THE LIMITED INFLUENCE OF PRIOR KNOWLEDGE

ON ENTREPRENEURIAL ACTION,

IN THE MIDST OF KNIGHTIAN UNCERTAINTY

By

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Abstract: . We extend the boundary conditions of the seminal work of McMullen and Shepherd (2006) by exploring entrepreneurial action that proceeds without prior knowledge related to the opportunity being pursued or when the importance of such knowledge is dismissed or discounted. We explain how some entrepreneurs pursue entrepreneurial endeavors because they possess, in one way or another, a disregard for prior knowledge and/or a motivational paradigm that eschews or at least discounts the importance of such knowledge. We do so by examining and tracing numerous possible paths to entrepreneurial action under uncertainty back to Frank Knight's (1921) six "methods for meeting uncertainty." We then empirically test one specific path, investigating the mechanisms by which extremely self-focused individuals pursue entrepreneurial action; in particular, we investigate their willingness to pursue entrepreneurial action in light of their self-focus, their sentiments about the importance of prior knowledge, and their perceptions of risk and uncertainty.

DEDICATION

I enthusiastically dedicate this dissertation to my grandfather, Charles Spencer Kibby, and to my beloved wife, Sarah Kathleen (née Stevenson) Trost – my grandfather magnanimously taught me *what it means* to be an entrepreneur and my wife courageously endured twenty years of me *being* an entrepreneur.

Charles Kibby (Grandpa Chuck, to me) began working full-time after finishing the eighth grade, and never looked back. He was the first person to teach me about entrepreneurship. He demonstrated (to me and others) that hard work and a deep appreciation of the servitude-nature of capitalism were the keys to success in business. When I was barely thirteen years old, he allowed me to shadow him and work for him in the lithograph business that he owned and operated – a business that he transformed from a single printing press operating in a single room to a business spanning five floors of a stoic brick building on Southwest Boulevard in downtown Kansas City. He taught me that a successful businessman understands his customers and caters to their needs, wants, and desires – that the customer is always right. But he did not mean that in a pejorative or compromising sense, never suggesting that one must endure bad behavior or mistreatment at the hands of one's 'customers'. Rather, he taught me that an astute businessman understands his customers – he anticipates their needs, wants, and desires – so that he can be ready and able to accommodate their last-minute demands, requests, design changes, or schedule changes. Similarly, he taught me that there is no substitute for an absolute commitment to first-time quality – there is no room for 'cutting

corners'; shabby work is simply unacceptable; do-overs are too costly to be normative – far better to do it right the first time. Although he was extremely critical and 'harsh' when addressing the mistakes of others, he did so in a self-deprecating manner. How many times did I hear him say to me, "I taught you everything I know, and you're the dumbest kid I ever saw"? Whenever I heard those words, I knew that I had messed something up – big time! But, for some reason, I never felt alone or alienated or worthless as a result; I knew that my mistakes were not fatal, that my grandfather's love and concern for me remained full and complete, never conditional on me 'doing everything just the right way' – I was free to live and learn.

My grandfather demonstrated that a successful business owner never asks or expects anything from his employees that he would not be willing to do himself. He taught me the importance of rewarding each employee's unique contributions. And, together we learned how to excel at Pac-Man (on the cocktail-table version of the game he purchased for the employee break-room, that now dons a space in our family's rec room) – wacka wacka wacka …

And now, as I complete PhD number two, I stand somewhat dazed, and feeling a bit crazy. What was I thinking? Who in their right mind would do this? To quote Billy Joel, an icon from my high school days, "You may be right; I may be crazy; but it just may be a lunatic you're looking for; … You may be wrong for all I know, but you may be right."

So, speaking of crazy, I am guilty of crazy love for my beautiful wife, Sarah. She is, hands down, the one person on earth to whom I am most grateful and without whose support none of this would have been even remotely possible. She is also the most exceptional person I know! Although I philosophically disagree with the notion that we, as individuals created by God and in His image, are in need of 'completion' by another human being, when I think about

Sarah and the comparison of my life with her by my side versus what my life would be like without her, I must echo that famous line from Jerry Maguire, "You complete me!"

Sarah and I had just become engaged (in April 1996) when Dr. Gary Oberlender asked me to work on a funded research project with him and, in so doing, to earn a PhD in engineering. As Sarah and I prayed about that decision, we both became convinced that such was the path God had chosen for us; so I quit my full-time job to become a full-time student again. Little did Sarah know that, as a result of that decision, she would end up enduring over twenty years of being married to a practicing 'entrepreneur'. As such, she endured my time spent as a full-time graduate student, a program management consultant, then a six sigma consultant, then an inventor, then a research and development owner/manager, then (full circle) a full-time graduate student again.

Thank you, Sarah, for believing in me and for staying by my side, for being a spectacular mom to our six amazing children, and for inspiring me to reach outside my comfort zone to open our hearts and our home and our souls to bring Caleb and Rachel and Lydia into our forever family through adoption. You have demonstrated (to me and to our children) the depth of God's love and care and compassion in a way that leaves me speechless. I thank God for you! You are unbelievably precious to Him and to me. What more can I say? I love you!

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Aside from my debt of gratitude to my grandfather (for first teaching me about entrepreneurship) and to my lovely wife (for enduring the 'entrepreneur' in me), I want to express my deep gratitude to my mom, Jeannine (née Kibby) Nelson, and my dad, Michael Trost, for always supporting me and encouraging me in my educational pursuits. Although Mom never graduated high school[1], she went to great lengths to make sure that I could attend college, thus enabling me to be the first member in my family (going back as many generations as I know of) to get a college degree. My dad confided in me that he hated school from the fourth grade on, because of an extremely negative experience he had with his fourth-grade teacher. As such, he merely endured school until he could finally graduate high school and move on with life. Yet, despite such a rocky start with formal education, he has remained a lifelong and avid learner, earning the nickname 'professor' from his fellow machinists and co-workers.

I am truly grateful to Mom and Dad for believing in me, supporting me, and encouraging me – in particular, I am extremely grateful for the sacrifices they made in support of my very expensive undergraduate education (allowing me to attend what was, at the time,

[1] I was so proud of Mom when, in her late 30s, she persevered to get her GED. She then went on to enroll in bartending school and graduated valedictorian of her class.

the most expensive school in the nation). For me, this current degree of course started then and there. Thank you, Mom! Thank you, Dad!

Thank you, Dr. Matthew Rutherford, for having faith that I could juggle multiple commitments and remain successful as a full-time graduate student as well as a husband and father of six. And thank you for introducing me to the Institute for the Study of Free Enterprise (ISFE) and their Doctoral Scholar program. ISFE has been a blessing and a game changer for me.

Speaking of ISFE, thank you Prof. Vance Fried for giving me the opportunity to work with the Institute these past two years and beyond. It has been both enjoyable and meaningful; and I look forward to further advancing the Institute's mission of teaching students to appreciate the importance of value creation in society, competitive markets, economic freedom, personal liberty, and human flourishing.

Thank you Dr. Per Bylund for all the hours spent listening, commenting, questioning, theorizing, and philosophizing together with me about life, academia, science, politics, and you name it. You always treated me more like a colleague than a student. You never hesitated to provide assistance when I needed it. You always provided direct, honest, straightforward, and constructive feedback. You faithfully guided me in new directions whenever you sensed I was headed down a path that might lead to my detriment. You have truly helped me become a more grounded scholar and scientist. I look forward to hearing your Nobel prize acceptance speech someday!

Thank you Dr. Robert Baron for the many hours of review and numerous iterations you endured in helping me refine my empirical model for this study. And thank you for your

constantly gracious attitude and perspective not only toward me but toward all your students. If all professors viewed students the way you do, the overall student experience would be enhanced in untold ways. Your humble approach in dealing with students and colleagues is truly inspirational – I aspire to imitate that approach.

Thank you Dr. Jeffery McMullen for taking an interest in me and being willing to serve on my committee. When I asked you to serve, I had no idea that my dissertation topic would end up being an extension of your dissertation and your seminal *Academy of Management Review* article. Your feedback has always been so sedulous and consequential and constructive. I admire you as a scholar and as a stellar person who personifies truth, wisdom, insight, and generosity. If my academic career ends up accomplishing a fraction of what you already have, I will count it a huge success.

Thank you Dr. Rick Wilson for walking through this process with me a second time. When I took your MBA course on developing quantitative business models in 1997, I thought it was one of the best (and most practical) technical course I had ever taken. After taking that class, I was grateful for your willingness to serve on my committee (for PhD number one); and now I am grateful, once again, for your willingness to reprise.

I want to thank my fellow doctoral students for all the feedback and encouragement they provided along the way. I especially want to thank the members of my cohort, Jonathon Button, Lincoln Brown, Jake Duke, and Paul Sanchez Ruiz. You will each do great things; I have enjoyed walking this journey with you guys! With respect to this dissertation, thank you, Lincoln, for your feedback regarding the hypothetical scenarios in the conjoint experiment. Your suggestions greatly improved the overall quality of this project. I also want to give a special "Thank you!" to Jonathan (and your lovely wife, Quinn) for all the countless hours

spent talking through where we've been, where we're going, how to get there, how to make this world a better place, etc. etc. Your friendship is one of the best things I will take away from this whole process – thanks!

I want to thank each of my six children for simply being the fearfully- and wonderfully-made individuals God created you to be. God has given each of you a unique personality and a unique collection of skills, talents, and abilities. Remember that (quoting the Spiderman comic-book series) "...with great power there must also come – great responsibility!" I urge each of you to use the great gifts you have been given to glorify God and to help spread His glory and the knowledge of Him and His love and His goodness to the ends of the earth. Each of you have made varying degrees of sacrifice enabling me to accomplish the work leading up to this dissertation, and for that, I say "Thank you" to each of you – to David, Jonathan, Silas, Rachel, Caleb, and Lydia![2] I love and admire each of you, with all my heart!

In closing, I wish to thank (most of all) the One to whom I owe everything – my Lord, my Redeemer, my Creator. Thank you, Jesus!

[2] This dissertation will always invoke special remembrances for me, in that for many of the hours I spent working on this degree, sitting in my recliner reading journal articles or writing, Caleb spent right there beside me, happy and content to just be next to his dad. Those were precious moments for me. I thank God for you, Caleb; and I am grateful that we had those special times to just enjoy being next to each other!

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INTRODUCTION

> If you don't know where you are going,
> you'll end up someplace else.
>
> — Yogi Berra

> The future ain't what it used to be.
>
> — Yogi Berra

The Influence of Knowledge on Entrepreneurial Action, in the Midst of Uncertainty

McMullen and Shepherd (2006), in their seminal article on entrepreneurial action and uncertainty, provided a two-stage theoretical model (the first stage leading to opportunity evaluation, the second stage leading to entrepreneurial action) wherein entrepreneurs ostensibly rely upon motivation and knowledge at each stage (see Figure 1). Autio, Dahlander, and Frederiksen (2013) extended McMullen and Shepherd's conceptual model and concluded that "potential entrepreneurs are usefully thought of as embedded in not one, but two, interconnected information domains … [that separately and independently] exercise different influences on opportunity evaluation and entrepreneurial action" (:1349). In addition, Townsend, Hunt, McMullen, and Sarasvathy (2018) inextricably link entrepreneurial action and uncertainty to the existence of "knowledge problems." Or, more precisely, they typify

'uncertainty' (which they refer to as 'unknowingness' in order to avoid conflation with *Knightian* 'uncertainty') as emanating from one of four 'sources' (ambiguity, complexity, equivocality, and [Knightian] uncertainty)[3] and then refer to those sources as the "four knowledge problems" (:660) that are vying for resolution (by the entrepreneur).

As such, a predominant theoretical approach to entrepreneurial processes presumes that entrepreneurial action inherently flows from a favorable combination of *both* knowledge and motivation, the presumption being that prior knowledge reduces uncertainty (and that without such knowledge, entrepreneurial action is hindered because of otherwise intractable doubt about an uncertain future). In essence, the contemporary view presupposes that entrepreneurial action occurs after a prospective entrepreneur gains enough knowledge (or at least presumed or subjective knowledge or confidence) to perceive that an opportunity exists, and then chooses (consistent with internal motivational factors) to act on that knowledge. However, despite the rich literature explaining entrepreneurial action within the context of uncertainty, there remains "confusion regarding both the impact of uncertainty on entrepreneurial action and on the effectiveness of the processes and strategies used to resolve it" (Townsend *et al.*, 2018:664).

Part of that confusion stems from "inconsistent definitions of uncertainty" (Townsend *et al.*, 2018:664); however, we contend that some of that confusion has arisen from a theoretical fixation on opportunities and the prior attainment of, or intentional pursuit of, knowledge relevant to those opportunities, when in fact, sometimes (and perhaps oftentimes)

[3] Similarly, McMullen and Shepherd (2006) employ a very broad definition of 'uncertainty' (risk, Knightian uncertainty, ambiguity, turbulence, and equivocality).

entrepreneurial action occurs in the substantial absence of *prior knowledge*[4] related to the opportunity being pursued (and sometimes even in the midst of a blatant disregard or disfavor for such knowledge). In particular, in the midst of true *Knightian uncertainty*, prior knowledge affords negligible benefits (and can actually prove detrimental) (Knight, 1921), even when doubt persists, because no underlying data-generating mechanism is at work (Keynes, 1921; Knight, 1921; Leamer, 2010). As such, we seek to extend the boundary conditions of McMullen and Shepherd's (2006) model by exploring entrepreneurial action that proceeds without prior knowledge related to the 'opportunity' being pursued and at times even when the importance of such knowledge is explicitly dismissed or discounted (sometimes rationally, sometimes irrationally). When faced with uncertainty, some entrepreneurs truly possess asymmetric information, dialectic judgment, keen alertness, or imaginative vision that enables them to manage as probabilistic risk the uncertainty that their rivals eschew (because, to the rivals, the unknowns resolve into nothing more than a mere guessing game). Even so, we argue herein that numerous entrepreneurs pursue entrepreneurial endeavors not because they possess prior knowledge or see what others do not, but because they possess, in one way or another, an ostensible disregard for prior knowledge and/or a motivational paradigm that eschews or at least discounts the importance of such knowledge. Although we champion the usefulness of McMullen and Shepherd's (2006) model (depicted in Figure 1), we argue herein that an

[4] When we use the term 'prior knowledge' we are referring specifically to knowledge (regardless of accuracy or 'correctness') that is in some way relevant to some (real or imagined or yet-to-be-discovered) entrepreneurial 'opportunity' and is known (i.e. consciously beheld by the entrepreneur) prior to the entrepreneur taking action. To be clear, we do not impugn the importance of knowledge *per se* to decision-making in general nor to entrepreneurial decision-making in particular. Nor do we suggest that entrepreneurs lacking 'prior knowledge' are, *ipso facto*, acting out of pure or complete ignorance (although we do not presume that they cannot or do not at times do so).

extension to the model is warranted. When developing their model, McMullen and Shepherd (2006) applied an intentionally broad definition of 'uncertainty' (encompassing risk, Knightian uncertainty, ambiguity, turbulence, and equivocality). Their model applies elegantly to situations involving four of the five 'types' of uncertainty cited: risk, ambiguity, turbulence, and equivocality (cf. Townsend *et al.*, 2018). However, in situations where individuals are faced with *Knightian uncertainty*, prior knowledge will tend to be ineffectual. This is not to say that knowledge *per se* is ineffectual, for no decision or action takes place in an informational vacuum. Rather, *prior knowledge*, knowledge that somehow connects the prospective entrepreneur to the existence of a third-person opportunity and that is known *prior to* entrepreneurial action, i.e. prior to *any* commitment of resources, can provide little assistance when "that higher form of uncertainty not susceptible to measurement and hence to elimination" (Knight, 1921:232) predominates.

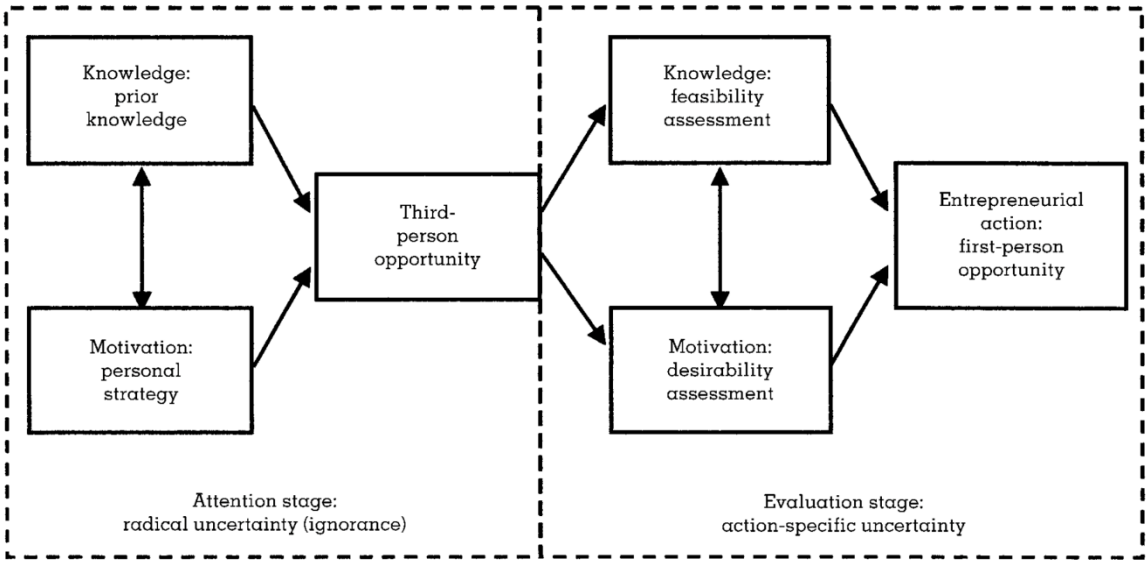

Figure 1 – McMullen and Shepherd's (2006) Model of Knowledge, Motivation, Opportunity, and Uncertainty

In that light, we seek to explain why some individuals take action in the midst of Knightian uncertainty when others ostensibly choose not to. In answering this question, we also seek to elucidate how *prior knowledge* about the opportunity being pursued represents only a subset of the potential paths leading a prospective entrepreneur to take entrepreneurial action, especially *in the midst of Knightian uncertainty*. It is important to answer this question because bearing Knightian uncertainty (which Professor Knight referred to as "true uncertainty") represents the quintessential source of entrepreneurial income and, perhaps more importantly, true uncertainty, by its very nature, tends to render prior knowledge ineffectual (Knight, 1921):

> but the present and more important task is to follow out the consequences of that higher form of uncertainty not susceptible to measurement and hence to elimination. It is this *true uncertainty* which by preventing the theoretically perfect outworking of the tendencies of competition gives the characteristic form of "enterprise" to economic organization as a whole and accounts for the peculiar income of the entrepreneur. (italics in original, :232)

Our approach to answering that question beckons back to the conceptual source of 'Knightian uncertainty': Frank Knight's *Risk, Uncertainty, and Profit*. In that seminal work, Knight (1921), in addition to crystallizing the differences between risk and uncertainty, enumerated six "methods for meeting uncertainty" (:239ff). We examine and trace numerous possible paths to entrepreneurial action under Knightian uncertainty back to those six methods and develop a set of propositions relevant to each method. We then develop an empirical model to evaluate one particular path to entrepreneurial action and empirically test that model.

CHAPTER II

REVIEW OF LITERATURE

Entrepreneurship: Definitional Difficulties

Theorists have struggled with the question 'Who is an entrepreneur?' for over 300 years. Exceptional minds representing lifetimes of contemplation and achievement have arrived at conflicting conclusions about this all-important question. Richard Cantillon (1931 [1730]) stressed risk-bearing in the midst of uncertainty as the *prima facie* indicator of entrepreneurship, as did Frank Knight (1921). Carl Menger (1976 [1871]) argued that entrepreneurial risk-bearing is inconsequential, because any risk of loss is offset by the chance of gain, and John Bates Clark (1892, 1907) and Joseph Schumpeter (1934 [1912]) both advocated that only the owners of capital truly bear any risk, not the entrepreneurs *per se*. Ludwig von Mises (1949) asserted that the term entrepreneur should be defined as "acting man exclusively seen from the aspect of the uncertainty inherent in every action" (1949:254) and that, in any genuine economy, "every actor is always an entrepreneur and speculator." (:253). Joseph Schumpeter (1934 [1912]) contended that successful innovation and successful innovation alone (i.e. carrying out new combinations) represents the single core element of entrepreneurial activity and that a business person "loses that character as soon as he has built up his business, when he settles down to running it as other people run their businesses." (1934

[1912]:78). Prior to Schumpeter, Frank Taussig (1915) stressed that although innovation may be an activity performed by the entrepreneur, it is certainly not the only one nor is it the most important. Similarly, Arthur Cole (1946) argued "there is nothing … that *requires* the employment of innovation in the activities of entrepreneurship, at least innovation in the usual senses. … However, innovation is not excluded" (italics added, :14).

In similar fashion, empirical researchers have been equally unable to find a consensus definition of 'the entrepreneur.' William Gartner (1989) in his review of dozens of entrepreneurship journal articles from 1944 to 1982, lamented "many (and often vague) definitions of the entrepreneur have been used" (:48), that many studies never even attempted to define "the entrepreneurs" they were researching, and that he found "few studies that employ the same definition" (:57). A more recent review by Johnson, Newby, and Watson (2005) demonstrated that Gartner's concerns remain applicable to modern researchers just as they were three decades ago. Johnson *et al.* (2005) reported "the various definitions found in the literature to describe an entrepreneur (and entrepreneurial activity) are confusing" (:1).

Recognizing the diversity amongst entrepreneurs, coupled with the stark reality that the majority of new ventures ultimately fail, researchers have sought earnestly to find that elusive 'secret ingredient' that makes an entrepreneur truly an entrepreneur. Early research sought to find entrepreneurial 'traits' by examining the personalities of entrepreneurs. After decades of fruitless traits-based approaches, researchers turned to more behavior-oriented approaches (Gartner, 1989). A decade later, Shane and Venkataraman (2000) suggested a shift away from "defining the field in terms of the individual [entrepreneur]" (:218) and toward studying the nexus between enterprising individuals and opportunities (Venkataraman, 1997).

Max Weber (1949 [1904]) developed four 'ideal types' to categorize human behavior: goal-based, values-based, emotional, and habitual. Weber recognized that his ideal types were fictional in the sense that no single behavior fits completely into any one category; rather, the various categories represent distinct frames of reference, or lenses, through which researchers can analyze and evaluate human behaviors and human action. In similar fashion, Hébert and Link (2009) evaluated three centuries of theoretical literature attempting to identify and describe 'the entrepreneur.' From that study, they distilled twelve 'identities' of the entrepreneur: [1] Assuming risk associated with uncertainty, [2] Supplier of financial capital, [3] Innovator, [4] Decision-maker, [5] Industrial leader, [6] Manager / superintendent, [7] Organizer and coordinator of economic resources, [8] Owner of an enterprise, [9] Employer of factors of production, [10] Contractor, [11] Arbitrageur, [12] Allocator of resources among alternative uses (:xviii).

Entrepreneurship and Uncertainty

Hébert and Link (2009) present their twelve identities, not as a consensus view of what it means to be an entrepreneur, but rather as the summation of numerous (sometimes conflicting) perspectives that have been presented over the centuries. In recognition of the rich theoretical history represented by the twelve identities, we do not seek to 'resolve' any longstanding conflicts regarding which are more valid than others. Rather, we seek to drill down and then expand upon their '#1' identity: 'assuming risk associated with uncertainty.'

Although Cantillon (1931 [1730]) first elucidated uncertainty-bearing as an inherently entrepreneurial activity, Hawley (1893, 1900) identified income in the form of profits derived from risk-bearing as being distinct from income that accrues due to the productive use of land,

labor, and capital. Knight (1921) expanded upon Hawley's notion of profit resulting from risk-bearing by explicitly differentiating insurable risk (which he associated with *probabilistic* 'risk') from non-insurable risk (which he uniquely associated with *non-probabilistic* 'uncertainty'). Drawing upon Knight (1921), we espouse a working definition of entrepreneurial activity as '***the pursuit of any economic endeavor that prospective rivals would view as being wrought with non-probabilistic (i.e. Knightian) uncertainty***.' By definition, non-probabilistic uncertainty represents an unknown and uncertain future that cannot be managed according to expected value and for which no numerical representation can be objectively attributed to the likelihood of the uncertain outcome.

Knight (1921) referred to non-probabilistic uncertainty as "true uncertainty" that is, by its very nature, "indeterminate" and "unmeasurable" (:46). As such, trying to establish any sort of 'measure' of Knightian (non-probabilistic) uncertainty would undoubtedly be wrought with difficulty. At best, it would seem that any attempt to measure Knightian uncertainty must be relegated to merely *categorizing* unknown future outcomes as being either Knightian or non-Knightian. For example, we could ask a prospective entrepreneur 'What is the probability that your current value proposition will end up being the most important value proposition for your customers at launch?' and give him/her two ways to respond—[1] provide an estimated probability (0-100%) or [2] select an option like 'Hard to say at this point' or 'Anybody's guess'. If they enter a number, then we can categorize the 'uncertainty' as probabilistic risk (with a number thusly assigned, which we can designate 'the degree of perceived risk'); if they check the alternative box, then we can categorize the perceived uncertainty as Knightian, but we cannot assign a 'number' to reflect the *degree* of Knightian uncertainty.

For that matter, we could argue that there is no such thing as 'degree' of Knightian uncertainty—either the critical unknowns are or are not non-probabilistic. However, if we apply the principles espoused by Shackle (1939, 1952), we might actually be able to quantify a 'degree' of Knightian uncertainty. Shackle (1939) introduced the concept of 'potential surprise' with respect to uncertainty, arguing that the

> … concept of "potential surprise" is something very different from that of mathematical probability for which I wish to substitute it. It is purely subjective. It cannot, of course, be measured in absolute units, but something more than a mere ordinal comparison *is possible*. An individual can sometimes say not merely, "I should be more surprised by this outcome than that," but, "I should be very much more surprised, rather more surprised," and so forth. (italics added, :443)

Later, Shackle (1952) recognized that a similar methodological construct had been developed by another scholar (Campbell, 1928), that construct being "degree of mental discomfort" associated with finding that a belief previously held to be true is, in actuality, untrue. Shackle (1952) acknowledged that his conceptualization of "potential surprise" was essentially the same as Campbell's (1928) "degree of mental discomfort" (Shackle, 1952:13).

CHAPTER III

THE IMPLICATIONS OF *KNIGHTIAN* UNCERTAINTY ON THE POTENTIAL INFLUENCE OF PRIOR KNOWLEDGE

Understanding uncertainty in terms of 'potential surprise' informs us with respect to how entrepreneurs may approach and bear the uncertainty of their undertakings. In that vein, Knight (1921) enumerated six "methods for meeting uncertainty" (:239-240). In this section, we highlight several potential paths to entrepreneurial action (and associated propositions) by directly relating various business and entrepreneurial decision-making processes to Knight's six methods, which are:

1. "reduction [of uncertainty] by grouping"
2. "selection of men to 'bear' [the uncertainty]"
3. "control the future" (e.g. reliance upon effectual processes)
4. "increased power of prediction" (e.g. reliance upon causal processes)
5. "'diffusion' of the consequences of untoward contingencies"
6. "directing industrial activity more or less along lines in which a minimal amount of uncertainty is involved and avoiding those involving a greater degree"

The paths are described below following the order of Knight's enumeration. It is important to note that Knight (1921) did not present his six methods as mutually exclusive; rather, he emphasized the connectedness between various methods, implying that a given

business person might be employing multiple methods at any given time, even while pursuing a single economic endeavor (:239-240). As such, Knight's methods should be construed similarly to Weber's (1949 [1904]) ideal types of human behavior. In addition, it is interesting to note that Knight (1921) viewed Methods #1 and #2 as "the two main principles for dealing with uncertainty" (:255), thus relegating the remaining methods to a secondary or even 'uninteresting' status.

Regarding Knight's (1921) Method #2 ("selection of men to 'bear' [the uncertainty]"), he contends that the "fact or set of facts making for a reduction of uncertainty is the *differences among human individuals* in regard to it" (italics added, :239). He goes on to summarize those differences as being, "from the standpoint of the person concerned, … the (subjective or felt) uncertainty and his conative feeling toward it" (:242). In other words, Knight is suggesting that an individual's decision to act entrepreneurially in a given situation depends upon a combination of (or interaction between) the individual's subjective *perception* of the uncertainty being faced and the individual's *conative* feeling toward it (i.e. the individual's core instincts—fears, doubts[5], expectations, hopes, dreams, desires—regarding uncertainty, and how those instincts affect the individual's propensity to take action).[6]

[5] 'Doubt' represents a key aspect of McMullen and Shepherd's (2006) theorizing about uncertainty. Although they adopt a rather broad definition of 'uncertainty' (as risk, Knightian uncertainty, ambiguity, turbulence, and equivocality), the essence of 'uncertainty' to them centers around 'doubt' and its interaction with a prospective entrepreneur's 'beliefs.' To that end, they state that "uncertainty *takes the form of* doubt, which prevents action by *undermining* the prospective actor's beliefs …" (italics added, :133). This is instructive in that, although they intentionally start with a broad definition of uncertainty, they essentially narrow it by focusing on a particular aspect of how prospective entrepreneurs interact with uncertainty (i.e. via the process of uncertainty producing doubt and the influence of that doubt on belief via hindrance to action). As such, they seem to be excluding those types of 'uncertainty' that fail to produce significant 'doubt' in the mind of the prospective entrepreneur. In other words, whenever an individual is 'confident and venturesome' to the point of suppressing, ignoring, or otherwise disregarding the influence of his or her doubts about the future, that individual is, by and large, placing himself or

Of Knight's six methods, one (Method #6) falls entirely outside the realm of entrepreneurship (referring specifically to the 'business as usual' approach of intentionally avoiding Knightian uncertainty).

Although Knight (1921) describes his Method #5 with a sense of reservation or apprehension (using the limiting phrase "*[p]ossibly* a fifth method," italics added, :239), it represents perhaps the most interesting of the six methods, because the advent of modern technology (i.e. crowdfunding) has made the method universally available to every prospective entrepreneur who has an idea but lacks prior knowledge (i.e. regarding the market potential of the idea) and/or significant start-up capital.

Figure 2 provides a graphical depiction of the various paths described below (with the purple box highlighting what we view as the boundary conditions of McMullen and Shepherd's (2006) model, *within the context of Knightian uncertainty*).

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herself outside of McMullen and Shepherd's (2006) model. In our view, this is exactly what Knight (1921) was getting at when he identified "venturing" (i.e. pursuing entrepreneurial action to the point of organizing a firm) as "the system under which the confident and venturesome 'assume the risk' or 'insure' the doubtful and timid by guaranteeing to the latter a specified income in return for an assignment of the actual results" (:269-270). In essence, Knight's Method #2 could be construed as affirming that there are three types of individuals: [1] individuals who fall *within* the scope of McMullen and Shepherd's (2006) model but *outside* its implementation by allowing their doubts to keep them from acting entrepreneurially (i.e. non-entrepreneurs, if you will), [2] others who fall *within* the scope of the model and *within* its implementation by relying upon prior knowledge to overcome their doubts, and [3] others who fall *outside* the scope of the model altogether, in that they are not 'demotivated' by doubt.

[6] Knight (1921) equates his Method #2 ("selection of men to 'bear' [the uncertainty]") with "specialization" (:239), to which he adds: "specialization of uncertainty-bearing [presents itself] in light of *the many ways in which individuals differ in their relations to uncertainty*" (italics added, :255). However, Knight (1921) later conflates specialization (Method #2) with consolidation (Method #1) when he says "Specialization implies concentration, and concentration involves consolidation; and no matter how heterogeneous the 'cases' the gains and losses neutralize each other in the aggregate to an extent increasing as the number of cases thrown together is larger. Specialization itself is primarily an application of the insurance principle" (:256).

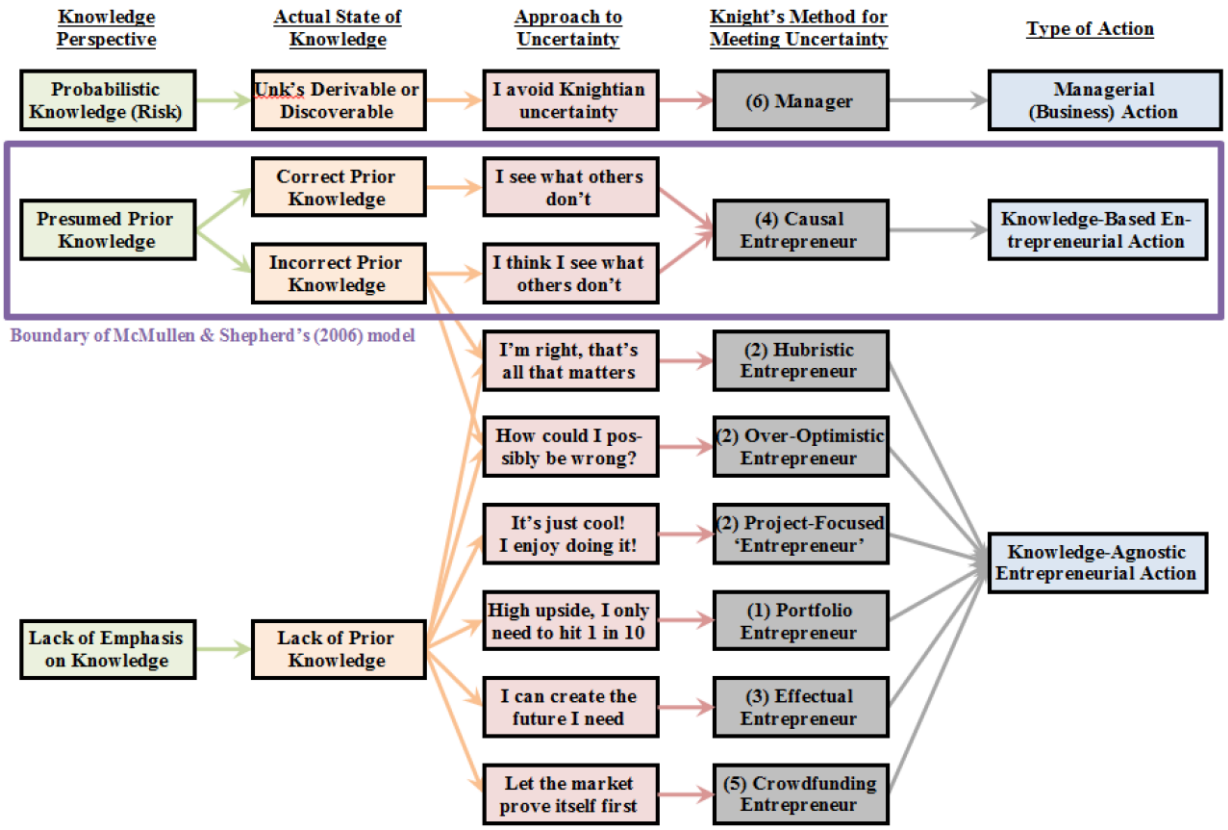


Figure 2 – Model Relating Knowledge Perspective, Approach to Uncertainty, and Type of Entrepreneurial Action *under Knightian Uncertainty*

Knight's Method #1 (Reducing Uncertainty by Grouping)

Path #1: Portfolio Investors Pursue Entrepreneurial Action by Transforming 'Uncertainty' into 'Risk' through Consolidation of Uncertain Projects, with a *Rational*, *Pragmatic*, and *Systematic* Disregard for Prior Knowledge

Knight (1921) aptly identified the mechanism by which venture capitalists and angel investors transform 'uncertainty' into 'risk' — by aggregation (i.e. grouping) and consolidation:

> A considerable and increasing number of individual promoters and corporations give their exclusive attention to the launching of new enterprises, withdrawing entirely as soon as the prospects of the business become fairly determinate. The gain from arrangements of this sort arises largely from the consolidation of uncertainties, their conversion by grouping into measured risks which are for the *group* of cases *not uncertainties at all*. Such a promoter takes it as a matter of course that a certain proportion of his ventures will be failures and involve heavy losses, while a larger proportion will be relatively unprofitable, and

> counts on making his gains from the occasional conspicuous successes. That is — to face frankly that paradoxical element which is really involved in such calculations — he does not "expect" to have his "expectations" verified by the results in every case; the expectations on which he really counts are based on an average, on *an "estimate" of the long-run value of his "estimates."* The specialization in the speculative phase of the business *enables a single man or firm* to deal with *a larger number of ventures,* and is *clearly a mode of applying the same principle which underlies ordinary insurance*. (italics added, :257-8)

The venture capitalist or angel investor thus eschews (or at least heavily discounts) the need for special or prior knowledge with respect to any specific opportunity, and instead relies upon his or her 'judgment' and, more precisely, his or her judgment about the entrepreneur (Matusik, George, & Heeley, 2008) more so than the opportunity itself.

Just as the insurer is able to calculate probability-based premiums by aggregating across numerous individual cases, the venture capitalist or the angel investor is able to subjectively derive "an 'estimate' of the long-run value of his 'estimates.'" (Knight, 1921:258). When we consider the spectrum of 'risk' versus 'uncertainty', we might reasonably conclude that, on an individual project basis, the 'uncertainty' associated with each new venture is predominantly Knightian. However, upon aggregating numerous instances into a group (or portfolio) of projects, the investor is able to principally shift his or her exposure from 'uncertainty' into the 'risk' category. This leads to the following:

> Proposition 1: Portfolio-focused entrepreneurs (such as venture capitalists and angel investors), employing a *rational, pragmatic*, and *systematic* disregard for prior knowledge, transform Knightian uncertainty into probabilistic risk by pursuing a *portfolio* of entrepreneurial projects (any one of which, in isolation, represents Knightian uncertainty; but, when aggregated, the portfolio can be assigned subjective probabilities).

Knight's Method #2 (Selection of Individuals to Bear Uncertainty)

Path #2A: Action-Focused Entrepreneurs Pursue Entrepreneurial Action with an *Impatient* Disregard for Prior Knowledge

Path #2B: Extremely Self-Focused Entrepreneurs who are Overly Optimistic Pursue Entrepreneurial Action with a *Subconscious* Disregard for Prior Knowledge and a Propensity to Underestimate Risk

Path #2C: Project-Focused Entrepreneurs Pursue Entrepreneurial Action with a *Conscious, yet Nuanced*, Disregard for Prior Knowledge Coupled with Ambivalence toward Risk and Uncertainty

Path #2D: Extremely Self-Focused Entrepreneurs with Hubristic Pride Pursue Entrepreneurial Action with a *Conscious* and *Blatant* Disregard for Prior Knowledge and a Propensity to Perceive Uncertainty as Risk

Venkataraman (1997) defined entrepreneurship as the nexus between opportunities and enterprising individuals. Although his definition has generated numerous insightful investigations and discussions regarding individuals and their pursuit of entrepreneurial endeavors, it presumes upon the existence (or possible existence) of an opportunity, whether the opportunity currently (objectively) exists or can be created by the entrepreneur (Alvarez & Barney, 2007). Similarly, McMullen and Shepherd's (2006) model of entrepreneurial action presumes upon not only the existence (or possible existence) of an opportunity, but of the entrepreneur's access to prior knowledge related to the opportunity.

However, what if some entrepreneurs pursue development of a new product not because they believe *a priori* that the 'new thing' represents a genuine 'opportunity' but simply because they think what they are doing is 'cool' or because they enjoy the creative process thus

embodied by their actions (Eggers & McCabe, 2015)[7] or because they are 'product-centric' (Eggers & McCabe, 2016) or because their hubris (Hayward, Shepherd & Griffin, 2006) or self-efficacy (McGee, Peterson, Mueller & Sequeira, 2009) or over-optimism (Hmieleski & Baron, 2009) or overconfidence (Busenitz & Barney, 1997) leads them to pursue a 'non-opportunity' (i.e. an endeavor that they do not view, at the time they begin committing resources, as an economic 'opportunity') or to pursue an 'opportunity' regardless of their level of perceived uncertainty and/or lack of prior knowledge related to the opportunity? Scant effort has been devoted to the study of entrepreneurs who combine characteristics such as overconfidence, over-optimism, narcissism, or self-efficacy with a disregard for customer preferences or market-based 'opportunities.' In recognition of these potential paths to entrepreneurial action, we propose that

> Proposition 2A: Action-focused entrepreneurs (i.e. those high in locomotion orientation), favoring action over inaction with an *impatient* disregard for the importance of prior knowledge, are more prone to pursue entrepreneurial endeavors in the midst of Knightian uncertainty than assessment-focused entrepreneurs.
>
> Proposition 2B: Entrepreneurs with a *subconscious* disregard for the importance of prior knowledge, who ignore Knightian uncertainty and proceed with their entrepreneurial endeavors anyway, will tend to be more optimistic than the general population.

[7] Some will argue that individuals who pursue an endeavor because it is 'cool' or because they enjoy the creative process are not actually entrepreneurs. We include this example precisely because of that potential objection. In the midst of Knightian uncertainty, it is "anybody's guess" regarding whether a given endeavor will actually lead to economic gain. The working definition of entrepreneurship that we espouse (discussed previously) intentionally shifts the focus away from the actor (i.e. the 'entrepreneur') to the non-actor (i.e. the rival or close competitor who refuses or fails to take action because of perceived uncertainty). From that perspective and based on that definition of entrepreneurship, the purpose and motive of the actor becomes irrelevant to whether the pursuit should be considered 'entrepreneurial' or not.

Proposition 2C: Entrepreneurs with a *conscious* disregard for the importance of prior knowledge, who ignore Knightian uncertainty and proceed with their entrepreneurial endeavors anyway, will tend to be more project-focused than entrepreneurs with a subconscious disregard for the importance of prior knowledge.

Proposition 2D: Entrepreneurs with a *conscious* and *blatant* disregard for the importance of prior knowledge, who ignore Knightian uncertainty and proceed with their entrepreneurial endeavors anyway, will tend to be more overconfident and hubristic than entrepreneurs with a subconscious or merely conscious disregard for the importance of prior knowledge.

Proposition 2E: Extremely self-focused entrepreneurs will be more prone to perceive uncertainty as risk and thus more prone to proceed with entrepreneurial endeavors in the midst of Knightian uncertainty, with an *inattentive* disregard for the importance of prior knowledge.

Knight's Method #3 (Control the Future)

Path #3A: Effectuating Entrepreneurs Transform Uncertainty into Risk over Time by Creating Opportunities 'As They Go', with a *Pragmatic* and *Cautious* Disregard for Prior Knowledge

Sarasvathy's (1998, 2001) observation of expert entrepreneurs relying upon effectuation processes provides another example where entrepreneurial action sometimes precedes the existence of prior knowledge regarding the 'opportunity' being pursued. McMullen and Shepherd (2006) appropriately laud Sarasvathy's work on effectuation by highlighting the benefits of the 'think-aloud' protocol she used to "to examine how entrepreneurs think about opportunity" (:148). Even so, when we consider Sarasvathy's (2001) conclusions about what those expert entrepreneurs do actually 'think' about pre-existing knowledge and opportunities, we see that effectuating entrepreneurs exploit "contingencies" whereas non-effectuating entrepreneurs exploit "knowledge." Indeed, Sarasvathy (2001) identified "[e]xploitation of contingencies rather than exploitation of *preexisting knowledge*" (italics added, :252) as one of the four core principles of her theory of effectuation. Thus, we see that entrepreneurs who effectuate rely not upon prior knowledge about some specific opportunity, but rather go about

creating opportunities as they employ effectual processes. Effectuation, as an iterative process (Sarasvathy & Dew, 2005), allows the entrepreneur to experiment and test and explore the potential realities of a new market before *fully* committing[8] to one direction or another. As such, we propose that

> Proposition 3A: Effectual entrepreneurs transform Knightian uncertainty into probabilistic risk by systematically and iteratively assessing and expanding their own capabilities, experimenting relative to their capabilities, and validating and testing potential market(s) for new products or services, employing a *pragmatic* and *cautious* disregard for the importance of prior knowledge.

Path #3B: 'Alert' Entrepreneurs Who Proactively Shape Opportunities Contend with *Reduced-Relevance* Prior Knowledge

Kirzner (1973, 1997) is perhaps best known for beginning a longstanding conversation within the economic and management literatures regarding the concept of entrepreneurial alertness. Although scholars have debated whether Kirzner's views on entrepreneurship and alertness were markedly different at different times and/or different contexts or whether he was merely presenting viewpoint differences to different audiences (Korsgaard, Berglund, Thrane & Blenker, 2016), both perspectives of entrepreneurial alertness (referred to as 'Mark I' and

[8] Some might argue that effectuating entrepreneurs have not yet taken 'entrepreneurial action' until after they have identified or created the opportunity they ultimately pursue and have, in so doing, garnered *prior knowledge* related to that opportunity. We disagree with such a narrow view of 'entrepreneurial action.' Whenever an individual begins committing resources (including time and opportunity costs), he or she (in our view) is engaging in 'entrepreneurial action' provided that the endeavor being pursued is [1] an *economic* endeavor (or potentially an economic one, even if the entrepreneur does not yet recognize it as such) and [2] an endeavor that prospective rivals would eschew based on their perceptions of Knightian uncertainty surrounding the endeavor (see the working definition of 'entrepreneurship' provided in the introduction). Note that we are not intending to conflate 'endeavor' with 'opportunity.' By 'endeavor' we are referring to the broad scope of the individual's pursuits (regardless of whether any actual or imagined 'opportunity' is contained within the present or future scope of those pursuits). We use the term 'opportunity' in a more narrow sense, referring to one of the three classes cited by Venkataraman (1997:122) (referring to Drucker, 1985): "inefficiencies within existing markets" or "significant changes in social, political, demographic, and economic forces" or "inventions and discoveries that produce new knowledge."

'Mark II") depict some level of disregard or discounted relevance with respect to prior knowledge related to the 'opportunity' being pursued.

For example, Kirzner 'Mark II' placed emphasis on entrepreneurs "proactively shaping the nonexistent future" (Korsgaard *et al.*, 2016:7) in the midst of "an uncertain context in which entrepreneurs iteratively *develop* and *alter* their imagined opportunities" (italics added, :13). As such, we readily acknowledge that 'Mark II' alert entrepreneurs, who are lauded for iteratively creating or imagining 'opportunities' as they go, might have access to some level of 'prior knowledge' (e.g. technology specific or market specific) that shapes their *ability* to develop and alter and imagine some heretofore nonexistent *future* opportunity; however, the more an entrepreneur truly 'develops' or 'alters' or 'imagines' the future opportunity he or she ultimately pursues, the less important any 'prior knowledge' (of any sort) truly was (and the less likely that any 'prior knowledge' directly related to the ultimate 'opportunity' actually existed). This leads to the following:

> Proposition 3B: Whenever alert entrepreneurs 'see' uncertainty through a probabilistic lens even though their prospective rivals see only Knightian uncertainty, the extent to which the entrepreneurs 'developed' or 'altered' or 'imagined' the opportunity they ultimately pursued will be inversely proportional to the relevance (and thus importance) of any presumed or actual prior knowledge.

Knight's Method #4 (Predict the Future)

Power to predict the future has been venerated and sought after for millennia. The priestess of the famous 'Oracle of Delphi,' purported to be able to utter predictive prophecies, was deemed the most powerful woman of her time (Scott, 2014).

Apart from divine revelation, the essence of reliable and meaningful prediction (or forecasting) lies in the objective existence of an underlying data-generating mechanism and

either a favorable understanding of the mechanism itself or a surfeit of historical data (that can be used to be calculate reliable forecasts, even if a general understanding of the underlying mechanism is lacking). In either case, accurate and adequate prior knowledge (embodied as either genuine processual understanding or representative data or both) and a stable underlying process are both critical.

However, within the context of Knightian uncertainty, which is "indeterminate" and "unmeasurable" (Knight, 1921:46), powers of prediction and forecasting vitiate to the status of a mere 'guessing' game. Although Mintzberg (1994) was not commenting specifically about Knightian uncertainty, his deprecatory comments about forecasting are nonetheless appropriate: "a good deal of forecasting is simply akin to magic, done for superstitious reasons and because of an obsession with control that becomes the illusion of control" (:235).

Sarasvathy (2008), on the other hand, was directly focusing on the realm of Knightian uncertainty when she critically assessed attempts to predict and forecast the emergence of new markets:

> In commercializing new technologies, pioneering entrepreneurs often find that formal market research and expert forecasts however sophisticated in their methods and impeccable in their analyses, fail to predict where the markets will turn out to be, or what new markets will come into existence. (:94)

As such, whereas Knight's Method #4 (increased power of prediction) represents a relatively large swathe of the potential paths to entrepreneurial action encompassed by McMullen and Shepherd's (2006) two-stage model, it represents an extremely narrow portion of the potential paths when the 'opportunity' being pursued is steeped in Knightian uncertainty. We turn now to that narrow set.

Path #4A: Alert Entrepreneurs Correctly See Risk where Others (Incorrectly) See Uncertainty, with a *Ready-to-Discover* yet *Non-Deliberate* Disregard for Prior Knowledge

Path #4B: Alert Entrepreneurs Correctly See Risk where Others (Incorrectly) See Uncertainty, with a *Reliance upon Asymmetric Knowledge*

Within the framework of Kirzner 'Mark I' entrepreneurship (Korsgaard *et al.*, 2016), we see a perspective on alertness that emphasizes the presence of 'surprise' on the part of the alert entrepreneur (Kirzner, 1997). In order for 'surprise' to be present, there must have been some significant *lack of prior knowledge* that preceded that moment of surprise—i.e. the 'Mark I' alert entrepreneur, who attempts to exploit some fortuitous 'discovery' of asymmetric information, initially begins that journey with a genuine *lack* of prior knowledge relevant to the opportunity ultimately pursued. In fact, Kirzner (1997) refers to that lack of prior knowledge as the entrepreneur's "earlier unaccountable *ignorance*" (italics added, :72):

> Without knowing what to look for, without deploying any deliberate search technique, the entrepreneur is at all times scanning the horizon, as it were, ready to make discoveries. Each such discovery will be accompanied by a sense of *surprise* (at one's earlier unaccountable *ignorance*). (italics added, :72)

As such, 'Mark I' alert entrepreneurs begin with a paucity of prior knowledge, perhaps even complete ignorance (related to the opportunity ultimately pursued) immediately prior to the moment of 'surprise' wherein they suddenly gain insight and vision that allows them to 'see' an opportunity that others have failed to see. However, although 'Mark I' entrepreneurs begin with a lack of prior knowledge, immediately after that moment of 'surprise' they then suddenly possess asymmetric information or knowledge that essentially allows them to 'predict' or 'forecast' a future price discrepancy, allowing them, for example, to commence buying "some or all of the factors of production at prices which, seen from the point of view of the future state of the market, are too low" (Mises, 1962:109 as quoted by Kirzner, 1999:11).

We see, therefore, a transition from little or no knowledge relevant to the opportunity to asymmetric knowledge; similarly, we see a transition from little or no predictive power to an ability to 'see' or 'predict' price discrepancies that can be exploited for profit, consistent with a Kirzner 'Mark I' entrepreneurial attitude in which the entrepreneur "is always ready to be surprised, always ready to take the steps needed to profit by such surprises" (Korsgaard *et al.*, 2016:72). This leads to the following:

> Proposition 4A: Alert entrepreneurs who experience 'surprise' when they first 'see' (through a probabilistic lens) an 'opportunity' that their prospective rivals would eschew as being wrought with Knightian uncertainty, employ a *ready-to-discover* yet *non-deliberate* disregard for the importance of prior knowledge.

> Proposition 4B: Alert entrepreneurs 'see' uncertainty through a probabilistic lens when their prospective rivals see only Knightian uncertainty. In other words, the entrepreneurs (correctly) perceive risk where their prospective rivals and close competitors (incorrectly) perceive uncertainty, thus signifying the likely presence of *asymmetric* knowledge on the part of the entrepreneur.

Path #4C: Misguided Causal Entrepreneurs Incorrectly Perceive 'Risk' where Others (Correctly) See 'Uncertainty,' with a *Presumed Reliance upon Asymmetric Prior Knowledge* (but in Actuality, a *Reliance upon False Prior Knowledge*)

Although Path #4C is conceptually distinct from Path #4B, the mechanics and net effect are indistinguishable *ex ante*. In fact, even *ex post*, we cannot definitively determine whether entrepreneurs who failed to capitalize on a given 'opportunity' merely failed to exploit a genuine opportunity (i.e. failed in their execution) or failed due to self-deception or 'false prior knowledge' that caused them to falsely pursue a non-opportunity. So, *empirically* Proposition 4C (below) might be indistinguishable from Proposition 4B; nonetheless, we present it herein to highlight the conceptual and theoretical distinctions associated with 'correct' and 'incorrect' prior knowledge related to the 'opportunity' being pursued:

> Proposition 4C: Some seemingly 'alert' entrepreneurs are actually deceiving themselves into incorrectly ascribing probabilistic risk to Knightian uncertainty.

> In other words, the entrepreneurs (incorrectly) perceive risk where their prospective rivals (correctly) perceive uncertainty, due to the entrepreneurs' reliance upon *false* prior knowledge.

Knight's Method #5 (Diffuse the Downside Consequences across a Large Group)

Path #5A: Crowdfunding (Non-Equity-Based) Entrepreneurs Convert Uncertainty to Risk by Diffusing the Downside Consequences across a Large Group of Non-Equity Stakeholders, thus *Capturing* 'Prior Knowledge' about a New Market, by Securing Pre-Orders, Prior to Committing Substantial Personal Resources

Path #5B: Crowdfunding (Equity-Based) Entrepreneurs Convert Uncertainty to Risk by Diffusing the Downside Consequences across a Large Group of Equity Stakeholders, with a *Pragmatic* and *Dismissive* Disregard for Prior Knowledge

With the advent of crowdfunding sites like KickStarter in 2009, entrepreneurs have a new way of dealing with uncertainty. A key element of the uncertainty associated with launching a new venture centers on the uncertainty inherent in human action, in general, and, in particular, human action related to the preferences of potential customers. Non-equity crowdfunding sites (like KickStarter) enable prospective entrepreneurs to obtain pre-commitments from prospective customers. This allows the prospective entrepreneur to delay significant financial commitment until *after* a pre-specified number of potential customers have actually committed to purchasing the new product or service.

It is doubtful that Knight (1921) anticipated crowdfunding sites like KickStarter when he quipped,

> Possibly a fifth method [for meeting uncertainty] should be named, the "diffusion" of the consequences of untoward contingencies. Other things equal, it is a gain to have an event cause a loss of a thousand dollars each to a hundred persons rather than a hundred thousand to one person (:239)

Despite Knight's trepidation about the practical feasibility of his Method #5, prospective entrepreneurs now possess a direct path to its implementation; they can minimize

their downside losses with little or no 'prior knowledge' regarding the market potential of the opportunity being pursued.

> Proposition 5A: Entrepreneurs pursuing non-equity crowdfunding are able to 'diffuse' the untoward consequences of Knightian uncertainty, prior to committing substantial portions of their own financial resources, by pre-establishing the existence of a new market through customer pre-commitments, essentially *capturing* 'prior knowledge' about the market.

> Proposition 5B: Entrepreneurs pursuing equity-based crowdfunding are able to 'diffuse' the untoward consequences of Knightian uncertainty, prior to committing substantial portions of their own financial resources, *pragmatically dismissing* the need for prior knowledge.

Knight's Method #6 (Pursue Only Risk, Avoid Uncertainty)

Path #6: Non-Entrepreneurial Business Managers Actively Embrace and Manage 'Risk' while Eschewing 'Uncertainty,' with a *Timid* Circumvention of the Need for Prior Knowledge of the Unfamiliar

Knightian risk (i.e. probabilistic risk) encompasses situations where the critical unknowns can be characterized by derivable or discoverable probability distributions. The key factors driving the business decision reside in the realm of expected value and net present value, which are a function of the respective probabilities of various occurrences, the anticipated gains (or losses) associated with each occurrence, and the relative timing thereof. Of course, even Knight (1921) recognized that human actors, when faced with probabilistic risk, rarely employ exhaustive analyses or rely upon accurate measurements, even when making important business decisions (:230).

Returning to the question discussed earlier regarding 'entrepreneurs' versus 'non-entrepreneurs,' such a dichotomy fails to recognize the fact that there is uncertainty inherent in every human action and, as such, we are all at some level 'entrepreneurs' (Mises, 1949). As such, we should expect to observe some measure of 'entrepreneurial' action and mindset in all

business managers while observing some who are more ‘entrepreneurial’ than others. Furthermore, the premise of person-organization fit (Morley, 2007) suggests that business managers having ‘less entrepreneurial’ personal characteristics will tend to align with positions of responsibility that require less engagement with Knightian uncertainty. Similarly, we should expect business managers who are fulfilling primarily ‘non-entrepreneurial’ roles to be more prone to eschew ‘uncertainty’ and thus actively seek to avoid it. This leads us to propose that:

> Proposition 6: ‘Business managers’ fulfilling primarily ‘non-entrepreneurial’ business roles tend to eschew ‘uncertainty’ by “directing industrial activity more or less along lines in which a minimal amount of uncertainty is involved,” openly *relying* upon knowledge of the familiar while *timidly* circumventing any need for or importance of prior knowledge of the unfamiliar.

CHAPTER IV

RESEARCH METHODOLOGY

An Empirical Model to Test Potential Mechanisms by which Extremely Self-Focused Individuals Pursue Entrepreneurial Action in the Midst Of Knightian Uncertainty

McMullen and Shepherd's seminal 2006 *Academy of Management Review* paper marked a resurgence in scholarly research regarding entrepreneurial action in the midst of uncertainty. We have sought to extend that conversation by examining and tracing the numerous possible paths to entrepreneurial action under Knightian uncertainty back to Knight's (1921) six "methods for meeting uncertainty" (:239ff). In particular, we develop and empirically test a model related to Knight's method #2 (selection of individuals to bear uncertainty). The essence of Knight's argument regarding his method #2 hinges on "the differences among human individuals in regard to" their 'suitability' for bearing uncertainty (1921:239). Knight did not argue that some 'expert' selects individuals to bear uncertainty; rather, he suggested that some individuals are better 'suited' to bear uncertainty and thus self-select into entrepreneurial endeavors. With respect to suitability, we can surmise numerous possible traits, characteristics, dispositions, experiences, etc. that might make one individual more 'suitable' to bearing uncertainty than another. However, ultimately, the self-selection that Knight inferred must materialize via an individual's willingness to tangibly instantiate their 'suitability' by taking entrepreneurial action, e.g. committing resources to pursue a given entrepreneurial endeavor.

Figure 3 depicts an empirical model devised to capture and test such willingness to take entrepreneurial action; in particular, the model evaluates an hypothesized set of mechanisms whereby individuals possessing a high degree of self-focus, self-confidence, or perceived self-sufficiency ultimately choose to pursue entrepreneurial action (see Proposition 2E in Chapter III).

Knight also elucidated that, although uncertainty affects both the producer and the consumer, the ultimate bearer of uncertainty is the producer, and the uncertainty borne by the producer comprises two 'fields'—production and wants:

> It is perhaps obvious that the function of prediction in the technological side of *production* itself inevitably devolves upon the producer. At first sight it would appear that the consumer should be in a better position to anticipate his own *wants* than the producer to anticipate them for him, but we notice at once that this is not what takes place. The primary phase of economic organization is the production of goods for a general market, not upon direct order of the consumer. With uncertainty absent it would be immaterial whether the exchange of goods preceded or followed actual production. With uncertainty (in the two fields, *production* and *wants*) present it is still conceivable that men might exchange productive services instead of products, but the fact of uncertainty operates to bring about a different result. … The main reason [the consumer does not contract for his goods in advance] is that he does not know what he will want, and how much, and how badly; consequently he leaves it to producers to create goods and hold them ready for his decision when the time comes. (italics added, Knight, 1921:240-1)

As such, in the model depicted in Figure 3, we evaluate and test individuals' propensity to pursue entrepreneurial action in the midst of these two fields of uncertainty—production and wants—relating respectively to the ability of the entrepreneur to actually design and manufacture the good or service in question (which we refer to hereafter as 'technical' uncertainty) and the ability of the entrepreneur to persuade consumers to purchase the resulting good or service (which we refer to as 'market' uncertainty).

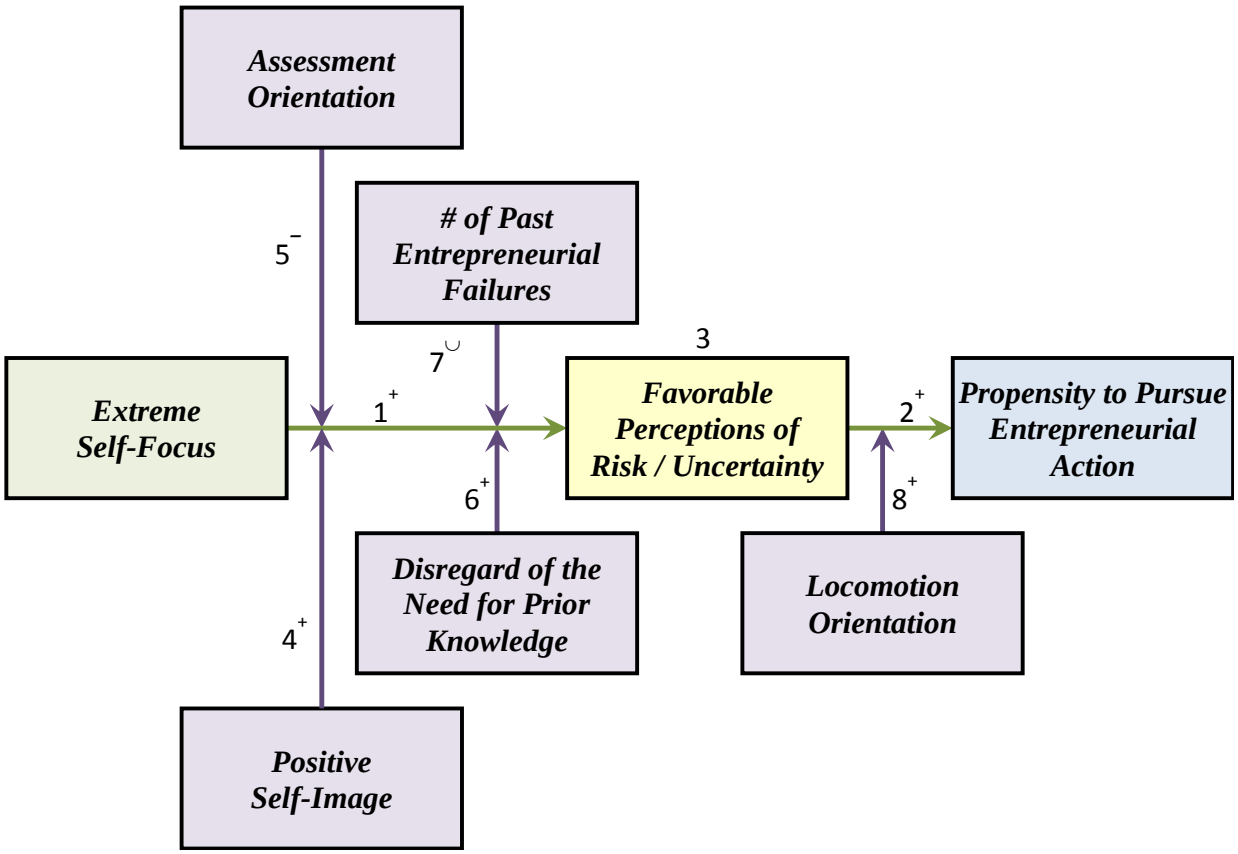


Figure 3 – Empirical Model Relating Extreme Self-Focus to Entrepreneurial Action in the Midst of Knightian Uncertainty

H1A: Under conditions of Knightian uncertainty, individuals with extreme self-focus will tend to perceive Knightian uncertainty as probabilistic risk.

H1B: Under conditions of Knightian uncertainty, individuals with extreme self-focus who perceive uncertainty as risk will tend to perceive that 'risk' more favorably (i.e. perceive a given uncertain situation as less risky) than individuals low in self-focus.

H1C: Under conditions of probabilistic risk, individuals with extreme self-focus will tend to perceive risk more favorably (i.e. perceive a given risky situation as less risky) than individuals low in self-focus.

H2A: Under conditions of Knightian uncertainty, individuals who are more prone to perceive uncertainty as risk will exhibit a higher propensity to pursue entrepreneurial action than those who are less prone to perceive uncertainty as risk.

H2B: Under conditions of Knightian uncertainty, individuals who perceive uncertainty as risk and perceive that 'risk' more favorably will exhibit a higher propensity to pursue entrepreneurial action than individuals who perceive risk less favorably.

H2C: Under conditions of probabilistic risk, individuals who perceive risk more favorably will exhibit a higher propensity to pursue entrepreneurial action than individuals who perceive risk less favorably.

H3A: Under conditions of Knightian uncertainty, individuals with extreme self-focus will exhibit a higher propensity to pursue entrepreneurial action, with that relationship mediated by the individual's tendency to perceive uncertainty as risk.

H3B: Under conditions of Knightian uncertainty, individuals with extreme self-focus will exhibit a higher propensity to pursue entrepreneurial action, with that relationship mediated by the individual's tendency to perceive uncertainty favorably.

H3C: Under conditions of probabilistic risk, individuals with extreme self-focus will exhibit a higher propensity to pursue entrepreneurial action, with that relationship mediated by the individual's tendency to perceive risk favorably.

H4A: Under conditions of Knightian uncertainty, positive self-image will *strengthen* the effect of extreme self-focus on the tendency to perceive uncertainty as risk.

H4B: Under conditions of Knightian uncertainty, positive self-image will *strengthen* the effect of extreme self-focus on the tendency to perceive uncertainty favorably.

H4C: Under conditions of probabilistic risk, positive self-image will *strengthen* the effect of extreme self-focus on the tendency to perceive risk favorably.

H5A: Under conditions of Knightian uncertainty, assessment orientation will *weaken* the effect of extreme self-focus on the tendency to perceive uncertainty as risk.

H5B: Under conditions of Knightian uncertainty, assessment orientation will *weaken* the effect of extreme self-focus on the tendency to perceive uncertainty favorably.

H5C: Under conditions of probabilistic risk, assessment orientation will *weaken* the effect of extreme self-focus on the tendency to perceive risk favorably.

H6A: Under conditions of Knightian uncertainty, disregard of the need for and importance of prior knowledge will *strengthen* the effect of extreme self-focus on the tendency to perceive uncertainty as risk.

H6B: Under conditions of Knightian uncertainty, disregard of the need for and importance of prior knowledge will *strengthen* the effect of extreme self-focus on the tendency to perceive uncertainty favorably.

H6C: Under conditions of probabilistic risk, disregard of the need for and importance of prior knowledge will *strengthen* the effect of extreme self-focus on the tendency to perceive risk favorably.

H7A: Under conditions of Knightian uncertainty, the # of past entrepreneurial failures will, in a curvilinear fashion, moderate the effect of extreme self-focus on the tendency to perceive uncertainty as risk.

> H7A1: The # of past entrepreneurial failures, when one and only one, will *weaken* the effect of extreme self-focus on the tendency to perceive uncertainty as risk.
>
> H7A2: However, when the # of past entrepreneurial failures is either zero or more than one, *no weakening* of the effect will occur.

H7B: Under conditions of Knightian uncertainty, the # of past entrepreneurial failures will, in a curvilinear fashion, moderate the effect of extreme self-focus on the tendency to perceive uncertainty favorably.

> H7B1: The # of past entrepreneurial failures, when one and only one, will *weaken* the effect of extreme self-focus on the tendency to perceive risk more favorably.
>
> H7B2: However, when the # of past entrepreneurial failures is either zero or more than one, *no weakening* of the effect will occur.

H7C: Under conditions of probabilistic risk, the # of past entrepreneurial failures will, in a curvilinear fashion, moderate the effect of extreme self-focus on the tendency to perceive risk favorably.

H7C1: The # of past entrepreneurial failures, when one and only one, will *weaken* the effect of extreme self-focus on the tendency to perceive risk more favorably.

H7C2: However, when the # of past entrepreneurial failures is either zero or more than one, *no weakening* of the effect will occur.

H8A: Under conditions of Knightian uncertainty, locomotion orientation will *strengthen* the effect of the tendency to perceive uncertainty as risk on the propensity to pursue entrepreneurial action.

H8B: Under conditions of Knightian uncertainty, locomotion orientation will *strengthen* the effect of the tendency to perceive uncertainty favorably on the propensity to pursue entrepreneurial action.

H8C: Under conditions of probabilistic risk, locomotion orientation will *strengthen* the effect of the tendency to perceive risk favorably on the propensity to pursue entrepreneurial action.

Overview of the Empirical Research Process

We empirically tested the model in Figure 3 and the associated hypotheses using self-report online survey data from 631 individuals (62.7% female). However, 38 of those individuals responded during the 'soft launch' of the full questionnaire. Because significant changes were made to the conjoint design portion of the questionnaire after the soft launch, subsequent analyses by and large exclude the responses from those initial 38 respondents. As a result, the bulk of the analyses center on the remaining 597 respondents (61.6% female), 226 (37.9%) of whom reported that they have started at least one business (46.9% female). Of the 226 who have started at least one business, 200 (88.5%) have worked full-time for at least 12 months for a business they founded or co-founded. Fifty-four of those 200 (27.0%) founded or co-founded a business that we categorize as 'highly successful' (i.e., at its peak, employed at least 5 full-time employees while grossing at least $100,000 in annual revenue per employee).

To empirically test the model shown in Figure 3, we performed the following tasks (which are described in detail after the *Measurement* section):

- Preparation for Pilot Testing
- Pilot Testing
- Scale Item Selection using Item Response Theory
- Development of the Final Questionnaire
- Soft Launch using the Final Questionnaire
- Data Collection
- Identification and Elimination of 'Intentionally Inattentive' Respondents

Measurement

This section provides an overview of the measurement variables used to test the model depicted in Figure 3. We first present a hierarchical listing of the measurement constructs, then follow up with a detailed description of each.

Independent Variables

- *Extreme Self-Focus*
    - *Extreme Self-Appreciation*
        - *Narcissism / Egotism*
        - *Authentic Pride*
        - *Optimism*
        - *Perceived Self-Efficacy*
        - *Entrepreneurial Self-Efficacy*
    - *Hubristic Pride*

- *Overconfidence*

Moderating Variables

- *Positive Self-Image*
- *Assessment Orientation*
- *Disregard of the Need for Prior Knowledge*
- *# of Past Entrepreneurial Failures*
- *Locomotion Orientation*

Mediating Variable

- *Favorable Perceptions of Risk / Uncertainty*
  - *Percent Time Uncertainty Perceived as Risk*
    - *Percent Time Technical Uncertainty Perceived as Technical Risk*
    - *Percent Time Market Uncertainty Perceived as Market Risk*
  - *Perceiving Uncertainty Favorably*
    - *Perceiving Technical Uncertainty Favorably*
    - *Perceiving Market Uncertainty Favorably*
  - *Perceiving Risk Favorably*
    - *Perceiving Technical Risk Favorably*
    - *Perceiving Market Risk Favorably*

Dependent Variable

- *Propensity to Pursue Entrepreneurial Action*
  - *Willingness to Commit Immediate Resources for a Local Product Launch*

- *Willingness to Commit Immediate Resources for a Regional or National Product Launch*
- *Willingness to Commit Immediate Resources for a Global Product Launch*

Control Variables

- *Age*
- *Education*
- *Gender*

Brief Discussion of the Measurement Constructs

By way of example or explanation, *Extreme Self-Focus* comprises three mid-level constructs, *Extreme Self-Appreciation*, *Hubristic Pride*, and *Overconfidence*. At the next level, *Extreme Self-Appreciation* comprises five constructs, *Narcissism / Egotism*, *Authentic Pride*, *Optimism*, *Perceived Self-Efficacy*, and *Entrepreneurial Self-Efficacy*.

Also, when discussing hierarchical measures, whenever we are referring to a single higher-level construct, we use the single broad term (as listed above). For example, *Perceiving Uncertainty Favorably* refers to the single higher-level construct that comprises *Perceiving Technical Uncertainty Favorably* and *Perceiving Market Uncertainty Favorably*. However, when are referring to both of the lower level constructs as separate and independent constructs, we use parenthesis. For example, *Perceiving Technical (Market) Uncertainty Favorably* refers to the lower level constructs, *Perceiving Technical Uncertainty Favorably* and *Perceiving Market Uncertainty Favorably*, as two separate constructs. Similarly, *Perceiving Technical (Market) Risk (Uncertainty) Favorably* refers to the four separate and independent constructs:

Perceiving Technical Risk Favorably, *Perceiving Market Risk Favorably*, *Perceiving Technical Uncertainty Favorably*, and *Perceiving Market Uncertainty Favorably*.

In order to keep the survey questionnaire to a manageable length, several of the chosen measurement constructs were intentionally abridged. Item Response Theory (IRT) procedures were applied to pilot test data in determining which items to include in the final questionnaire. The IRT process employed is described in more detail in the subsection entitled *Scale Item Selection using Item Response Theory* (under the section entitled *Research Procedures*).

Independent Variables

Our independent variable, *Extreme Self-Focus*, was operationalized using seven different constructs: *Narcissism / Egotism*, *Authentic Pride*, *Optimism*, *Perceived Self-Efficacy*, *Entrepreneurial Self-Efficacy*, *Hubristic Pride*, and *Overconfidence*. Confirmatory factor analysis demonstrated a three-factor structure wherein *Narcissism / Egotism*, *Authentic Pride*, *Optimism*, *Perceived Self-Efficacy*, and *Entrepreneurial Self-Efficacy* comprised a single factor (which we have labeled *Extreme Self-Appreciation*) and *Hubristic Pride* and *Overconfidence* were each distinct and separate factors.

Narcissism / Egotism was measured using 10 items drawn from three different narcissism / egotism scales (3 items from the 15-item SPI Egotism scale developed by Paunonen, 2002; 3 items from the 16-item NPI-16 Narcissism scale developed by Ames, Rose, & Anderson, 2006; and 4 items from the 18-item NARQ Narcissism scale developed by Back, Küfner, Dufner, Gerlach, Rauthmann, & Denissen, 2013) (Cronbach's alpha = 0.892).

Hubristic pride and *Authentic Pride* were measured using the two 7-item constructs by Tracy and Robins (2007) (Cronbach's alpha = 0.874 and 0.914, respectively).

Optimism was measured using 3 items from the 6-item Life Orientation Test-Revised (LOT-R) by Scheier, Carver, and Bridges (1994) (Cronbach's alpha = 0.773).

Perceived Self-Efficacy was measured in accordance with the 8-item construct developed by Chen, Gully, and Eden (2001) (Cronbach's alpha = 0.899).

Entrepreneurial Self-Efficacy was measured using 6 items from the 19-item construct developed by McGee and associates (2009) (2 items from the 'searching' dimension, 3 from 'planning' and 1 from 'marshalling') (Cronbach's alpha = 0.913).

Overconfidence was measured using the procedure set forth in Lichtenstein and Fischhoff (1977) However, *Overconfidence* had to be excluded from our analyses because our SEM models failed to converge whenever *Overconfidence* was included as an independent variable.

Moderating Variables

Positive Self-Image was measured using 4 items from the 12-item core self-evaluation scale developed by Judge, Erez, Bono, and Thoresen (2003) and 3 items from the 6-item Life Orientation Test-Revised (LOT-R) by Scheier *et al.* (1994) (Cronbach's alpha = 0.866).

Assessment Orientation and *Locomotion Orientation* were measured using 4 and 5 items respectively of the 12-item assessment orientation and 12-item locomotion orientation scales developed by Higgins, Kruglanski, and Pierro (2003) (Cronbach's alpha = 0.589 and 0.762, respectively).

Disregard of the Need for Prior Knowledge was measured using 8 items (Cronbach's alpha = 0.738) selected from 23 items assessed during the pilot test. However, one of those eight items was eliminated due to poor agreement with the other seven items (as revealed

during the confirmatory factor analysis), leaving 7 items in the final *Disregard of the Need for Prior Knowledge* measurement construct (Cronbach's alpha = 0.778).

# of Past Entrepreneurial Failures: Survey respondents were asked how many businesses they have launched along with the ultimate outcomes of each business, such as ongoing business (profitable), ongoing business (not profitable), sold (for a net gain), sold (at a loss), ceased operations (bankruptcy), ceased operations (liquidation), ceased operations (with outstanding debt), ceased operations (with no outstanding debt). Any of the latter five responses were counted as a 'failure'. Of the 245 respondents who had started a business, 242 (98.8%) provided outcome data, with 187 (77.3%) reporting zero failures, 55 (22.7%) reporting one and only one failure, and 26 (10.7%) having experienced multiple failures (i.e. 2 or more). Whereas the moderating effect of *# of Past Entrepreneurial Failures* was hypothesized as curvilinear (negative, or downward sloping, between zero and one; positive, or upward sloping, above one), we coded one dummy variable (**`fails01`**) to represent 0 or 1 failures (no failures coded as zero; one and only one failure coded as one; anything else coded as missing) and a separate dummy variable (**`fails21`**) representing either two or more failures or one and only one failure (two or more failures coded as zero; one and only one failure coded as one; anything else coded as missing).

Mediating Variable

Favorable Perceptions of Risk / Uncertainty was operationalized using the results of a conjoint experiment. The conjoint experiment provided a series of hypothetical scenarios, each having one of two different risk / uncertainty levels (Knightian uncertainty and probabilistic risk) for each of two 'fields' of unknowns (technical and market, or if we use Knight's (1921:240) terminology, 'production' and 'wants') (with the resulting conjoint experiment comprising a

full factorial with 2 factors, 2 levels per factor, fully replicated, for a total of eight hypothetical scenarios). The scenarios were numbered as follows (but presented to each respondent in a random order, twice):

- Scenario 2: Technical Uncertainty / Market Uncertainty
- Scenario 4: Technical Risk / Market Uncertainty
- Scenario 6: Technical Uncertainty / Market Risk
- Scenario 8: Technical Risk / Market Risk

Furthermore, the first occurrence of the conjoint design was labeled with the suffix "a" and the replication was labeled with the suffix "b" (e.g. responses from the first time a respondent viewed Scenario 2 were recorded as "Scenario 2a" and the replication of that same scenario was recorded as "Scenario 2b").

For each hypothetical scenario, respondents were asked to assign a technical risk probability (operationalized as 'likelihood of successful product development') as well as a market risk probability (operationalized as 'likelihood of successful launch of a profitable business, given that the product has already been successfully developed'). However, for each 'field' of unknown (technical and market), the respondent was also given the response option "No way to know (anybody's guess)." Any time a respondent used the "anybody's guess" response option, that response was deemed to be 'perceived uncertainty'. By contrast, any time the respondent chose a risk probability (anything other than the "anybody's guess" response option), that response was deemed to be 'perceived risk'.

Six different *Favorable Perceptions of Risk / Uncertainty* measures were calculated from the conjoint experiment, three measures of technical risk / uncertainty and three measures

of market risk / uncertainty, as described below. The only differences between the technical and market calculations were the subset of scenarios included in the calculation. As such, they are described together. Similarly, for the *Perceiving Technical (Market) Risk (Uncertainty) Favorably* measures, all four operationalizations were coded based on the same set of rules and are thus initially described together.

Calculations of *Percent Time Technical (Market) Uncertainty Perceived as Technical (Market) Risk* were conducted for all respondents based on the proportion of the 'uncertainty only' hypothetical scenarios (2a, 2b, 6a, 6b for technical uncertainty; 2a, 2b, 4a, 4b for market uncertainty) where they chose any risk probability option other than the "anybody's guess" response option. For example, with *Percent Time Technical Uncertainty Perceived as Technical Risk*, if the respondent chose "anybody's guess" for all four 'technical uncertainty only' hypothetical scenarios, then that respondent's *Percent Time Technical Uncertainty Perceived as Technical Risk* value would be zero (i.e. 0% of the time the respondent perceived technical uncertainty as technical risk). If, on the other hand, the respondent selected a risk probability for all four 'technical uncertainty only' scenarios, the respondent's *Percent Time Technical Uncertainty Perceived as Technical Risk* value would be 1 (i.e. 100% of the time the respondent perceived technical uncertainty as technical risk). Whereas there were four 'technical uncertainty only' scenarios and four 'market uncertainty only' scenarios, the possible values for *Percent Time Technical (Market) Uncertainty Perceived as Technical (Market) Risk* were 0, 0.25, 0.5, 0.75, and 1. Whenever one or more of the four responses was missing, then *Percent Time Technical (Market) Uncertainty Perceived as Technical (Market) Risk* was coded as missing.

For *Perceiving Technical (Market) Risk (Uncertainty) Favorably*, values were coded only for those respondents who, for at least one hypothetical scenario viewed the likelihood of success as something other than "anybody's guess". For example, if a given respondent chose "anybody's guess" for 'likelihood of successful product development' for all four technical uncertainty hypothetical scenarios (2a, 2b, 6a, 6b), then *Perceiving Technical Uncertainty Favorably* would be coded as 'missing' for that respondent.[9] If a respondent selected a 'likelihood of success' percentage for only one of the four scenarios, then that response was coded and recorded. If a respondent selected a 'success percentage' for more than one of the four scenarios, then each 'likelihood of success' percentage response was coded and the final *Perceiving Technical Uncertainty Favorably* value was calculated as the average of all the respondent's 'likelihood of success' percentage responses. With respect to coding, each response was coded as the midpoint of the selected 'likelihood of success' percentage range (e.g. if the respondent selected the response option "Very likely (60-80%)" the response was coded as 70). As such, the resulting values ranged from 0 (representing an assessment of zero likelihood of success) to 100 (representing the respondent's belief that their success is 100% certain).

Of the 597 individuals who responded after the soft launch, 38 (6.4%) never perceived technical uncertainty as risk (and were thus excluded from any analysis using *Perceiving Technical Uncertainty Favorably*) and 29 (4.9%) never perceived market uncertainty as risk (and were thus excluded from any analysis using *Perceiving Market Uncertainty Favorably*);

[9] This means that the sample population associated with a given *Perceiving Risk (Uncertainty) Favorably* analysis should be described as 'only those individuals who, at least some of the time, perceive risk (uncertainty) as risk'.

likewise 27 (4.5%) always perceived technical risk as uncertainty (and were thus excluded from analyses using *Perceiving Technical Risk Favorably*) and 26 (4.4%) always perceived market risk as uncertainty (and were thus excluded from analyses using *Perceiving Market Risk Favorably*).

As described above, there were only two different calculation methods associated with the six different operationalizations of *Favorable Perceptions of Risk / Uncertainty*, with the primary difference between operationalizations being the hypothetical scenarios that were relied upon. In that regard, all analyses involving *Percent Time Technical Uncertainty Perceived as Technical Risk* and *Perceiving Technical Uncertainty Favorably* were conducted using only the results from the four hypothetical scenarios where the technical 'risk / uncertainty' was described as 'uncertain'. Those four scenarios (2a, 2b, 6a, 6b) comprise two distinct scenarios that were replicated: technical uncertainty and market uncertainty (Scenarios 2a and 2b) and technical uncertainty and market risk (Scenarios 6a and 6b).

Similarly, all analyses involving *Percent Time Market Uncertainty Perceived as Market Risk* and *Perceiving Market Uncertainty Favorably* were conducted using only the results from the four hypothetical 'market uncertainty' scenarios (2a, 2b, 4a, 4b). By contrast, the analyses using *Perceiving Technical Risk Favorably* relied upon the four 'technical risk' hypothetical scenarios (4a, 4b, 8a, 8b) and the analyses using *Perceiving Market Risk Favorably* relied upon the four 'market risk' hypothetical scenarios (6a, 6b, 8a, 8b).

Dependent Variable

For purposes of the empirical study, we have operationalized *Propensity to Pursue Entrepreneurial Action* as the willingness to take immediate action involving an irreversible

commitment of resources, following the example of McKelvie, Haynie, and Gustavsson (2011). More specifically, for each of the hypothetical scenarios comprising the conjoint experiment, the respondent was asked to assess the likelihood that s/he would be willing to expend immediate resources to proceed with a product launch, given the unique scenario presented, and assuming the product is already fully developed. The respondent was then given three different 'product launch scopes' to assess: Local Launch, Regional or National Launch, and Global Launch. Available response options comprised a 9-point Likert scale ranging from "Absolutely! Let's do it!" (coded as 8) to "Absolutely Not!" (coded as zero). We expected the respondents to view the primary differentiator between options through the lens of the level of resources required (i.e. commitment level). The results suggest that this was, in fact, the way respondents viewed the response options (i.e. for all scenarios, paired t-tests confirmed a greater commitment level (i.e. likelihood to commit immediate resources) for local compared to national launch and for national compared to global launch, $p<.001$). This can be seen visually in Figure 4.

Although the *Propensity to Pursue Entrepreneurial Action* response prompts instructed the respondent to assume that the product was already developed, we used the *Propensity to Pursue Entrepreneurial Action* response as the dependent variable for both technical and market risk / uncertainty analyses. Our expectation was that we could capture the influence of technical uncertainty on the respondents' propensity to pursue entrepreneurial action (in a generic sense) even if the commitment question essentially instructed the respondent to ignore the technical uncertainty (i.e. to assume the product had already been successfully developed).

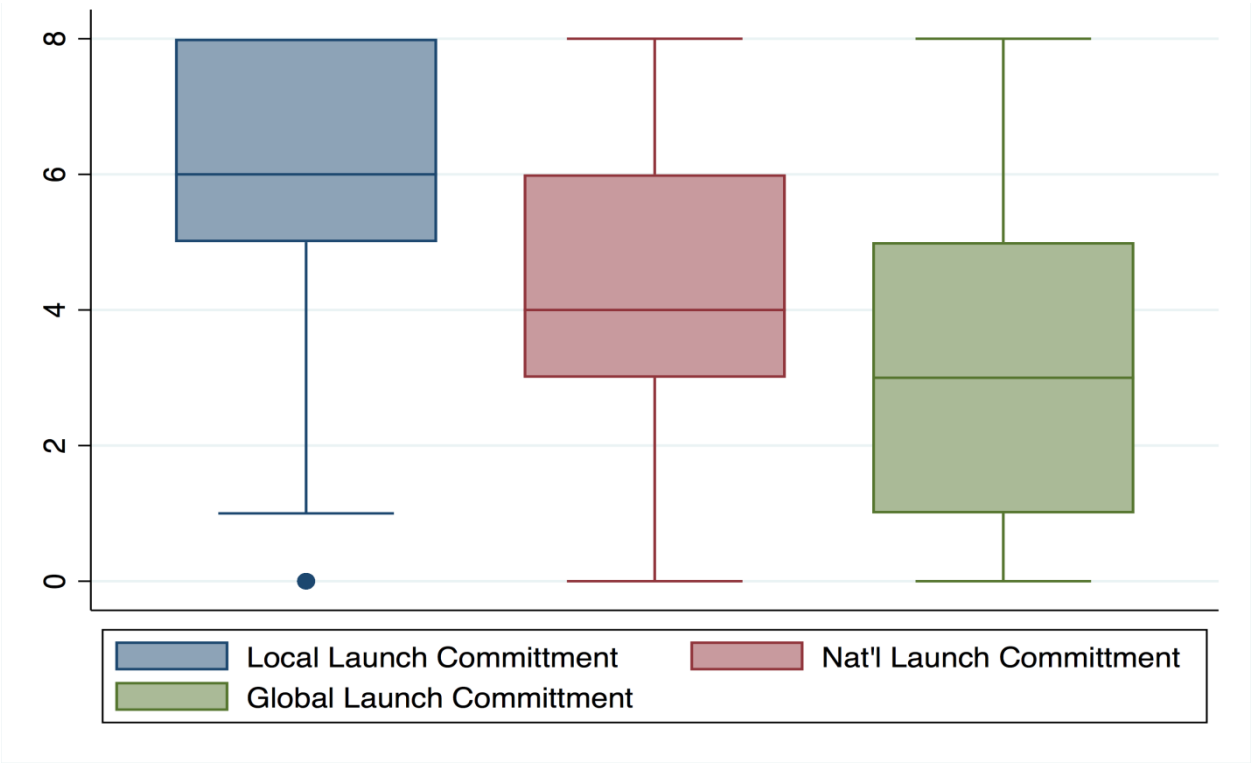


Figure 4 – Comparison of Business Launch Commitments
(Scenario 4a = "Technical Risk" / "Market Uncertainty")

We conducted paired t-tests to validate our expectations, namely that launch commitments would be less for Scenarios 2 and 6 together (technical uncertainty) compared to 4 and 8 (technical risk) and less for Scenarios 2 and 4 (market uncertainty) compared to 6 and 8 (market risk). The paired t-tests confirmed both expectations (diff = -.432, $p < .001$; diff = -.427, $p < .001$). Similarly, we would expect launch commitment to be least for Scenario 2 (technical uncertainty and market uncertainty) and greatest for Scenario 8 (technical risk and market risk), with Scenarios 4 and 6 somewhere in between. Paired t-tests confirmed our expectations that the launch commitment for Scenario 2 would be less than Scenarios 4, 6, and 8 (diff = -.374, $p < .001$; diff = -.370, $p < .001$; diff = -.859, $p < .001$) and that launch commitment for Scenario 8 would be greater than Scenarios 4 and 6 (diff = .485, $p < .001$; diff

= .489, $p < .001$). Regarding Scenarios 4 and 6, a paired t-test revealed that the two are indistinguishable from each other (diff = .004, $p = .932$).

In light of the above, we are confident that our data allow us to reliably test both technical and market risk / uncertainty for each of our hypotheses.

Control Variables

We included as control variables individual characteristics that could theoretically influence an individual's perception of risk or uncertainty or an individual's propensity to pursue entrepreneurial action. As such, we included *Age*, *Education*, and *Gender*. *Age* was measured as age in years; median age was 47 years with a range of 18 to 99 and an average of 47.7. *Education* was measured by asking respondents to identify all their educational experiences, then calculating the 'years beyond high school' for each individual's highest reported level of education; median education was 2 years, with a range of 0 to 10 and an average of 2.4. *Gender* was coded as 1 if female (62.6%) and zero if male.

Research Process

Preparation for Pilot Testing

To empirically test the model in Figure 3, we originally envisioned operationalizing *Extreme Self-Focus* in five separate ways, using latent constructs *Overconfidence, Optimism, Hubristic Pride, Perceived Self-Efficacy*, and *Entrepreneurial Self-Efficacy*. However, prior to commencing with pilot testing, we solicited feedback from several experts (i.e. entrepreneurship faculty and late stage entrepreneurship doctoral students) regarding the operationalization of *Extreme Self-Focus* and also *Disregard of the Need for Prior Knowledge*.

To that end, we gave each expert the following broad definitions for the desired constructs and asked for their direct feedback:

- *Extreme Self-Focus*: I think of myself as being more important than anything or anyone else, especially when it comes to the ultimate success of whatever I am seeking to accomplish.
- *Disregard of the Need for Prior Knowledge*: I disregard the need for or importance of prior knowledge related to an entrepreneurial opportunity being pursued.

With regards to *Extreme Self-Focus*, several of the experts suggested inclusion of one of more of the numerous 'narcissism' and 'egotism' scales. Based upon this feedback, we compiled a list of 119 items from six different narcissism and egotism scales (Paunonen, 2002; Ames *et al.*, 2006; Back *et al.*, 2013; Weigel, Hessing & Elffers, 1999); Gebauer, Sedikides, Verplanken & Maio,, 2012; Jones & Paulhus, 2014). From this group of items, we chose 63 items to include in the pilot test.

Regarding *Disregard of the Need for Prior Knowledge*, the experts provided suggested wording for numerous potential items. Based upon that feedback, we compiled 23 *Disregard of the Need for Prior Knowledge* items to include in the pilot test.

Pilot Testing

The purpose of the pilot test was two-fold:

- Identify which psychometric scale items to include in the final survey questionnaire, and
- Determine which type and set of response options to include in the conjoint experiment.

Overview of the Pilot Test

Whereas the pilot test questionnaire comprised nearly 200 scale items plus a lengthy conjoint experiment, the pilot test was conducted using a 'planned missingness' approach. The respondents to the pilot test were predominantly undergraduate students who were receiving extra credit for participating. Their expected participation time was 15 to 20 minutes. To accommodate these limitations, respondents were randomly assigned either the conjoint experiment or the psychometric scale items. Those who were randomly assigned to the scale-item portion of the questionnaire received up to 10 pages of scale items, with the order of the pages randomized and the order of the items on each page randomized. Every scale-item page included at least one 'attention check' question (such as "I have never used a computer"). If a respondent failed an attention check question, the survey was terminated and the respondent was informed that they could retake the survey one additional time, with their previous responses having been saved (but changeable during the 'retake'). The survey was considered 'complete' once the respondent either responded to all 10 pages of scale items or reached the 20 minute time limit. However, whenever respondents reached the 20 minute time limit, they were given the option of continuing if they so chose (and were given that option after each subsequent page or until all 10 pages were completed).

Identifying which Psychometric Scale Items to Include

Identifying which psychometric scale items to include in the final survey questionnaire represented the primary purpose of the pilot test. As such, approximately 80% of the respondents were randomly assigned the 'scale' portion of the survey questionnaire. Details of

the analysis used to make those determinations are presented below in the subsection entitled *Item Selection using Item Response Theory*.

The Conjoint Experiment

The conjoint experiment comprised a full factorial design using 3-factors with 2 levels per factor, fully replicated (2^3 = 8 unique scenarios, replicated, = 16 total scenarios). The three factors were market experience, technical uncertainty, and market uncertainty. The hypothetical-scenario prompts associated with each factor were as follows:

Market Experience:

1. You have ***never*** worked in an industry that serves the target customers.
2. You have ***extensive experience*** (20+ years) working in a parallel industry directly serving the same target customers.

Technical Uncertainty:

1. According to your hypothetical rival, with the right team of developers, successful development of the product ***seems promising***.
2. According to your hypothetical rival, the technology required to make the product fully functional is so ***cutting edge*** that there is ***no way of knowing*** whether the product is actually feasible.

Market Uncertainty:

1. According to your hypothetical rival, due to the product's similarities with existing products, it seems ***reasonable*** to assume the target customers would embrace the new product.

2. According to your hypothetical rival, the target market for the new product is categorically *unknown and unproven*; the product is so different from anything that's ever been done before, it is essentially *anybody's guess* as to whether customers would embrace the product.

Discussions with some of the pilot test respondents identified a potential disconnect regarding the wording of the hypothetical-scenario prompts and the overall intent of the conjoint experiment (i.e. to ascertain an individual's willingness to expend immediate resources in the midst of Knightian uncertainty). As a result of those discussions, the wording for the technical and market uncertainty prompts was changed (for the final questionnaire) to the following:

- Technical: According to your hypothetical rival, there is *no way of knowing* whether the product itself is even feasible, because the technology required to make the product fully functional is *cutting edge* and does not currently exist.
- Market: According to your hypothetical rival, the target market for the new product is categorically *unknown and unproven* because the product satisfies an existing need in a *radically* different way.

Determining Response Options for the Conjoint Experiment

Four different sets of response options were considered for the conjoint experiment. The first two each involved requiring respondents to assess their 'likelihood of success' (both for developing the product and for launching a profitable business based on the product) by keying in a value between 0 and 100. One response set required the respondent to key in two values representing a range, i.e. a 'low' value and a 'high' value (i.e. "Between _____% and _____%"). The other set only required a single 'low' value (i.e. "At least _____%"). Both

these options were overly time-consuming for respondents and resulted in clear recording errors (due to respondents mis-keying their responses). Because of this, both key-in sets were eliminated from further consideration.

The other two sets utilized Likert-scale response options. One set asked respondents to assess their 'likelihood of success' by giving eight different options, with each option comprising both a qualitative description and a numeric range (e.g. "Extremely likely (80-99%)"). The other set provided six options for respondents to assess how 'surprised' they would be if they were successful (e.g. "Only mildly surprised").

All four sets of response options included a separate option of "No way to tell at this point." This option would correspond to the respondent acknowledging that the situation is truly 'uncertain' (i.e. wrought with Knightian uncertainty) as opposed to merely involving probabilistic risk. In other words, by keying in a percentage value or selecting a percentage value from the list of options, the respondent was deeming the situation as one governed by probabilistic risk; by choosing the "No way to tell" option, the respondent was deeming the situation as one governed by Knightian uncertainty.

The option set utilizing 'likelihood of success' via a Likert scale was chosen as preferred over the option using 'surprise' because the 'likelihood of success' options contained numeric percentage-based values that [1] allow for true interval scaling and [2] directly relate to the concept of perceived risk (which is a basic premise of the empirical model being tested).

Adding a Countdown Timer to the Overconfidence Questions

During the pilot test, certain respondents were found to have spent considerable time answering the *Overconfidence* questions (and answering them all or nearly all correctly). It became clear

that some respondents were actively searching for the correct answers rather than simply answering based on their current knowledge. As a result, the *Overconfidence* questions were reworded to state, "**You only have 30 seconds to answer this question; do not look up the answer; answer according to your current knowledge**" and a 30-second countdown timer was added as a visual cue and to automatically advance to the next question after 30 seconds.

Item Selection using Item Response Theory

Following the recommendations of Edelen and Reeve (2007) we utilized item response theory (IRT) techniques with the pilot test data to facilitate item selection for the final questionnaire. In particular, we calculated graded response models (GRM) for each of the various measurement constructs and used the results to eliminate scale items that relayed poor item information or exhibited excessive information overlap with other items. Also, as mentioned previously, survey-length time constraints during the pilot test necessitated the use of planned missingness for the psychometric scales and IRT GRM is robust to missing data, especially when the missingness is planned (Smits, Vorst, & Mellenbergh, 2002). IRT differs significantly from classical test theory (CTT) in that whereas CTT assumes (or expects) equality among all the items comprising a given latent variable, IRT assumes that each item contributes differently in its ability to measure the individual's true score. In fact, IRT assumes that each response interval uniquely contributes to the scale's ability to measure the individual's true score. As such, where the goal of CTT is to identify and 'throw out' those items that deviate from the remaining items, IRT seeks to retain items that are each highly discriminatory (or informative), but where each item discriminates (or informs) at a different 'location' along the single dimension being measured. (Edelen & Reeve, 2007)

The primary goal of the pilot test was to identify which psychometric scale items to include in the final survey questionnaire. In particular, a significant part of that goal was to identify which of the 63 *Narcissism / Egotism* items to include and which of the 23 *disregard* items to include. Combining all 63 *Narcissism / Egotism* items into a single IRT graded response model yielded 25 items exhibiting good item information when measuring a single common unidimensional construct. Those 25 items are shown in Table 1 (in descending order of item information). The ten items in bold were chosen (from those 25) to comprise the *Narcissism / Egotism* scale for the final questionnaire. The item identified by an asterisk was modified for the final questionnaire by deleting the word "almost" (to intentionally shift the items difficulty toward the higher end of the measurement dimension).

Table 1 – Top 25 *Narcissism / Egotism* Items with Chosen Items in Bold

In many ways, I am a remarkable, special person.
I have a very positive influence on others.
I think I am a special person.
I greatly enrich others' lives.
I have touched many people's lives in a positive way.
I am an extraordinary person.
I am great.
Most of the time I am able to draw people's attention to myself in conversations.
I deserve to be seen as a great personality.
I think that I am an attractive person.
I know that I am good because everybody keeps telling me so.
Everybody likes to hear my stories.
I make the world a much more beautiful place.
I expect to be treated with a great deal of respect and admiration.
People see me as a natural leader.
Most people like me and enjoy being in my company.
I show others how special I am.
I would rate myself as above average in most areas.
I manage to be the center of attention with my outstanding contributions.
I deserve to be recognized for my accomplishments.
I deserve all of my successes in life.
***I am good at almost everything that I do.**

Being a very special person gives me a lot of strength.
Many group activities tend to be dull without me.
I like to tell others about my accomplishments.

Similarly, combining all 23 *Disregard of the Need for Prior Knowledge* items into a single IRT graded response model yielded 16 items exhibiting good item information. Those 16 items are shown in Table 2 (in descending order of item information). The eight items shown in bold were chosen to comprise the *disregard* scale for the final questionnaire. The item identified by an asterisk (*) was modified for the final questionnaire by changing "having extensive knowledge" to "what you know (or think you know)". The items identified by a minus sign (-) were reverse scored.

Table 2 – Top 16 *Disregard of the Need for Prior Knowledge* Items with Chosen Items in Bold

If a new opportunity is truly groundbreaking, prior knowledge is probably not all that helpful.
***When launching a new venture, having extensive knowledge ahead of time regarding the opportunity you're planning to pursue often ends up being counterproductive.**
When it comes to recognizing and pursuing new business ideas, existing knowledge is vastly over-rated.
If a new opportunity is truly worthwhile, prior knowledge will not be all that helpful.
Prior information is essentially useless when deciding whether a new business opportunity is really worth pursuing.
When pursuing an entrepreneurial opportunity, having knowledge of the industry is of little importance.
When I pursue new business opportunities, I tend to go against the 'conventional wisdom' and prior knowledge in that field.
Whenever I come across a new business opportunity, I instantly know whether or not it will be successful.
When launching a new venture, having extensive knowledge about the opportunity you're pursuing is not important.
-Having knowledge in a specific field or industry is critical to being able to successfully pursue a new business opportunity in that area.
I have a knack for recognizing good business opportunities in industries where I have never worked before.

If a new opportunity is truly worthwhile, deep prior knowledge will probably prove detrimental.

Many times I find myself pursuing a new business opportunity that actually goes against what my prior experience suggests.

I can quickly recognize the success potential of new business opportunities, even when they are completely outside of my field of expertise.

-When pursuing an entrepreneurial opportunity, having knowledge of the industry is crucial.

-Before committing resources to a new business venture, having prior knowledge about product-market fit is absolutely essential.

IRT graded response models were also used to trim some of the other psychometric scales. In particular, the technique was used to trim the following scales:

- *Entrepreneurial Self-Efficacy*: 19 items to 6
- *Assessment Orientation*: 12 items to 4
- *Locomotion Orientation*: 12 items to 5
- Core Self-Evaluation (to operationalize *Positive Self-Image*): 12 items to 4

Table 3 to Table 7 show the full items for each of the above constructs, sorted in descending order of item information, with the chosen items shown in bold. In addition, various IRT graded response models involving the mixing of numerous *Extreme Self-Appreciation* items with the six Life Orientation Test-Revised (LOTR) items revealed three LOTR items that do not correspond to any of the other *Extreme Self-Appreciation* measurement constructs. However, those three LOTR items (all reverse-scored) were found to load quite strongly with the four reverse-scored items of the *Core Self-Evaluation* construct. Those seven items were chosen as best to represent *Positive Self-Image*, in part because the remaining *Core Self-Evaluation* items tended to carry an element of capabilities and accomplishment rather than mere outlook (which made those remaining *Core Self-Evaluation* items load strongly with many of the *Extreme Self-Appreciation* items). Table 7 identifies the three LOTR items that

seem to ‘belong’ with the other *Extreme Self-Appreciation* items (shown as bold) and the three LOTR items that seem to ‘belong’ with *Positive Self-Image* (shown as gray).

Table 3 – *Entrepreneurial Self-Efficacy* Items with Chosen Items in Bold

I am confident in my ability to identify the need for a new product or service.
I am confident in my ability to design a product or service that will satisfy customer needs and wants.
I am confident in my ability to estimate customer demand for a new product or service.
I am confident in my ability to determine a competitive price for a new product or service.
I am confident in my ability to design an effective marketing/advertising campaign for a new product or service.
I am confident in my ability to supervise employees.
I am confident in my ability to organize and maintain the financial records of my business.
I am confident in my ability to recruit and hire employees.
I am confident in my ability to train employees.
I am confident in my ability to brainstorm (come up with) a new idea for a product or service.
I am confident in my ability to get others to identify with and believe in my vision and plans for a new business.
I am confident in my ability to estimate the amount of start-up funds and working capital necessary to start my business.
I am confident in my ability to manage the financial assets of my business.
I am confident in my ability to clearly and concisely explain verbally/in writing my business idea in everyday terms.
I am confident in my ability to read and interpret financial statements.
I am confident in my ability to inspire, encourage, and motivate my employees.
I am confident in my ability to delegate tasks and responsibilities to employees in my business.
I am confident in my ability to deal effectively with day-to-day problems and crises.
I am confident in my ability to network—i.e., make contact with and exchange information with others.

Table 4 – *Assessment Orientation* Items with Chosen Items in Bold

I often feel that I am being evaluated by others.
I often compare myself with other people.

I spend a great deal of time taking inventory of my positive and negative characteristics.
I am very self-critical and self-conscious about what I am saying.
I like evaluating other people's plans.
-I rarely analyze the conversations I have had with others after they occur.
-I never evaluate my social interactions with others after they occur.
When I meet a new person I usually evaluate how well he or she is doing on various dimensions (e.g., looks, achievements, social status, clothes).
I often critique work done by myself or others.
-I don't spend much time thinking about ways others could improve themselves.
I am a critical person.
I often think that other people's choices and decisions are wrong.

Table 5 – *Locomotion Orientation* Items with Chosen Items in Bold

I am a ''go-getter.''
I am a ''doer.''
When I get started on something, I usually persevere until I finish it.
I enjoy actively doing things, more than just watching and observing.
I don't mind doing things even if they involve extra effort.
By the time I accomplish a task, I already have the next one in mind.
I am a ''workaholic.''
When I decide to do something, I can't wait to get started.
Most of the time my thoughts are occupied with the task I wish to accomplish.
-When I finish one project, I often wait awhile before getting started on a new one.
I feel excited just before I am about to reach a goal.
-I am a ''low energy'' person.

Table 6 – *Positive Self-Image* Items with Chosen Items in Bold (from Core Self-Evaluation)

I am capable of coping with most of my problems.
-Sometimes when I fail I feel worthless.
-There are times when things look pretty bleak and hopeless to me.
I am confident I get the success I deserve in life.
I complete tasks successfully.
-Sometimes I feel depressed.

-I am filled with doubts about my competence.
-I do not feel in control of my success in my career.
Overall, I am satisfied with myself.
-Sometimes, I do not feel in control of my work.
When I try, I generally succeed.
I determine what will happen in my life.

Table 7 – *Extreme Self-Appreciation* Items with Chosen Items in Bold and *Positive Self-Image* Items with Chosen Items in Gray (from Life Orientation Test-Revised)

Overall, I expect more good things to happen to me than bad.
I'm always optimistic about my future.
In uncertain times, I usually expect the best.
-I hardly ever expect things to go my way.
-I rarely count on good things happening to me.
-If something can go wrong for me, it will.

Development of the Final Questionnaire

The results of the pilot test were used to develop the final questionnaire. The structure of the final questionnaire was:

- Demographic Questions
- Conjoint Experiment (8 scenarios, random order)
- Psychometric Scales and Overconfidence Questions (random order)
- Conjoint Experiment Replication (same 8 scenarios, random order)

Completion time for the final questionnaire was estimated to be 20 to 30 minutes (based on pilot test completion times).

Soft Launch using the Final Questionnaire

A paid panel service was used to collect the response data. Two separate sampling groups were employed—sampling from the 'general population' and sampling specifically targeting 'entrepreneurs'. The goal was to sample 400 to 500 respondents from the 'general population'

group and 150 to 200 from the 'entrepreneur' group. A 'soft launch' targeting approximately 40 respondents was conducted so that any potential problems could be identified and corrected before commencing full data collection.

Three modifications were made to the questionnaire and survey flow as a result of the 'soft launch':

1. Eliminated 'market experience' as a factor for the first 8 hypothetical scenarios of the conjoint experiment.
2. Created a tool to help identify and eliminate 'intentionally inattentive' responses.
3. Revised the format of the *Overconfidence* questions.

The above modifications are explained in more detail below.

Elimination of Market Experience from the Conjoint Experiment

Analysis of the 'soft launch' results revealed that the 'market experience' factor in the hypothetical scenarios seemed to be dominating respondents' decision-making with respect to their willingness to take entrepreneurial action in the midst of Knightian uncertainty. By design, a full-factorial experiment allows one to statistically examine the main effects and all interaction effects without interference across and between effects (because for each main effect and interaction effect, all other main effects and interaction effects are equally balanced, such that their respective 'highs' and 'lows' effectively cancel each other out). However, it seems that respondents were, for the most part, simply ignoring the technical and market uncertainty descriptions and were, in essence, deciding whether or not to 'take action' based solely upon the reported market experience level. Discussions (after the 'soft launch') with colleagues who had completed the pilot test confirmed this suspicion. For example, one

colleague stated, "As soon as I read '20+ years' experience I decided that nothing else mattered. Even if everything else was highly uncertain, I figured 20 years' experience would make up for it."

As a result, the decision was made to split the conjoint experiment into two separate conjoint designs. During the first conjoint design, the 'market experience' factor would be excluded. The resulting design would be a 2x2 full factorial, fully replicated, comprising a total of eight scenarios (four unique scenarios, replicated), with the two remaining factors being technical uncertainty and market uncertainty. The second conjoint design would remain as originally designed (a 3-factor full-factorial) but would not be replicated. As such, the overall survey length would remain the same, with the first conjoint design comprising eight hypothetical scenarios (2x2 full factorial, fully replicated) and the second comprising eight hypothetical scenarios (2x2x2 full factorial). Only the first conjoint design would be used to empirically test the model shown in Figure 3; however, including the second conjoint design would enable *ad hoc* analyses to examine the effects of 'market experience' on respondents' considerations of technical and market uncertainty. However, for the second conjoint design, the prompt for 'market experience' was changed from "extensive experience (20+ years)" to simply "extensive experience" with a follow-up question asking, "Given the statement: You have <u>extensive experience</u> working in a <u>different</u> industry, directly serving the same target customers. How many years of experience does that imply?"

Criteria for Identifying and Eliminating 'Intentionally Inattentive' Responses

During pilot testing, several 'attention check' questions were inserted into the questionnaire. The questions followed examples set forth by Meade and Craig (2012). Similar attention check

questions (five total) were included in the final questionnaire. However, a pertinent question remained unanswered, "At what level of 'inattention' do we exclude respondents from the analyses?" Excluding respondents who miss *any* of the attention check question would bias the sample (Berinsky, Margolis & Sances, 2013). Prior to the soft launch, the decision was made to exclude any respondent who missed four or five of the five attention check questions and to exclude 'speeders' (i.e. any respondent who clearly and wantonly 'sped' through the survey).

Midway through the soft launch, it became clear that 'speeders' were going to be a significant problem and that the existing tools for flagging speeders (question timers and cumulative survey timers) were likely to be inadequate. In response, we developed a Javascript routine that would run in the background of the online survey data-collection platform and record the time (in milliseconds) between every click as each respondent completed the questionnaire. The latter portion of the soft launch was then used to confirm the correct functioning of the Javascript routine. The resulting time-between-clicks data would be used at the conclusion of the data-collection to help objectively identify and eliminate 'speeders' (i.e. those who were 'intentionally inattentive').

Revised Format for the Overconfidence Questions

As a result of the pilot test, a 30-second timer had been added to each of the five *Overconfidence* questions (as discussed previously). However, during the soft launch we realized that the *Overconfidence* questions needed to be reformatted. The questions had originally been formatted as radio-button style questions where the respondent had to choose which of two possible answers was believed to be 'correct' then key in a 'confidence percentage' for the chosen answer (between 50% and 100%). However, whenever both

'confidence percentage' text-entry boxes remained blank (or if either had been populated with an invalid entry), once the countdown timer reached zero, the survey validation logic would actually halt the survey (i.e. ignore the countdown timer) until a correct percentage (between 50 and 100) was keyed in. The net effect being that the original format of the questions kept the 30-second timer from operating as intended.

To correct this problem, we reformatted each *Overconfidence* question as an 11-option radio-button, with the prompt being "Choose how confident you are (as a percentage) in your answer (e.g. 50% = 'a complete guess'; 100% = 'absolutely certain')". The following eleven response options were then presented (with the two possible answer choices written out in lieu of "Answer Choice #" and with the "Complete Guess 50%" response being the pre-selected 'default'):

- Answer Choice 1 100%
- Answer Choice 1 90%
- Answer Choice 1 80%
- Answer Choice 1 70%
- Answer Choice 1 60%
- Complete Guess 50%
- Answer Choice 2 60%
- Answer Choice 2 70%
- Answer Choice 2 80%
- Answer Choice 2 90%
- Answer Choice 2 100%

This eliminated the potential error associated with the respondent keying in an invalid number and also allowed the countdown timer to function properly.

Whereas the initial confirmatory factor analysis (CFA) had demonstrated *Overconfidence* as being distinctly different from the other *Extreme Self-Appreciation* constructs, we analyzed *Overconfidence* as a separate construct. However, despite our best efforts, we were unable to get any of our SEM models to converge when incorporating

Overconfidence as an independent variable. As such, none of our analyses include *Overconfidence*. However, our robustness checks using ordinary least squares regression demonstrated results for *Overconfidence* that were extremely similar to those for *Hubristic Pride*. *Hubristic pride* and *Overconfidence* were the two *Extreme Self-Focus* constructs that were revealed by CFA as being distinctly different from the *Extreme Self-Appreciation* measures.

Data Collection

After the 'soft launch' the final questionnaire was administered (in whole or in part) to over 1,500 research participants. Participants who stopped responding midway through the questionnaire (approximately 750) were excluded from all analyses. In addition, the panel service conducting the data-collection applied their own set of criteria to automatically flag respondents who were underage, failed four or more of the attention check questions, or completed the entire survey in less than one-half the median completion time from the soft launch.

At the conclusion of the aforementioned data-collection effort, 649 complete responses had been recorded (500 from the 'general population' group and 149 from the 'entrepreneurs' group). We then utilized the time-between-clicks data in an effort to identify and eliminate 'intentionally inattentive' respondents. That procedure (detailed below) identified 145 'intentionally inattentive' respondents (111 from the 'general population' group and 34 from the 'entrepreneurs' group) that were then eliminated from the data set. Subsequently, 152 additional responses were obtained, 120 from the 'general population' group and 32 from the 'entrepreneurs' group. We then applied the same time-between-clicks analysis on the additional responses and found 21 of them to be 'intentionally inattentive' (14 from the

'general population' group and 7 from the 'entrepreneurs' group) and eliminated them from the data set. In addition, 4 respondents self-reported "I did not provide my best answers; I do not recommend including my responses in this research study" and were eliminated from the data set.

The final data set comprised 631 respondents, 491 from the 'general population' group and 140 from the 'entrepreneurs' group, with various levels of 'missingness' within those responses. It bears noting that, although only 140 responses were from the targeted 'entrepreneurs' sampling group, a total of 245 respondents self-reported as 'entrepreneurs'. Of those 245 respondents, 27 (11.0%) had started a business but never worked full-time for at least 12 months for a business they founded or co-founded while 218 (89.0%) had. Of those 218, there were 57 (26.1%) who had started a business that at some point employed at least 5 employees while grossing at least $100,000 per employee.

Identification and Elimination of 'Intentionally Inattentive' Respondents

In terms of 'data quality' researchers earnestly desire to have participants respond to each question with thoughtfulness and attentiveness. However, we must be realistic and realize that a certain percentage of any population being sampled will comprise individuals who genuinely struggle with staying thoughtful and attentive, especially while filling out a lengthy online questionnaire. As such, we need a method to objectively identify respondents who were intentionally thoughtless, careless, or inattentive without excluding those who were 'normally' thoughtless, careless, or inattentive. To that end, we developed and implemented a procedure that is explicitly detailed in Appendix B.

CHAPTER V

DATA ANALYSIS AND FINDINGS

Measurement Model

Following the approach recommended by Anderson and Gerbing (1998), we tested the convergent validity of our measurement constructs using confirmatory factor analysis (CFA). The initial CFA revealed one of the *Disregard of the Need for Prior Knowledge* items ("Having knowledge in a specific field or industry is critical to being able to successfully pursue a new business opportunity in that area" reverse scored) as being dramatically inconsistent from the other seven items. That item was then removed from the *Disregard of the Need for Prior Knowledge* measurement scale. In addition, the initial CFA revealed that, of the seven different measurement scales being used to operationalize *Extreme Self-Focus*, two measurement scales (*Hubristic Pride* and *Overconfidence*) were entirely distinct from the other five (*Narcissism / Egotism, Authentic Pride, Optimism, Perceived Self-Efficacy*, and *Entrepreneurial Self-Efficacy*) and from each other. As such, the five 'similar' constructs were renamed *Extreme Self-Appreciation* in recognition of the fact that the items represented by those constructs tend to point toward an individual's self-assessment of their accomplishments or capabilities or their ability to garner the attention of others. By contrast, hubristic pride measures the way an individual views himself or herself apart from (or perhaps even despite) their past

accomplishments (or even lack thereof). Because of its uniqueness from the other *Extreme Self-Focus* constructs, *Hubristic Pride* was analyzed as a separate construct, as was *Overconfidence*. However, *Overconfidence* was excluded from all SEM analyses (due to lack of convergence whenever *Overconfidence* was included).

Moderating-Effects Hypotheses

The existence of significant moderators necessarily changes the way one interprets a model's main effects. This occurs because a significant moderator implies that the magnitude (and possibly the sign) of the regression coefficient (i.e. main effect) changes with value of the moderator. As such, the presence of a significant moderator likely creates 'zones of significance' for the main effect (i.e. ranges along the dimension of the moderating variable where the main effect is significant and ranges where it is not). In other words, along the moderator's continuum, the strength of the main effect either increases or decreases (depending upon the sign of the moderator); along this continuum, if the moderator is significant, we can reasonably expect that there may be zones wherein the main effect is zero (or at least indistinguishable from zero) and other zones where the main effect can be reliably estimated as non-zero. This would be especially true if a moderator were to cause a change in the sign of the coefficient of the main effect. In that instance, there would most certainly be a zone in the middle of that transition where the coefficient of the main effect would be zero (and thus non-significant). In recognition of this fact, we begin with an analysis of the hypothesized moderators from the model shown in Figure 3, which correspond to hypotheses H4A, H4B, H4C, H5A, H5B, H5C, H6A, H6B, H6C, H7A, H7B, and H7C.

A Brief Discussion of the Main Effects for H1A, H1B, and H1C: The Influence of *Extreme Self-Focus* on *Favorable Perceptions of Risk / Uncertainty*

Our first main-effect hypotheses (H1A, H1B, and H1C) posit that individuals who are extremely high in self-focus will perceive risk and uncertainty differently from those who are low in self-focus. More specifically, with H1A we hypothesize that individuals high in self-focus will tend perceive uncertainty as risk. With H1B and H1C we hypothesize that individuals high in self-focus will tend to perceive probabilistic risk more favorably (i.e. they will view a given 'risky' situation as more likely to turn out positively, in their favor) than individuals who are low in self-focus.

As such, we expect the coefficient of the main effect (of self focus on perceived risk) to be positive and significant when measuring self-focus on a positive scale (i.e. higher scores correspond to higher levels of self-focus) and risk perception on a 'positive favorability' scale (i.e. higher scores correspond to an assessment of a greater likelihood of a favorable outcome).

A Brief Discussion of the Main Effects for H2A, H2B, and H2C: The Influence of *Favorable Perceptions of Risk / Uncertainty* on *Propensity to Pursue Entrepreneurial Action*

Our second pair of main-effect hypotheses (H2A, H2B, and H2C) posit that individuals who perceive probabilistic risk with a more favorable view toward the likelihood of a successful outcome will be more prone to pursue entrepreneurial action in the midst of that uncertainty than individuals with a less favorable perspective of the situation.

We will address both sets of main-effects hypotheses after we present the results for our moderating-effects hypotheses.

Testing the Moderating-Effects Hypotheses

Assessment Orientation, Positive Self-Image, Disregard of the Need for Prior Knowledge, and Locomotion Orientation (H4, H5,H6, and H8)

Extreme Self-Focus was ultimately operationalized two different ways (as *Extreme Self-Appreciation* and as *Hubristic Pride*) and *Favorable Perceptions of Risk / Uncertainty* was operationalized six different ways. However, the six operationalization of *Favorable Perceptions of Risk / Uncertainty* were spread across three different conditions:

- Knightian uncertainty (all respondents)
- Knightian uncertainty (respondents who perceived uncertainty as risk)
- Probabilistic risk (respondents who perceived risk as risk)

The first condition represents all the 'A' hypotheses, the second condition comprises the 'B' hypotheses, and the third condition the 'C' hypotheses. However, within each of the 'A', 'B', and 'C' hypotheses, one operationalization of *Favorable Perceptions of Risk / Uncertainty* applied to technical risk or uncertainty and the other applied to market risk or uncertainty.

As such, for each separate moderating hypothesis (e.g. 'H4A') we tested it four different ways, once for *Extreme Self-Appreciation* under conditions of technical risk or uncertainty, once for *Extreme Self-Appreciation* under conditions of market risk or uncertainty, once for *Hubristic Pride* under conditions of technical risk or uncertainty, and once for *Hubristic Pride* under conditions of market risk or uncertainty. A summary of the hypothesis test results for those models is provided in Table 8, with the statistical output from each regression model presented in Appendix A.

Regarding the H7 hypotheses, we expected a loss of power because the sample size is notably smaller due to missing values (there were only 55 respondents who reported one and

only one previous entrepreneurial failure and only 26 who experienced more than one previous failure). For this reason, we tested the H7 hypotheses independently of the other moderating hypotheses (testing them simultaneously would have resulted in reduced power for all the moderating hypothesis tests).

Table 8 – Summary of Regression Models for Testing Moderating Hypotheses

			Extreme Self-Appreciation		***Hubristic Pride***	
			Technical	**Market**	**Technical**	**Market**
H4A	***Positive Self-Image*** **(Moderator)**	**Uncertainty**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**
H4B		**Uncertainty**	**SUPPORT**	**SUPPORT**	**NO SUPPORT**	**NO SUPPORT**
H4C		**Risk**	**SUPPORT**	**SUPPORT**	**NO SUPPORT**	**NO SUPPORT**
H5A	***Assessment Orientation*** **(Moderator)**	**Uncertainty**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**
H5B		**Uncertainty**	**SUPPORT**	**SUPPORT**	**NO SUPPORT**	**NO SUPPORT**
H5C		**Risk**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**
H6A	***Disregard Prior Knowledge***	**Uncertainty**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**
H6B		**Uncertainty**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**
H6C		**Risk**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**
H7A1	***# of Previous Entrepre-neurial Failures*** **(Moderator)**	**Uncertainty**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**
H7B1		**Uncertainty**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**
H7C1		**Risk**	**SUPPORT**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**
H7A2		**Uncertainty**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**
H7B2		**Uncertainty**	**SUPPORT**	**SUPPORT**	**SUPPORT**	**NO SUPPORT**
H7C2		**Risk**	**SUPPORT**	**SUPPORT**	**NO SUPPORT**	**NO SUPPORT**
H8A	***Locomotion Orientation*** **(Moderator)**	**Uncertainty**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**
H8B		**Uncertainty**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**
H8C		**Risk**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**

As can be seen from Table 8, only one of our moderating hypotheses was supported ($p < .05$) for *Hubristic Pride* (H7B2) and that was only under the condition of technical uncertainty. In addition, none of our moderating hypotheses for *Disregard of the Need for Prior Knowledge* and *Locomotion Orientation* were supported under any condition.

# of Previous Entrepreneurial Failures (H7)

Regarding the H7 hypotheses, we had to test the '1' and '2' hypotheses separately from each other because including both simultaneously would have resulted in zero variance in the

moderator. This is due to the fact that the '1' hypotheses should include all the respondents who reported zero or one previous entrepreneurial failures (with all other responses coded as 'missing') and the '2' hypotheses should include those who reported one or more than one (with all other responses coded as 'missing'), meaning that testing both together, using listwise deletion, would only leave those respondents who reported one and only one previous entrepreneurial failure. As with the other moderating hypotheses, the H7 hypotheses were each tested four times. The summary of those hypothesis tests are also presented in Table 8.

Testing the Main-Effects and Mediation Hypotheses

With the moderating effects associated with hypotheses H4, H5, H6, H7, and H8 failing to receive support or receiving, at best, limited and mixed support, we omitted the hypothesized moderators when analyzing the main effects of *Extreme Self-Focus* on *Favorable Perceptions of Risk / Uncertainty*, the main effects of *Favorable Perceptions of Risk / Uncertainty* on *Propensity to Pursue Entrepreneurial Action*, and the mediating effects of *Favorable Perceptions of Risk / Uncertainty*. As mentioned previously, *Favorable Perceptions of Risk / Uncertainty* was operationalized in six different ways.

With the CFA model's fit to the data having been confirmed, we analyzed and tested all main effects and mediating effects using a separate SEM model for each operationalization of *Favorable Perceptions of Risk / Uncertainty* (i.e. six different models). To evaluate the overall fit for each model, we utilized the 2-index strategy recommended by Hu and Bentler (1999) wherein we reviewed the standardized root mean squared residual (SRMR) and the root mean squared error of approximation (RMSEA) relative to their recommended maximum cutoff values of .08 and .06 respectively. All models met those cutoff values, leading us to conclude

that our hypothesized models exhibit relatively good fit with the observed data, thus allowing us to make meaningful inferences regarding our hypothesized relationships between the variables. [10]

To test our mediating hypotheses (H3A, H3B, and H3C), we follow a modified version of the causal steps approach originally recommended by Baron and Kenny (1986) by estimating the direct effects (denoted as 'a') between each independent variable (*Extreme Self-Appreciation* and *Hubristic Pride*) and the mediating variable (*Favorable Perceptions of Risk / Uncertainty*), the direct effect (denoted as 'b') between the mediating variable and the dependent variable (*Propensity to Pursue Entrepreneurial Action*), the total effects (denoted as 'c', controlling for 'a' and 'b') between each independent variable and the dependent variable, and the indirect effects (denoted as 'ab') between each independent variable and the dependent variable. The standardized results for each model (labeled as Models 1 to 6) are presented in Figure 5 to Figure 10 and are discussed separately below, with respect to their relevance to the various hypotheses.

Results of our main-effects and mediation hypothesis tests are presented in Table 9, with detailed explanations of each test below.

[10] During the time between the end of collection of the 'soft launch' data and completion of the full data-collection, we posited that *Disregard of the Need for Prior Knowledge* would have been better hypothesized as a mediator between *Extreme Self-Focus* and *Favorable Perceptions of Risk / Uncertainty* rather than as a moderator. As such, from that moment we intended to test the mediating effects of *Disregard of the Need for Prior Knowledge* as a supplemental analysis. This notion was later reinforced by some of the test results from Models 1 to 6, wherein in multiple instances the data suggest the presence of additional mediating variables (beyond those originally hypothesized) (in particular, see Models 1, 2, 4, and 5). Chapter VI provides the supplemental analysis (of *Disregard of the Need for Prior Knowledge* as a possible mediator between *Extreme Self-Focus* and *Propensity to Pursue Entrepreneurial Action*).

Table 9 – Summary of SEM Results for Testing Main-Effects and Mediating Hypotheses

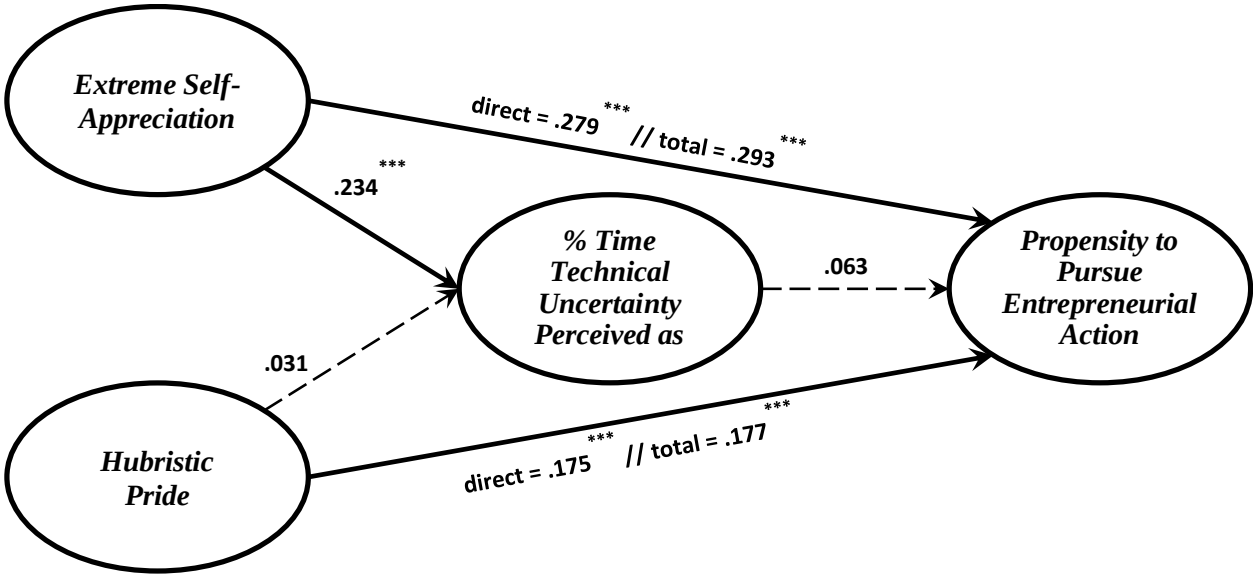
			Extreme Self-Appreciation		*Hubristic Pride*	
			Technical	**Market**	**Technical**	**Market**
H1A	**Independent Variable Main Effects**	**Uncertainty**	**SUPPORT**	**SUPPORT**	**NO SUPPORT**	**NO SUPPORT**
H1B		**Uncertainty**	**SUPPORT**	**SUPPORT**	**SUPPORT**	**NO SUPPORT**
H1C		**Risk**	**SUPPORT**	**SUPPORT**	**NO SUPPORT**	**NO SUPPORT**
H2A	**Mediator Main Effects**	**Uncertainty**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**
H2B		**Uncertainty**	**SUPPORT**	**SUPPORT**	**SUPPORT**	**SUPPORT**
H2C		**Risk**	**SUPPORT**	**SUPPORT**	**SUPPORT**	**SUPPORT**
H3A	**Mediation**	**Uncertainty**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**	**NO SUPPORT**
H3B		**Uncertainty**	**SUPPORT**	**SUPPORT**	**SUPPORT**	**NO SUPPORT**
H3C		**Risk**	**SUPPORT (Partial)**	**SUPPORT**	**NO SUPPORT**	**NO SUPPORT**

The Tendency to Perceive Uncertainty as Risk (Testing the 'A' Hypotheses, using Models 1 and 2)

Model 1, shown in Figure 5, depicts the main and mediating effects related to the misperception of technical uncertainty as risk under conditions of technical uncertainty (in the Knightian sense) (SRMR = .062; RMSEA = .034; CFI = .957; TLI = .951). Similarly, Model 2 (Figure 6) demonstrates the main and mediating effects related to the misperception of market uncertainty as risk under conditions of market uncertainty (again, in the Knightian sense) (SRMR = .062; RMSEA = .036; CFI = .952; TLI = .946).

The main effect of *Extreme Self-Appreciation* on *Percent Time Uncertainty Perceived as Risk* was both positive and significant ($\beta = .234$, $p < .001$; $\beta = .208$, $p = .002$) both for technical uncertainty and market uncertainty, thus **supporting hypothesis H1A**. However, the main effect of *Hubristic Pride* on *Percent Time Uncertainty Perceived as Risk* was not significant ($\beta = .031$, $p = .570$; $\beta = -.010$, $p = .865$) both for technical uncertainty and market uncertainty, thus **failing to support hypothesis H1A**. Furthermore, the main effect of *Percent*

Time Uncertainty Perceived as Risk on *Propensity to Pursue Entrepreneurial Action* was not significant (β = .063, *p* = .207; β = .066, *p* = .147) both for technical uncertainty and market uncertainty, thus **failing to support hypothesis H2A**.

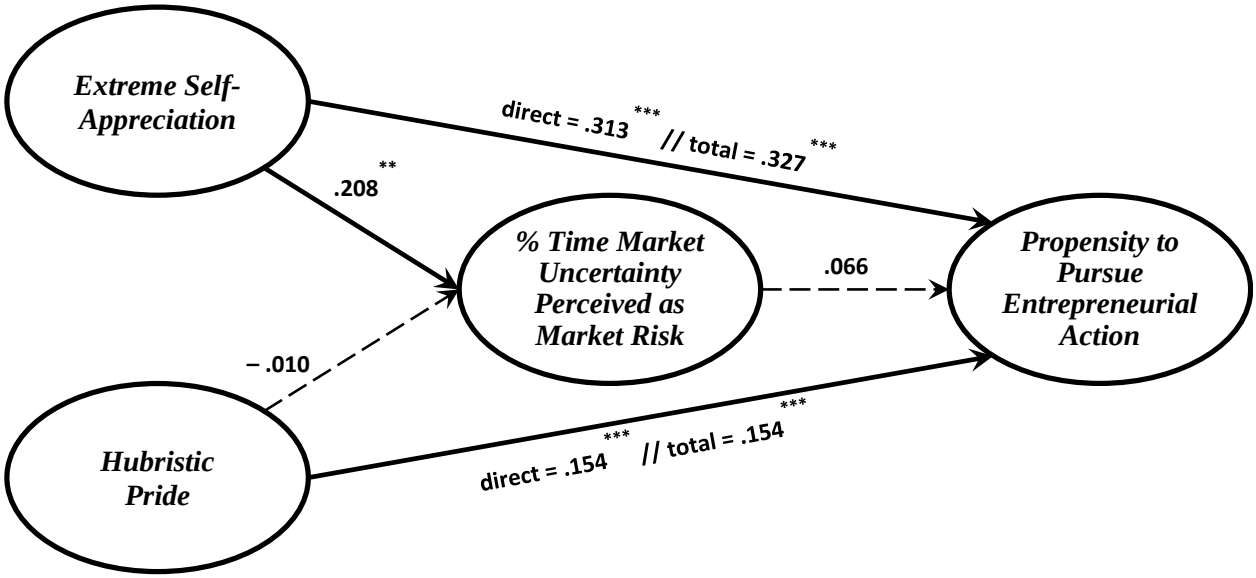


n = 475; standardized coefficients are reported: * = p < .05; ** = p < .01; *** = p < .001
thin dashed line = insignificant direct effect (a or b) (p > .05)
solid line = significant direct effect (a or b) (p < .05)
thick solid line = significant indirect effect (ab) (p < .05)
insignificant p-values close to .05 are reported

Figure 5 – Model 1 (Tendency to Perceive Technical Uncertainty as Technical Risk)

As such, with the failure to find support for the main effect between the hypothesized mediator (*Percent Time Uncertainty Perceived as Risk*) and the dependent variable (*Propensity to Pursue Entrepreneurial Action*) under conditions of both technical and market uncertainty, we must conclude **a lack of support for our mediating hypothesis, H3A** (Baron & Kenny, 1986) regardless of the significance or insignificance of the remaining paths. We do observe, however, with Models 1 and 2, significant direct effects from both independent variables, *Extreme Self-Appreciation* and *Hubristic Pride*, on the dependent variable, *Propensity to Pursue Entrepreneurial Action*, under conditions of both technical and market uncertainty (β =

.279, $p < .001$; $\beta = .175$, $p < .001$; $\beta = .313$, $p < .001$; $\beta = .154$, $p = .001$), thus suggesting the possibility of other mediators, as we shall look at forthwith. Most notably, this leaves open the possibility that one of our other operationalizations of *Favorable Perceptions of Risk / Uncertainty* may be the supplemental mediator that is missing from Models 1 and 2.



n = 475; standardized coefficients are reported: * = p < .05; ** = p < .01; *** = p < .001
thin dashed line = insignificant direct effect (a or b) (p > .05)
solid line = significant direct effect (a or b) (p < .05)
thick solid line = significant indirect effect (ab) (p < .05)
insignificant p-values close to .05 are reported

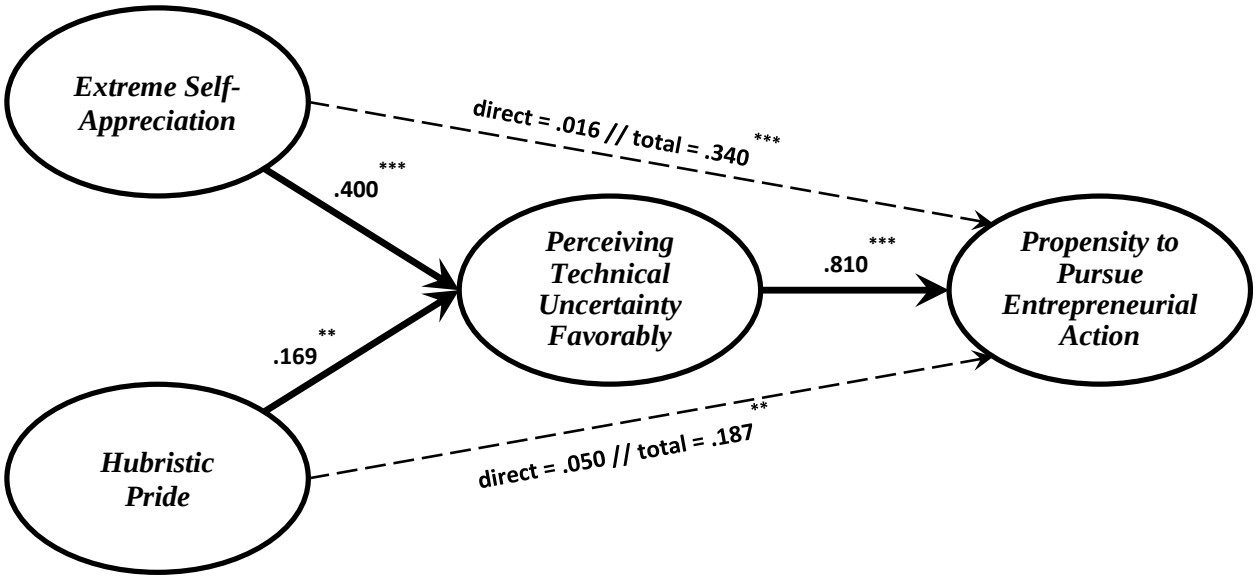
Figure 6 – Model 2 (Tendency to Perceive Market Uncertainty as Market Risk)

It bears noting that all the 'A' hypotheses (which relate specifically to Models 1 and 2) are the only ones that were tested using the 'full' data set. That is because the conditions for the 'A' hypotheses by design encompassed all respondents, including those who consistently responded to all 'uncertainty' scenarios (i.e. those involving Knightian uncertainty, either technical or market or both) with the "anybody's guess" response option. For all the other hypotheses (i.e. the 'B' and 'C' hypotheses, corresponding to Models 3 and 4 and Models 5 and 6, respectively), their specific operationalizations of *Favorable Perceptions of Risk /*

Uncertainty necessarily required excluding respondents who consistently chose the "anybody's guess" response option for a given risk or uncertainty condition.

Favorable Perceptions of Uncertainty (as Risk) under Conditions of Knightian Uncertainty (Testing the 'B' Hypotheses, using Models 3 and 4)

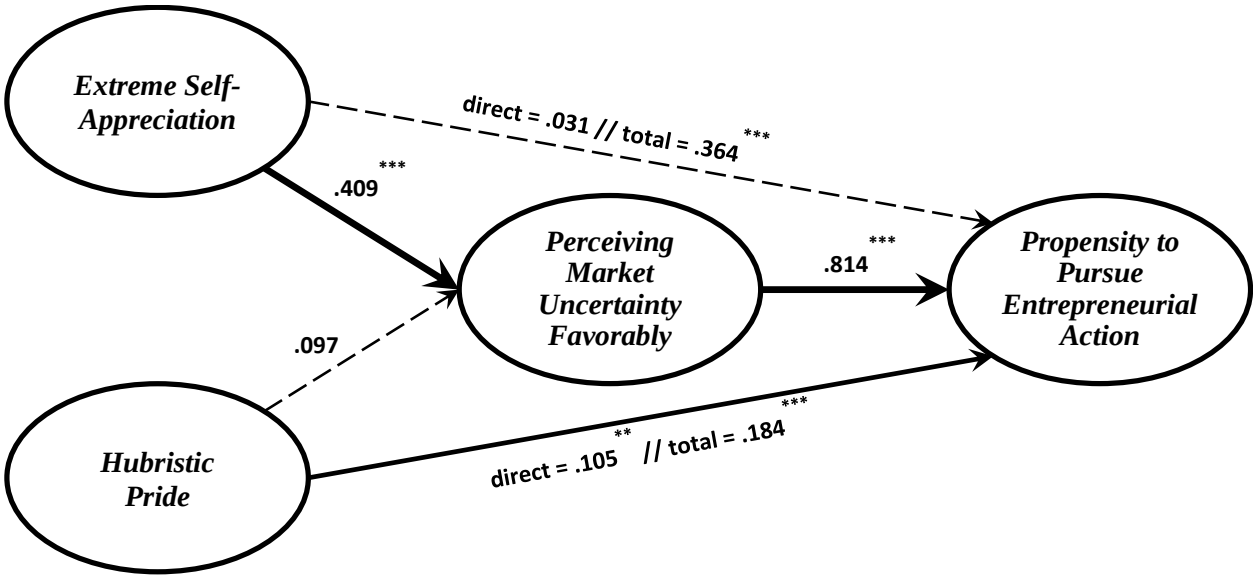
Model 3, shown in Figure 7, depicts the main and mediating effects related to *Perceiving Uncertainty Favorably* specifically under conditions of technical uncertainty (in the Knightian sense) (SRMR = .069; RMSEA = .044; CFI = .933; TLI = .926). Similarly, Model 4 (Figure 8) demonstrates the main and mediating effects related to *Perceiving Uncertainty Favorably* under conditions of market uncertainty (again, in the Knightian sense) (SRMR = .065; RMSEA = .044; CFI = .932; TLI = .925).



n = 331; standardized coefficients are reported: * = p < .05; ** = p < .01; *** = p < .001
thin dashed line = insignificant direct effect (a or b) (p > .05)
solid line = significant direct effect (a or b) (p < .05)
thick solid line = significant indirect effect (ab) (p < .05)
insignificant p-values close to .05 are reported

Figure 7 – Model 3 (Perceived Technical Risk under Conditions of Technical Uncertainty)

The main effect of *Extreme Self-Appreciation* on *Perceiving Uncertainty Favorably* was both positive and significant (β = .400, $p < .001$; β = .410, $p < .001$) both for technical uncertainty and market uncertainty, thus **supporting hypothesis H1B**. However, the main effect of *Hubristic Pride* on *Perceiving Uncertainty Favorably* was significant (β = .169, $p = .003$) for technical uncertainty but not significant for market uncertainty (β = .097, $p = .088$), thus **providing mixed support hypothesis H1B**. The main effect of *Perceiving Uncertainty Favorably* on *Propensity to Pursue Entrepreneurial Action* was significant (β = .810, $p < .001$; β = .814, $p < .001$) both for technical uncertainty and market uncertainty, thus **supporting hypothesis H2B**.



n = 358; standardized coefficients are reported: * = p < .05; ** = p < .01; *** = p < .001
thin dashed line = insignificant direct effect (a or b) (p > .05)
solid line = significant direct effect (a or b) (p < .05)
thick solid line = significant indirect effect (ab) (p < .05)
insignificant p-values close to .05 are reported

Figure 8– Model 4 (Perceived Market Risk under Conditions of Market Uncertainty)

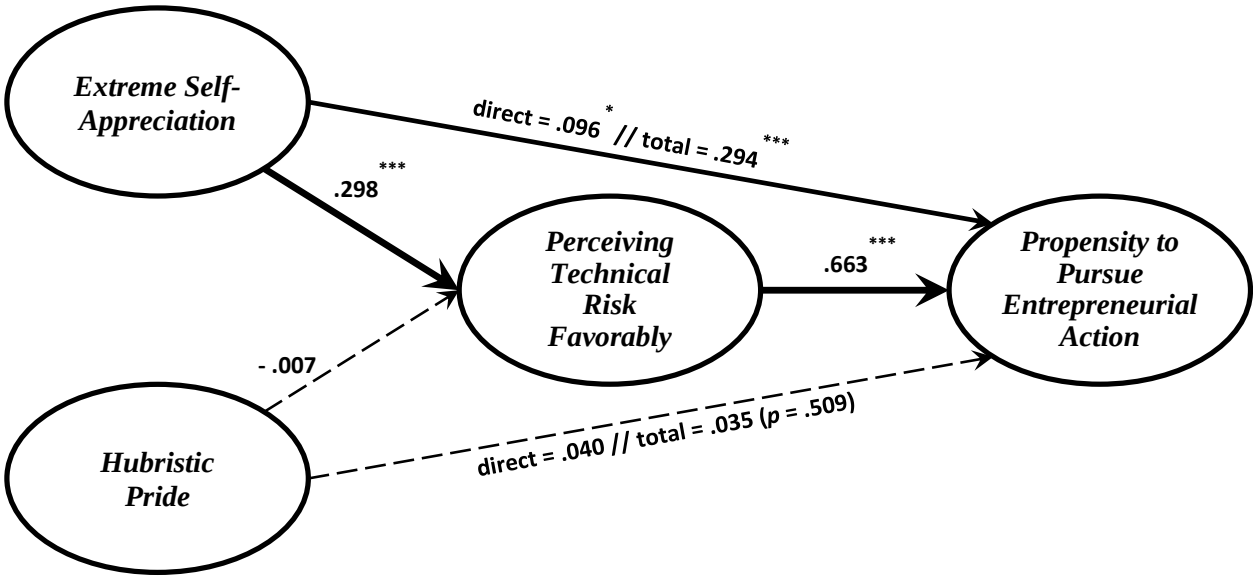
Regarding mediation effects, we observe that under both technical and market uncertainty, the direct paths from *Extreme Self-Appreciation* to *Perceiving Uncertainty Favorably* and from *Perceiving Uncertainty Favorably* to *Propensity to Pursue Entrepreneurial Action* are significant (as described above). In addition, the total effect from *Extreme Self-Appreciation* to *Propensity to Pursue Entrepreneurial Action* is significant (β = .340, $p < 001$; β = .364, $p < .001$) while the corresponding direct effect is not significant (β = .016, $p = .713$; β = .031, $p = .440$) and the indirect effect is significant (β = .324, $p < .001$; β = .333, $p < .001$), thus signifying full mediation between *Extreme Self-Appreciation* and *Propensity to Pursue Entrepreneurial Action* through *Perceiving Uncertainty Favorably*, thus **supporting hypothesis H2C**. Similarly, with respect to *Hubristic Pride* under technical uncertainty, we observe a significant main effect from *Hubristic Pride* to *Perceiving Uncertainty Favorably* (as described above) and from *Perceiving Uncertainty Favorably* to *Propensity to Pursue Entrepreneurial Action* (as described above), along with a significant total effect (β = .169, $p = .003$), insignificant corresponding direct effect (β = .050, $p = .215$), and significant indirect effect (β = .137, $p = .004$), thus also **supporting hypothesis H2C**. However, whereas the total effect of *Hubristic Pride* on *Propensity to Pursue Entrepreneurial Action* under conditions of market uncertainty was not significant (β = .097, $p = .088$) and the indirect effect was not significant (β = .079, $p = .089$) we observe a **lack of support for hypothesis H2C**. Taken together, that signifies **mixed support for hypothesis H2C** Even so, it bears noting that, for *Hubristic Pride* under conditions of market uncertainty, the total effect of *Hubristic Pride* on *Propensity to Pursue Entrepreneurial Action* was significant (β = .184, $p = .001$), the associated direct effect was significant (β = .105, $p = .005$), and the indirect effect

was not significant (β = .079, *p* = .089). This suggests the presence of a mediator other than *Perceiving Uncertainty Favorably*.

Favorable Perceptions of Risk under Conditions of Probabilistic Risk (Testing the 'C' Hypotheses, using Models 5 and 6)

Model 5, shown in Figure 9, depicts the main and mediating effects related to *Perceiving Technical Risk Favorably* under conditions of technical and market probabilistic risk (SRMR = .064; RMSEA = .041; CFI = .938; TLI = .932). Similarly, Model 6 (Figure 10) demonstrates the main and mediating effects related to *Perceiving Market Risk Favorably* under conditions of technical and market probabilistic risk (SRMR = .065; RMSEA = .041; CFI = .937; TLI = .932). For Models 5 and 6, we only included respondents' risk-perception and business-launch commitment responses related to Scenario 8 (technical risk / market risk) because we wanted to clearly compare how individuals pursue entrepreneurial endeavors under Knightian uncertainty (Models 1, 2, 3, and 4) versus under ONLY probabilistic risk (Models 5 and 6).

The main effect of *Extreme Self-Appreciation* on *Perceiving Risk Favorably* was positive and significant (β = .298, *p* < 001; β = .301, *p* < .001) under conditions of technical and market risk, thus **supporting hypothesis H1C**. However, the main effect of *Hubristic Pride* on *Perceiving Risk Favorably* was not significant (β = -.007, *p* = .889; β = -.010, *p* = .847) under conditions of technical and market risk, thus demonstrating a **lack of support hypothesis H1C**. Taken together, we conclude **mixed support for hypothesis H1C**. The main effect of *Perceiving Risk Favorably* on *Propensity to Pursue Entrepreneurial Action* was significant (β = .663, *p* < .001; β = .734, *p* < .001) under conditions of technical and market risk, thus **supporting hypothesis H2C**.



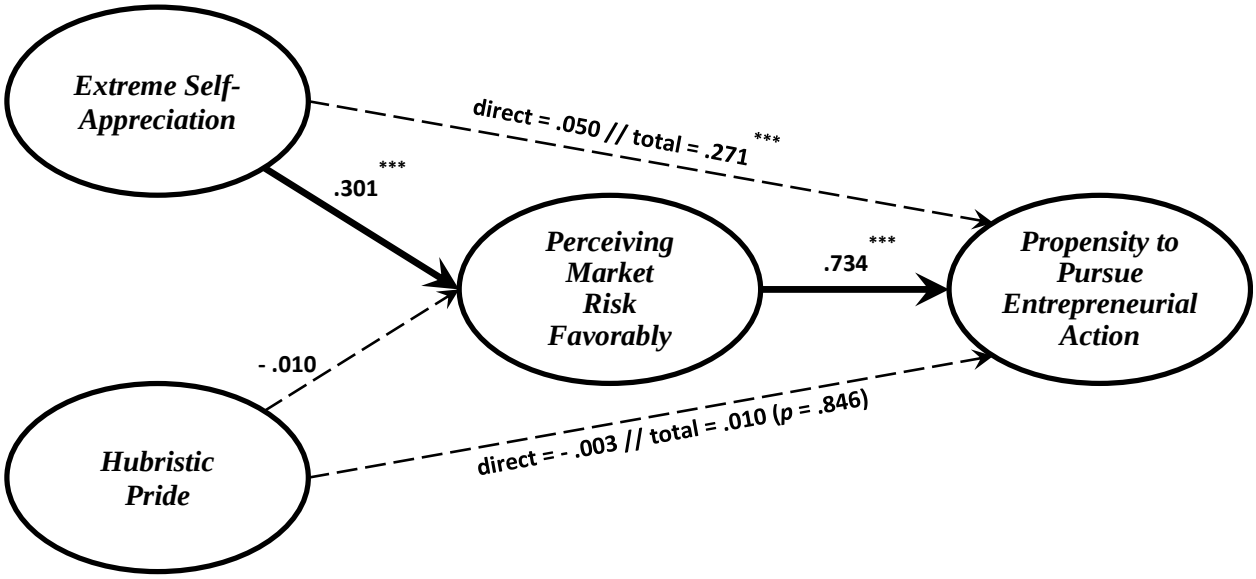
n = 412; standardized coefficients are reported: * = p < .05; ** = p < .01; *** = p < .001
thin dashed line = insignificant direct effect (a or b) (p > .05)
solid line = significant direct effect (a or b) (p < .05)
thick solid line = significant indirect effect (ab) (p < .05)
insignificant p-values close to .05 are reported

Figure 9 – Model 5 (Perceived Technical Risk under Conditions of Only Technical Risk and Market Risk)

Regarding mediation effects, we observe that, for both technical and market risk, the main effects of *Extreme Self-Appreciation* on *Perceiving Risk Favorably* and *Perceiving Risk Favorably* on *Propensity to Pursue Entrepreneurial Action* were significant (as described above), the total effects of *Extreme Self-Appreciation* on *Propensity to Pursue Entrepreneurial Action* were significant ($\beta = .294$, $p < .001$; $\beta = .271$, $p < .001$), and the corresponding indirect effects were significant ($\beta = .197$, $p < .001$; $\beta = .221$, $p < .001$), thus signifying *Perceiving Risk Favorably* as a mediating variable and thus **supporting hypothesis H3C**. However, there was a difference between technical risk and market risk with respect to the direct effects of *Extreme Self-Appreciation* on *Propensity to Pursue Entrepreneurial Action*. In particular, the direct effect was significant ($\beta = .096$, $p = .011$) under conditions of technical risk, but insignificant

(β = .050, *p* = .173) with respect to market risk, suggesting *partial* mediation under technical risk and *full* mediation under market risk.

However, with respect to *Hubristic Pride* under conditions of technical and market risk, we observed insignificant total effects (β = .035, *p* = .509; β = -.010, *p* = .847), direct effects(β = .040, *p* = .316; β = -.003, *p* = .934), and indirect effects (β = -.005, *p* = .889; β = -.007, *p* = .847) between *Hubristic Pride* and *Propensity to Pursue Entrepreneurial Action* thus signifying no mediation and thus **a lack of support for hypothesis, H3C** (Baron & Kenny, 1986). Taken together, we conclude **mixed support for hypothesis H3C**.



n = 426; standardized coefficients are reported: * = p < .05; ** = p < .01; *** = p < .001
thin dashed line = insignificant direct effect (a or b) (p > .05)
solid line = significant direct effect (a or b) (p < .05)
thick solid line = significant indirect effect (ab) (p < .05)
insignificant p-values close to .05 are reported

Figure 10– Model 6 (Perceived Market Risk under Conditions of Only Technical Risk and Market Risk)

CHAPTER VI

SUPPLEMENTAL DATA ANALYSIS

Considering Disregard of the Need for Prior Knowledge as a Mediator rather than Moderator

As mentioned previously, prior to completion of our data collection efforts we had posited that *Disregard of the Need for Prior Knowledge* might have been more appropriately hypothesized as a mediator rather than a moderator. A moderator, by definition, strengthens (weakens) the causal effect between an independent variable and the dependent variable. By contrast, a mediator IS the causal effect, i.e. the mediator represents or embodies the causal step or the 'mechanism' by which a change in the independent variable causes the corresponding change in the dependent variable.

As such, an important factor when deciding whether to hypothesize a variable as a mediator deals with whether it makes sense to theorize the independent variable as causally linked to the mediator and the mediator as causally linked to the dependent variable. If the answer to either of those questions is 'No' then it makes no sense to hypothesize the variable as a mediator. However, if the answer to both questions is 'Yes' then that implies the possible existence of a mediating relationship. Baron and Kenny (1986) succinctly summarized this distinction: "moderator variables *always* function as independent variables, whereas mediating

events *shift roles* from effects to causes, depending on the focus of the analysis" (italics added: 1174).

In the case of *Disregard of the Need for Prior Knowledge*, after reflecting upon the nature of the moderator/mediator distinction, we concluded that *Disregard of the Need for Prior Knowledge* fits better into the 'mediator' role with respect to the empirical model depicted in Figure 3. However, rather than change our analysis approach regarding that variable, we decided to merely conduct a supplemental analysis, looking at *Disregard of the Need for Prior Knowledge* as a possible mediator (in addition to *Favorable Perceptions of Risk / Uncertainty*), as depicted in Figure 12 (with moderators omitted to simplify the presentation). However, as part of our *post hoc* analysis of the original empirical model (Figure 3), we ended up with a slightly different empirical model to test in our supplemental analysis. This 'newly-revised' model is shown in Figure 12 (with moderators omitted due to our findings of lack of significance during the 'standard' analysis).

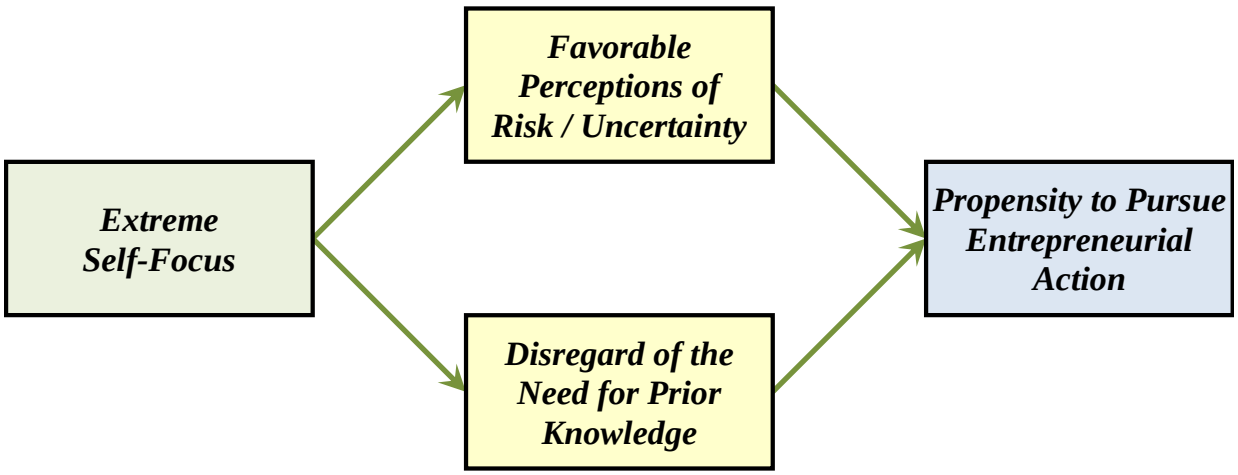


Figure 11– Initial Revision: Empirical Model (Hypothesizing *Disregard of the Need for Prior Knowledge* and *Favorable Perceptions of Risk / Uncertainty* as Parallel Mediators)

Post Hoc Analysis of the Original Empirical Model

Figure 13 shows the results of Model 2 again (for convenience), testing the empirical model from Figure 3 with *Favorable Perceptions of Risk / Uncertainty* operationalized as *Percent Time Market Uncertainty Perceived as Market Risk*. As can be seen, *Percent Time Market Uncertainty Perceived as Market Risk* does NOT mediate the relationship between *Extreme Self-Appreciation* and *Propensity to Pursue Entrepreneurial Action*, nor does it mediate the relationship between *Hubristic Pride* and *Propensity to Pursue Entrepreneurial Action*. However, both those relationships show up with highly-significant ($p < .001$) total and direct effects. This implies that either the independent variables directly cause the dependent variable or that there exists some other mediator(s).

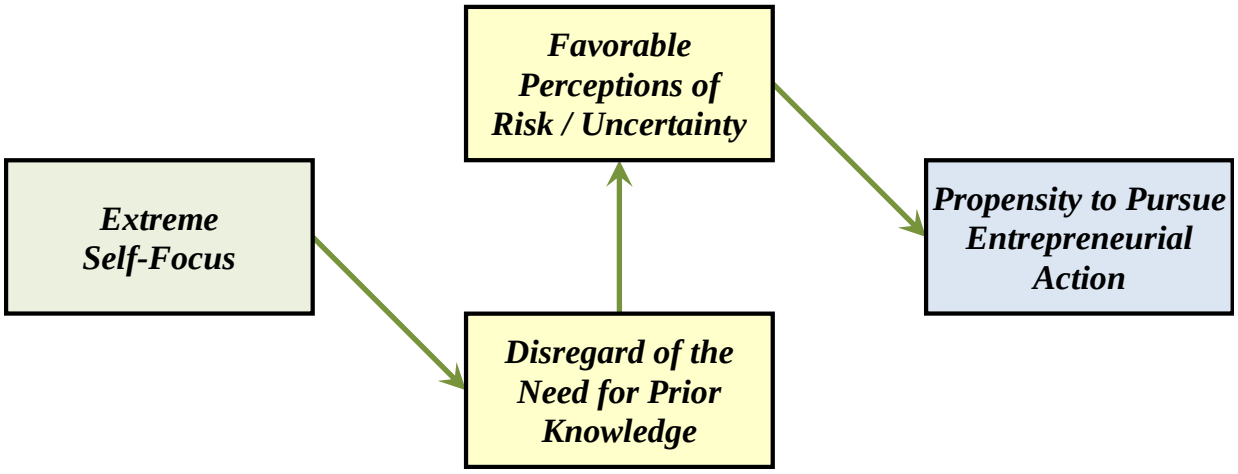
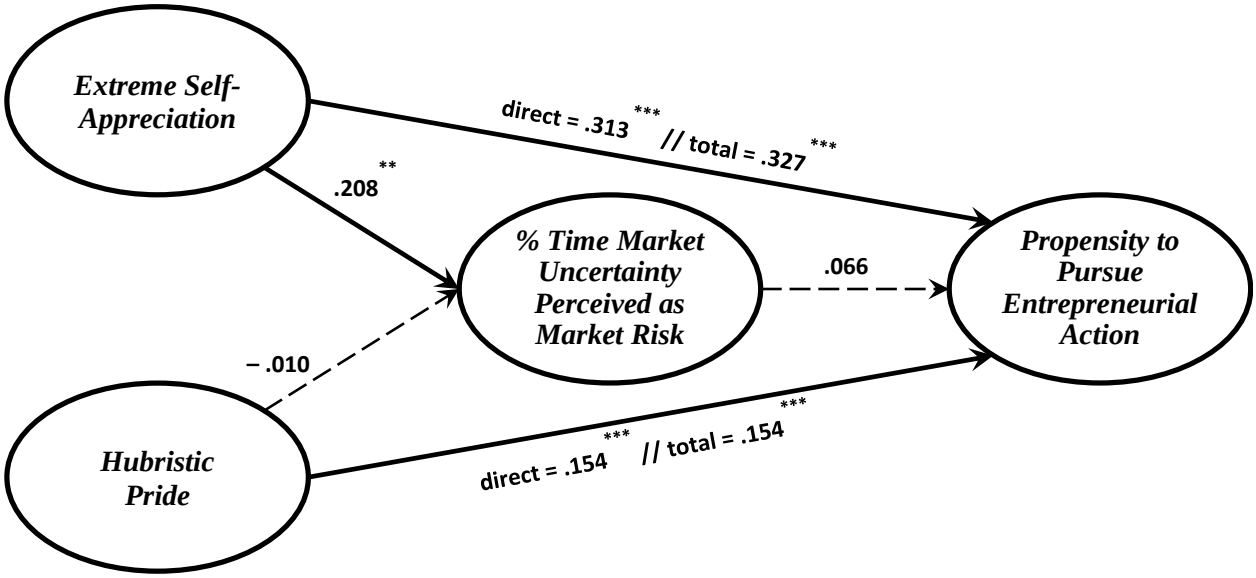


Figure 12– Newly-Revised Empirical Model (Hypothesizing *Disregard of the Need for Prior Knowledge* and *Favorable Perceptions of Risk / Uncertainty* as Sequential Mediators)

We could possibly conclude, from Figure 13, that one or more of our other operationalizations of *Favorable Perceptions of Risk / Uncertainty* represent a better mediator than *Percent Time Market Uncertainty Perceived as Market Risk*. When we look at Model 4 (shown again in Figure 14, for convenience), we do see, in fact that *Perceiving Market Uncertainty Favorably*

fully mediates the relationship between *Extreme Self-Appreciation* and *Propensity to Pursue Entrepreneurial Action*. However, the relationship between *Hubristic Pride* and *Propensity to Pursue Entrepreneurial Action* remains significant (p = .005; p = .001) in terms of the direct

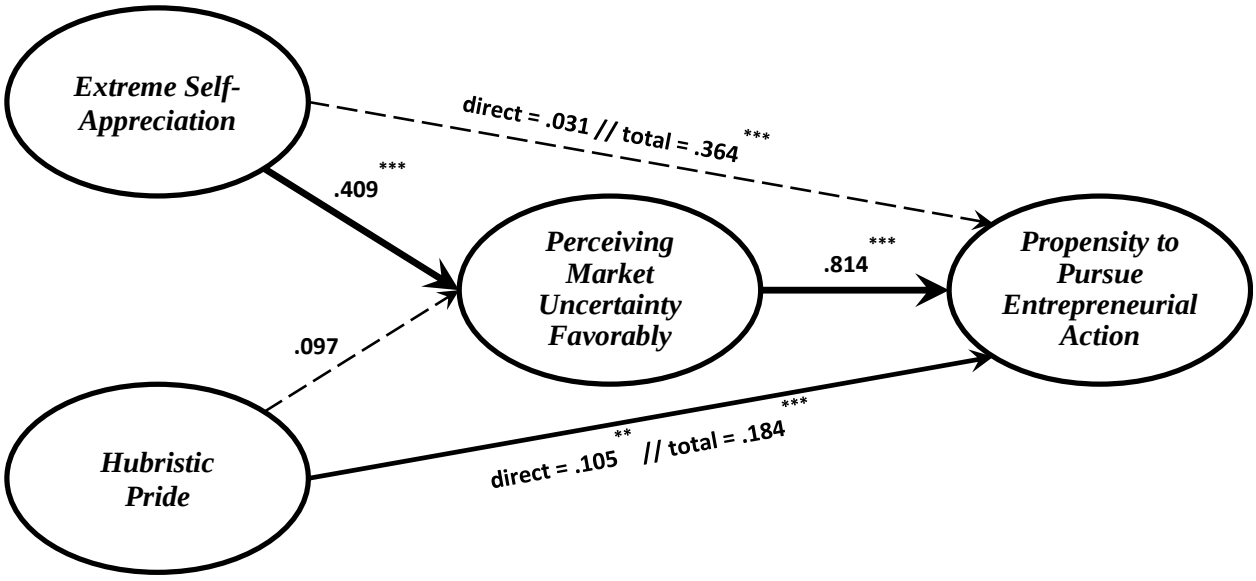


n = 475; standardized coefficients are reported: * = p < .05; ** = p < .01; *** = p < .001
thin dashed line = insignificant direct effect (a or b) (p > .05)
solid line = significant direct effect (a or b) (p < .05)
thick solid line = significant indirect effect (ab) (p < .05)
insignificant p-values close to .05 are reported

Figure 13 – Model 2 (Tendency to Perceive Market Uncertainty as Market Risk)

and total effects (under conditions market uncertainty), thus suggesting that a different mediator may be at work, at least between *Hubristic Pride* and *Propensity to Pursue Entrepreneurial Action*. In light of the foregoing results, we decided to begin testing the relationships depicted in Figure 11, starting with *Percent Time Market Uncertainty Perceived as Market Risk* as the operationalization of *Favorable Perceptions of Risk / Uncertainty* (i.e. extending the analysis of Model 2 to include *Disregard of the Need for Prior Knowledge*). We chose this specific operationalization of *Favorable Perceptions of Risk / Uncertainty* for two reasons. First, *Percent Time Uncertainty Perceived as Risk* encompasses the two

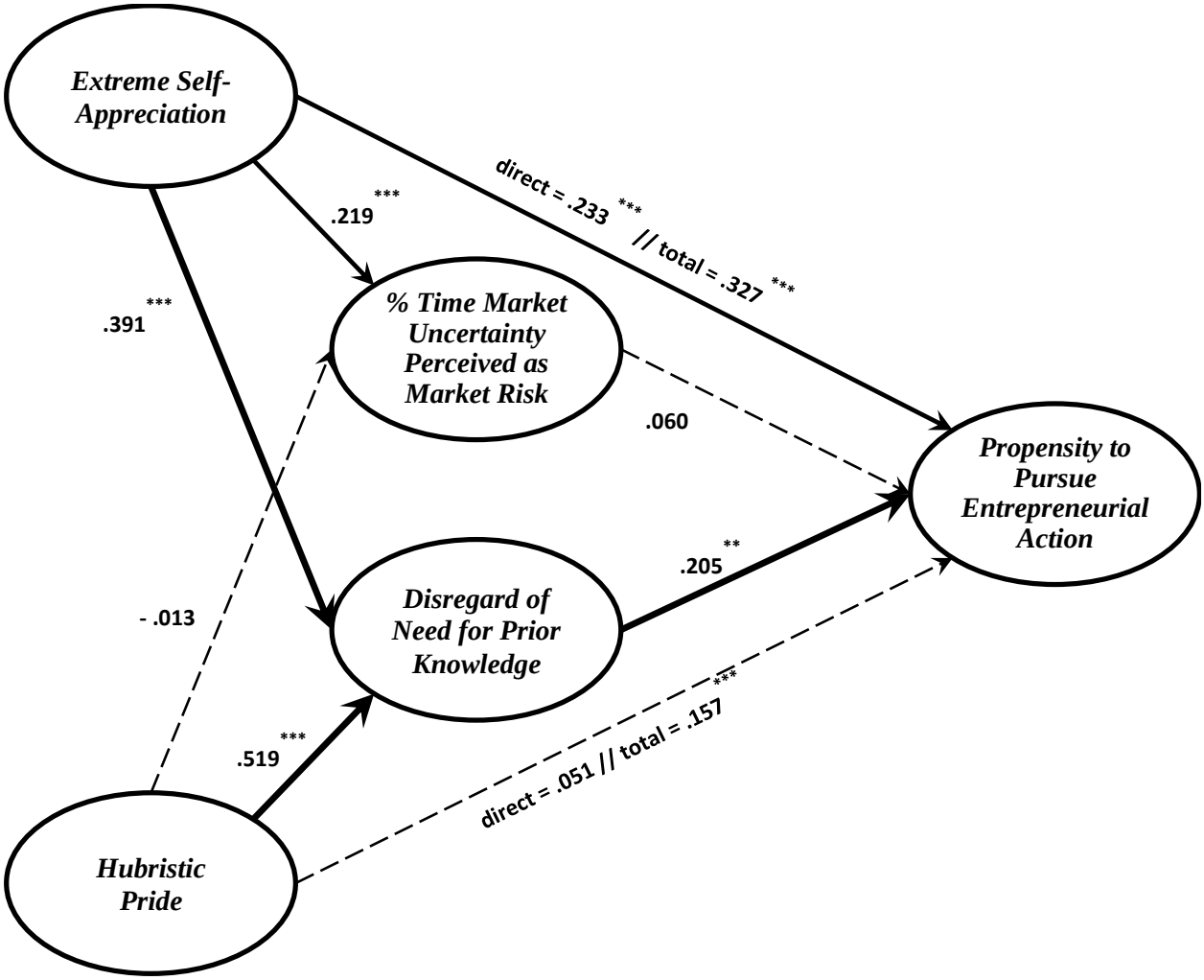
operationalizations of *Favorable Perceptions of Risk / Uncertainty* that include all the respondents. The other operationalizations (by definition) exclude any respondents who consistently perceived uncertainty as uncertainty and/or consistently perceived risk as uncertainty. Second, we chose to focus on market uncertainty because, from the standpoint of Knightian uncertainty, we view market uncertainty as 'more Knightian' than technical uncertainty in the sense that market uncertainty is the direct result of human action (which is the direct result of free will, and as such, is extremely non-deterministic) whereas technical uncertainty is ultimately bounded by the laws of physics, which means that all technical uncertainty remains, at its core, deterministic (and thus 'less Knightian' than market uncertainty).



n = 358; standardized coefficients are reported: * = p < .05; ** = p < .01; *** = p < .001
thin dashed line = insignificant direct effect (a or b) (p > .05)
solid line = significant direct effect (a or b) (p < .05)
thick solid line = significant indirect effect (ab) (p < .05)
insignificant p-values close to .05 are reported

Figure 14– Model 4 (Perceived Market Risk under Conditions of Market Uncertainty)

Figure 15 shows Model 2A, which represents the first *post hoc* analysis associated with adding *Disregard of the Need for Prior Knowledge* as a second mediator to Model 2 (Figure 13). As can be seen in Figure 15, *Disregard of the Need for Prior Knowledge* does indeed fully mediate the relationship between *Hubristic Pride* and *Propensity to Pursue Entrepreneurial*



n = 461; standardized coefficients are reported: * = p < .05; ** = p < .01; *** = p < .001
thin dashed line = insignificant direct effect (a or b) (p > .05)
solid line = significant direct effect (a or b) (p < .05)
thick solid line = significant indirect effect (ab) (p < .05)
insignificant p-values close to .05 are reported

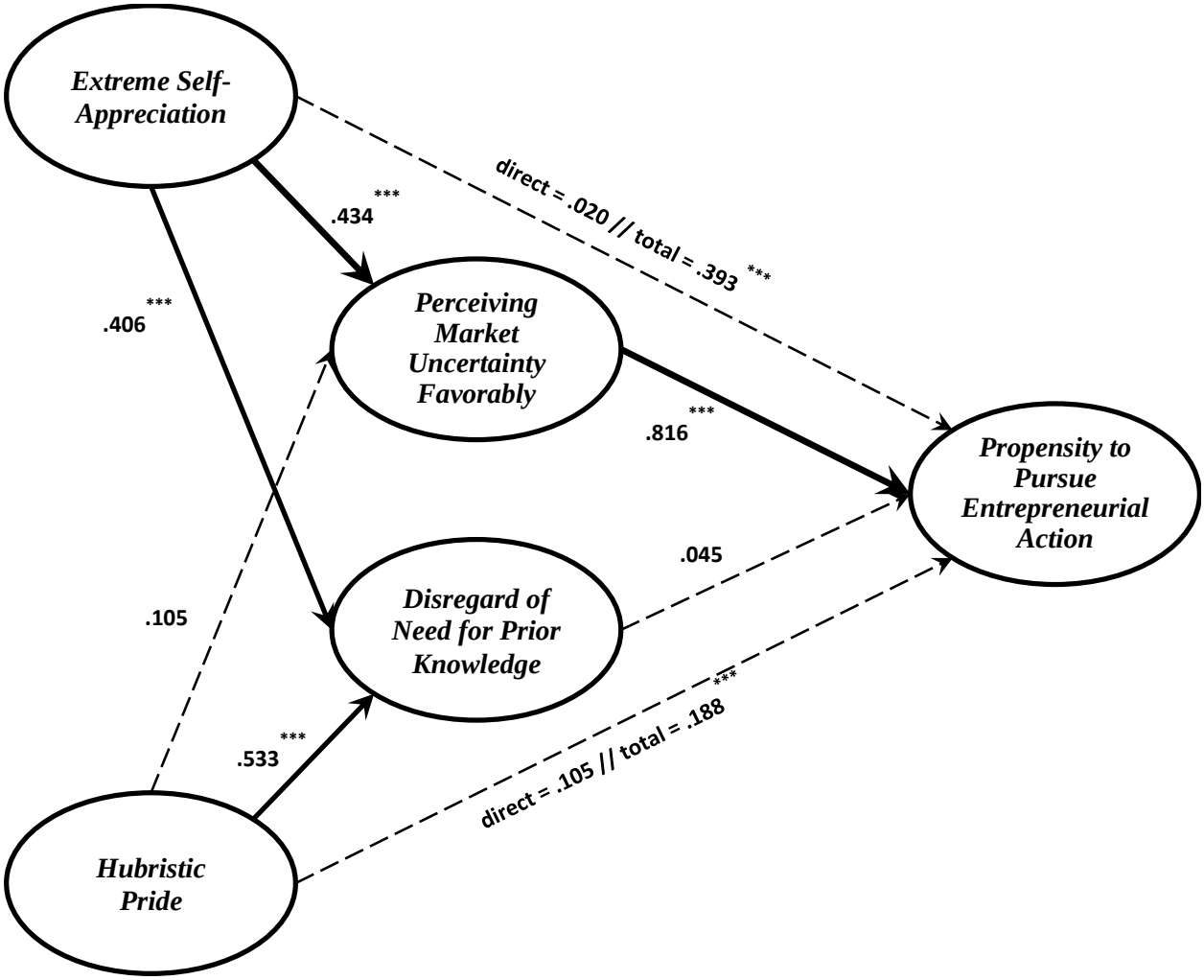
Figure 15 – Model 2A (Testing Parallel Mediation: Tendency to Perceive Market Uncertainty as Market Risk)

Action and partially mediates the relationship between *Extreme Self-Appreciation* and *Propensity to Pursue Entrepreneurial Action*. However 71% (= .233/.327) of the total effect of the *Extreme Self-Appreciation* relationship remains unexplained by either *Percent Time Market Uncertainty Perceived as Market Risk* or *Disregard of the Need for Prior Knowledge*.

To add clarity to the still-unexplained portion of the relationship between *Extreme Self-Appreciation* and *Propensity to Pursue Entrepreneurial Action*, we then turned to one of our other operationalizations of *Favorable Perceptions of Risk / Uncertainty*, to determine if *Percent Time Market Uncertainty Perceived as Market Risk* might simply be an incomplete operationalization of *Favorable Perceptions of Risk / Uncertainty*. The resulting analysis, which represents an extension of Model 4 (Figure 14), is shown in Figure 16, as Model 4A. Indeed, the results of Model 4A show that *Perceiving Market Uncertainty Favorably* does indeed mediate the relationship between *Extreme Self-Appreciation* and *Propensity to Pursue Entrepreneurial Action*. However, the previously-significant mediation of *Disregard of the Need for Prior Knowledge* between *Hubristic Pride* and *Propensity to Pursue Entrepreneurial Action* (i.e. the indirect effect) suddenly showed up as insignificant ($\beta = .110$, $p = .053$), even though the total effect remained highly-significant ($\beta = .188$, $p = .001$) and the direct effect was not significant ($\beta = .078$, $p = .125$). This led us to consider the sequential-mediation relationships shown in Figure 12, wherein *Disregard of the Need for Prior Knowledge* mediates the relationship between *Extreme Self-Focus* and *Favorable Perceptions of Risk / Uncertainty* and, in addition, *Favorable Perceptions of Risk / Uncertainty* mediates the relationship between *Disregard of the Need for Prior Knowledge* and *Propensity to Pursue Entrepreneurial Action*.

As such, we then tested Model 4B (Figure 17) as an extension of Model 4A (Figure 16), incorporating the additional causal link between *Disregard of the Need for Prior Knowledge*

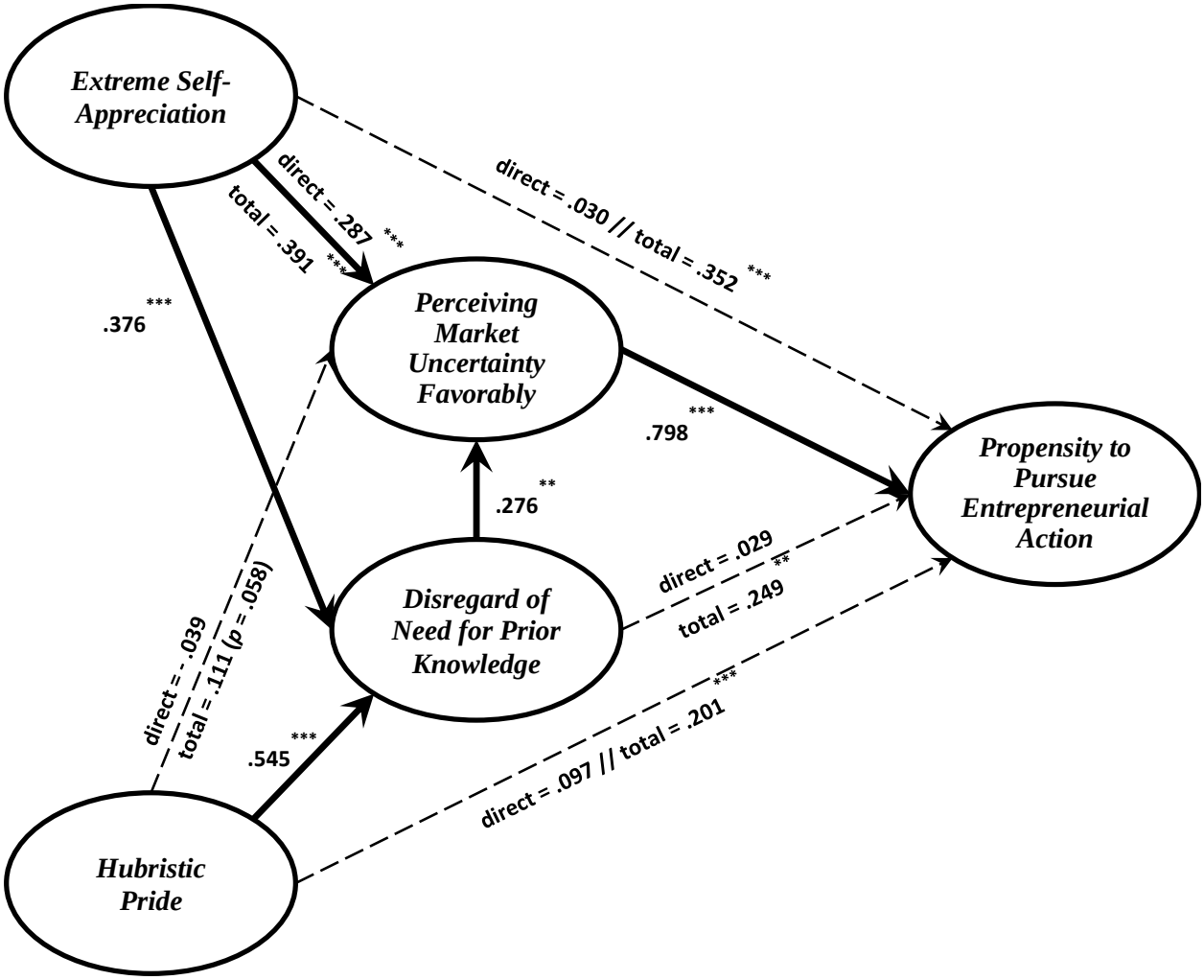
and *Perceiving Market Uncertainty Favorably* (see Figure 12). With Model 4B analyzed, we finally observed a coherent model that made theoretical and practical sense and fully explained the relationships between *Extreme Self-Focus* (operationalized as *Extreme Self-Appreciation* and *Hubristic Pride*) and *Propensity to Pursue Entrepreneurial Action*. In particular,



n = 348; standardized coefficients are reported: * = p < .05; ** = p < .01; *** = p < .001
thin dashed line = insignificant direct effect (a or b) (p > .05)
solid line = significant direct effect (a or b) (p < .05)
thick solid line = significant indirect effect (ab) (p < .05)
insignificant p-values close to .05 are reported

Figure 16 – Model 4A (Testing Parallel Mediation: Perceived Market Risk under Conditions of Market Uncertainty with Sequential Mediation)

Model 4B showed that the relationship between *Hubristic Pride* and *Propensity to Pursue Entrepreneurial Action* was fully mediated, with that mediation occurring across two sequential mediators, *Disregard of the Need for Prior Knowledge* and *Perceiving Market Uncertainty Favorably*. Model 4B also showed the relationship between *Extreme Self-Appreciation* and



n = 348; standardized coefficients are reported: * = p < .05; ** = p < .01; *** = p < .001
thin dashed line = insignificant direct effect (a or b) (p > .05)
solid line = significant direct effect (a or b) (p < .05)
thick solid line = significant indirect effect (ab) (p < .05)
insignificant p-values close to .05 are reported

Figure 17 – Model 4B (Testing Sequential Mediation: Perceived Market Risk under Conditions of Market Uncertainty with Sequential Mediation)

Propensity to Pursue Entrepreneurial Action as being fully mediated; however, that relationship was partially mediated by *Propensity to Pursue Entrepreneurial Action* (65% = .297 * .798 / .352) and partially mediated by the two sequential mediators of *Disregard of the Need for Prior Knowledge* and *Propensity to Pursue Entrepreneurial Action* (24% = .376 * .276 * .798 / .352).

Results of Considering Disregard of the Need for Prior Knowledge as a Mediator rather than Moderator

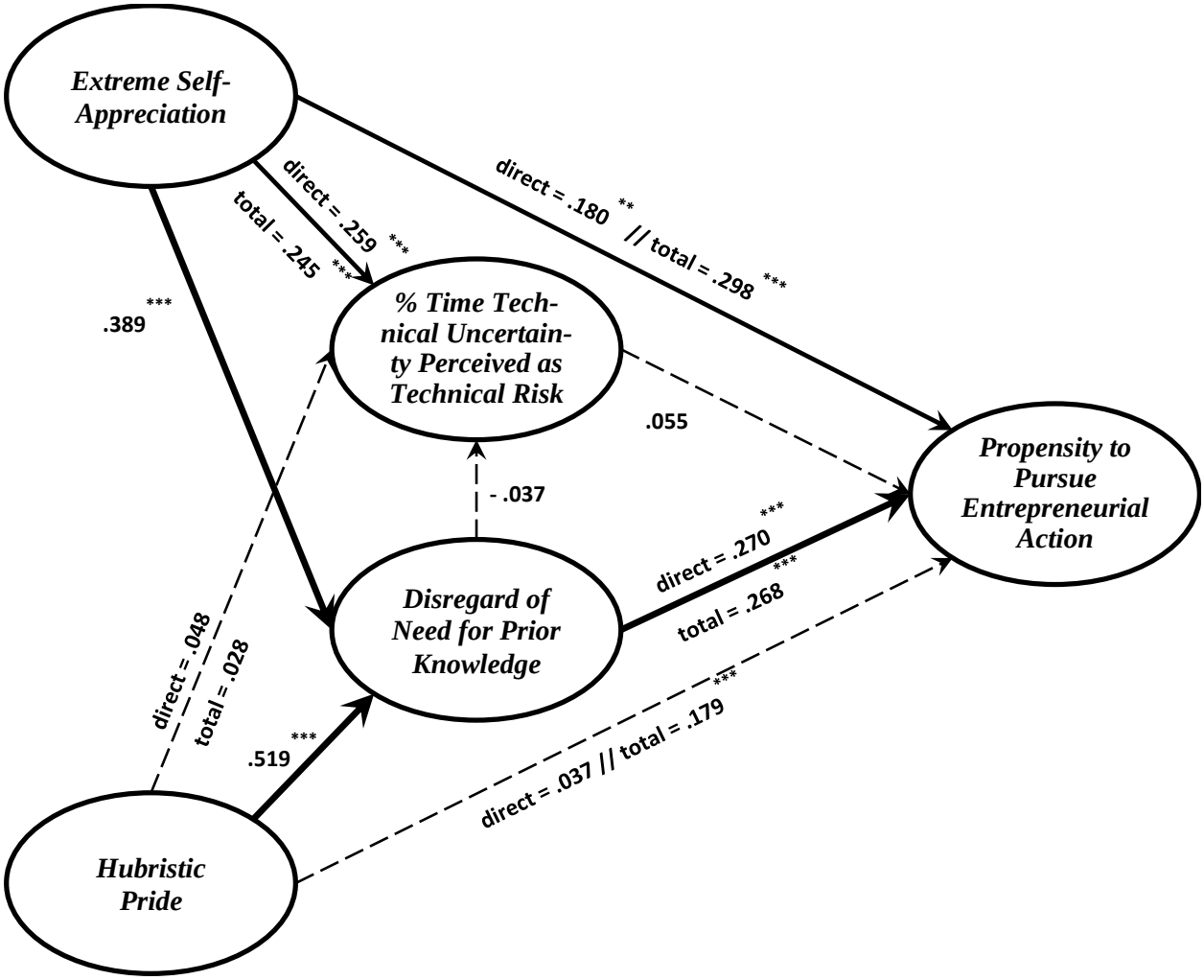
We now turn to a repeat of our mediation analyses from Chapter V, this time considering the sequential mediators: *Disregard of the Need for Prior Knowledge* followed by *Favorable Perceptions of Risk / Uncertainty* (operationalized six different ways) – the net result being six new models (Models 1B to 6B) that exactly parallel Models 1 to 6 (Figure 5 to Figure 10) except that the new models incorporate the aforementioned sequential mediators in lieu of the single mediator *Favorable Perceptions of Risk / Uncertainty*. As was done in Chapter V, we break the analysis down into the following three sections:

- The Tendency to Perceive Uncertainty as Risk (Models 1B and 2B)
- Favorable Perceptions of Uncertainty (as Risk) under Conditions of Knightian Uncertainty (Models 3B and 4B)
- Favorable Perceptions of Risk under Conditions of Probabilistic Risk (Models 5B and 6B)

The Tendency to Perceive Uncertainty as Risk (Models 1B and 2B)

Model 1B, shown in Figure 18, depicts the main and mediating effects related to the misperception of technical uncertainty as risk under conditions of technical uncertainty (in the

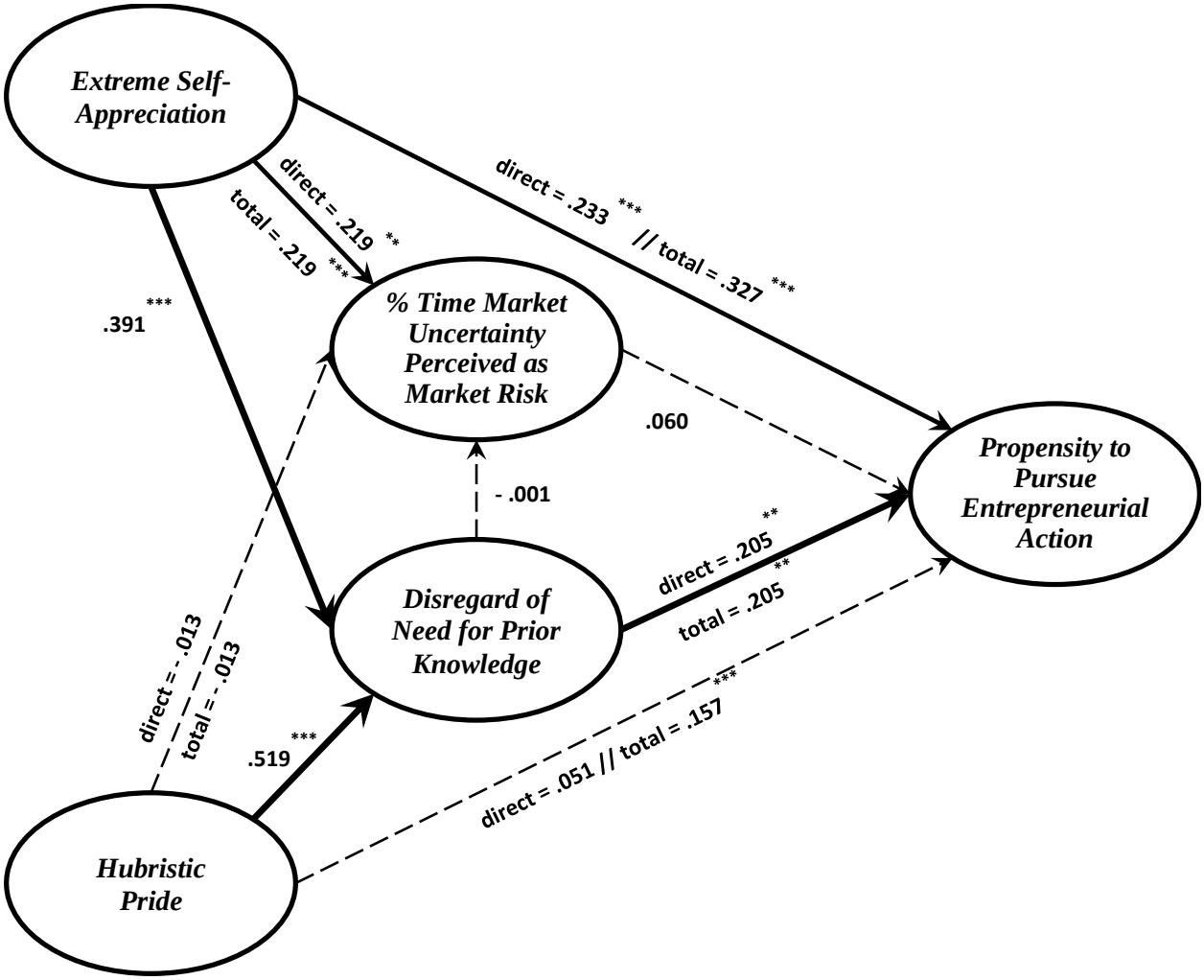
Knightian sense) (SRMR = .068; RMSEA = .035; CFI = .945; TLI = .939). Similarly, Model 2B (Figure 19) demonstrates the main and mediating effects related to the misperception of market uncertainty as risk under conditions of market uncertainty (again, in the Knightian sense) (SRMR = .068; RMSEA = .037; CFI = .940; TLI = .934).



n = 461; standardized coefficients are reported: * = p < .05; ** = p < .01; *** = p < .001
thin dashed line = insignificant direct effect (a or b) (p > .05)
solid line = significant direct effect (a or b) (p < .05)
thick solid line = significant indirect effect (ab) (p < .05)
insignificant p-values close to .05 are reported

Figure 18 – Model 1B (Tendency to Perceive Technical Uncertainty as Technical Risk with Sequential Mediation)

All relationships associated with Model 1B have the exact same significance, sign, and relative magnitude as those of Model 2B. As such, we conclude that, with respect to the operationalization of *Percent Time Uncertainty Perceived as Risk*, the effects are the same regardless of the 'field' of uncertainty (i.e. whether technical or market). With that being the



n = 461; standardized coefficients are reported: * = p < .05; ** = p < .01; *** = p < .001
thin dashed line = insignificant direct effect (a or b) (p > .05)
solid line = significant direct effect (a or b) (p < .05)
thick solid line = significant indirect effect (ab) (p < .05)
insignificant p-values close to .05 are reported

Figure 19 – Model 2B (Tendency to Perceive Market Uncertainty as Market Risk with Sequential Mediation)

case, we will use the generic terminology for the hypothesized mediator, *Percent Time Uncertainty Perceived as Risk*, and we will refrain from constantly repeating the fact that the observed effects hold for both technical uncertainty and market uncertainty.

The main effect of *Extreme Self-Appreciation* on *Percent Time Uncertainty Perceived as Risk* was both positive and significant ($\beta = .259$, $p < .001$; $\beta = .219$, $p = .005$), as was the main effect of *Extreme Self-Appreciation* on *Disregard of the Need for Prior Knowledge* ($\beta = .389$, $p < .001$; $\beta = .391$, $p < .001$) and the main effect of *Hubristic Pride* on *Disregard of the Need for Prior Knowledge* ($\beta = .519$, $p < .001$; $\beta = .519$, $p < .001$); however, the main effect of *Hubristic Pride* on *Percent Time Uncertainty Perceived as Risk* was not significant, neither the direct effects ($\beta = .048$, $p = .512$; $\beta = -.013$, $p = .869$) nor the total effects ($\beta = .028$, $p = .604$; $\beta = -.013$, $p = .819$), nor the indirect effects ($\beta = -.019$, $p = .668$; $\beta = -.001$, $p = .987$).

Furthermore, the main effect of *Percent Time Uncertainty Perceived as Risk* on *Propensity to Pursue Entrepreneurial Action* was not significant ($\beta = .055$, $p = .274$; $\beta = .060$, $p = .195$). By contrast, the main effect of *Disregard of the Need for Prior Knowledge* on *Propensity to Pursue Entrepreneurial Action* was significant and direct ($\beta = .270$, $p = .001$; $\beta = .205$, $p = .006$). This means *Percent Time Uncertainty Perceived as Risk* did not mediate the relationship between *Disregard of the Need for Prior Knowledge* and *Propensity to Pursue Entrepreneurial Action* (see also the insignificant indirect effects of *Disregard of the Need for Prior Knowledge* on *Propensity to Pursue Entrepreneurial Action*, $\beta = -.002$, $p = .696$; $\beta = .000$, $p = .987$). Nor did *Percent Time Uncertainty Perceived as Risk* mediate the relationships between either operationalization of *Extreme Self-Focus* (*Extreme Self-Appreciation* and

Hubristic Pride) and *Propensity to Pursue Entrepreneurial Action* (due to the aforementioned insignificant main effects).

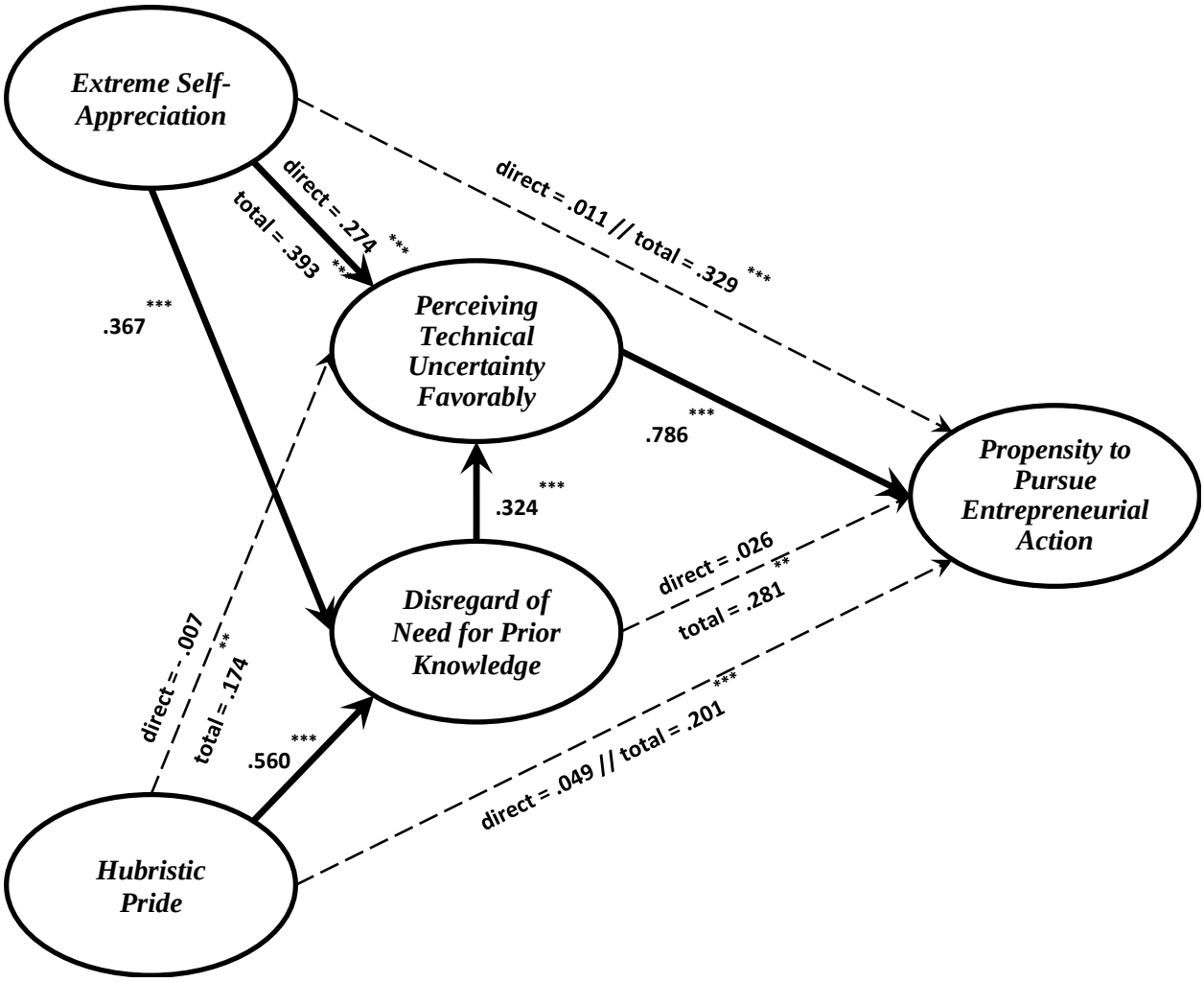
As such, we observe that the sole mediator between both operationalizations of *Extreme Self-Focus* (*Extreme Self-Appreciation* and *Hubristic Pride*) and *Propensity to Pursue Entrepreneurial Action* is *Disregard of the Need for Prior Knowledge*, with *Percent Time Uncertainty Perceived as Risk* failing to mediate anything (due to its failure to have any significant direct effect on *Propensity to Pursue Entrepreneurial Action*).

With respect to *Disregard of the Need for Prior Knowledge* as the sole mediator, we observe from Models 1B and 2B that it fully mediates the effect of *Hubristic Pride* on *Propensity to Pursue Entrepreneurial Action* but only partially mediates (35% = .389 * .270 / .298) the relationship between *Extreme Self-Appreciation* and *Propensity to Pursue Entrepreneurial Action* with 60% (= .180 / .298) remaining as direct and still unexplained. As we observed with Models 1 and 2 during our standard analysis, this suggests that perhaps our other operationalizations of *Favorable Perceptions of Risk / Uncertainty* may be more complete in their ability to mediate the observed relationship between *Extreme Self-Appreciation* and *Propensity to Pursue Entrepreneurial Action*. Our analyses of Models 3B and 4B below confirm this supposition.

Favorable Perceptions of Uncertainty (as Risk) under Conditions of Knightian Uncertainty (Models 3B and 4B)

Model 3B, shown in Figure 20, depicts the main and mediating effects related to *Perceiving Technical Uncertainty Favorably* specifically under conditions of technical uncertainty (in the Knightian sense) (SRMR = .076; RMSEA = .044; CFI = .917; TLI = .911). Similarly, Model 4B (Figure 21) demonstrates the main and mediating effects related to *Perceiving Market*

Uncertainty Favorably under conditions of market uncertainty (again, in the Knightian sense) (SRMR = .075; RMSEA = .043; CFI = .921; TLI = .914).

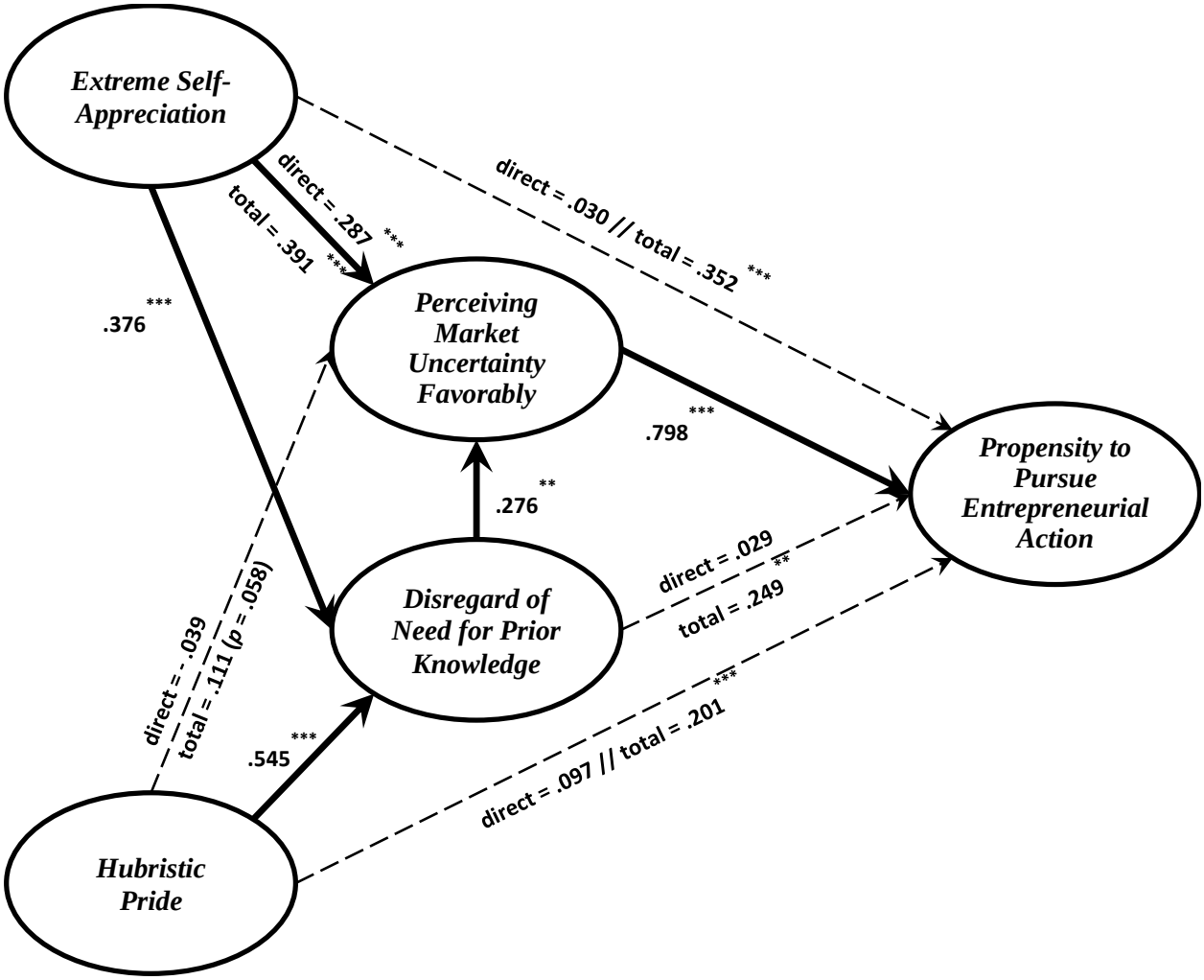


n = 321; standardized coefficients are reported: * = p < .05; ** = p < .01; *** = p < .001
thin dashed line = insignificant direct effect (a or b) (p > .05)
solid line = significant direct effect (a or b) (p < .05)
thick solid line = significant indirect effect (ab) (p < .05)
insignificant p-values close to .05 are reported

Figure 20 – Model 3B (Perceived Technical Risk under Conditions of Technical Uncertainty with Sequential Mediation)

As with Models 1B and 2B (albeit with one small exception, which will be explained below) all relationships associated with Model 3B have the exact same significance, sign, and

relative magnitude as those of Model 4B. As such, we conclude that, with respect to the operationalization of *Perceiving Uncertainty Favorably*, the effects are the same regardless of the 'field' of uncertainty (i.e. whether technical or market). With that being the case, we will use the generic terminology for the hypothesized mediator, *Perceiving Uncertainty Favorably*,



n = 348; standardized coefficients are reported: * = p < .05; ** = p < .01; *** = p < .001
thin dashed line = insignificant direct effect (a or b) (p > .05)
solid line = significant direct effect (a or b) (p < .05)
thick solid line = significant indirect effect (ab) (p < .05)
insignificant p-values close to .05 are reported

Figure 21– Model 4B (Perceived Market Risk under Conditions of Market Uncertainty with Sequential Mediation)

and we will refrain from constantly repeating the fact that the observed effects hold for both technical uncertainty and market uncertainty. The one small difference between the two models deals with the nature of the total effect of *Hubristic Pride* on *Perceiving Uncertainty Favorably*. The total effect is estimated to be 0.174 (p = .003) in Model 3B and 0.111 (p = .058) in Model 4B (with the indirect effects being similar, β = .152, p = .014, β = .104, p = .064). So, although the total and indirect effects in Model 4B are technically 'not significant' (at α = .05), when we look at the totality of the model and the fact that the total effect from *Hubristic Pride* to *Propensity to Pursue Entrepreneurial Action* is significant (β = .544, p < .001) and the total effect from *Disregard of the Need for Prior Knowledge* to *Propensity to Pursue Entrepreneurial Action* is significant (β = .249, p = .004) and the fact that the only complete path from *Hubristic Pride* to *Propensity to Pursue Entrepreneurial Action* wherein all direct paths are significant goes from *Hubristic Pride* to *Disregard of the Need for Prior Knowledge* to *Perceiving Uncertainty Favorably* to *Propensity to Pursue Entrepreneurial Action*, then we presumptively conclude that the total and indirect effects from *Hubristic Pride* to *Perceiving Market Uncertainty Favorably* are significant, even though the reported p-values are slightly larger than the customary cutoff at α = .05.

With Models 3B and 4B we observed that, in a manner very similar to Models 1B and 2B, the main effect of *Extreme Self-Appreciation* on *Perceiving Uncertainty Favorably* was both positive and significant (β = .274, p < .001; β = .287, p < .001), as was the main effect of *Extreme Self-Appreciation* on *Disregard of the Need for Prior Knowledge* (β = .367, p < .001; β = .376, p < .001) and also the main effect of *Hubristic Pride* on *Disregard of the Need for Prior Knowledge* (β = .560, p < .001; β = .545, p < .001); but the main effect of *Hubristic Pride*

on *Perceiving Uncertainty Favorably* was not significant as a direct effect (β = -.007, *p* = .928; β = -.039, *p* = .613) but the total effects were significant (or presumed significant as discussed above) (β = .174, *p* = .003; β = .111, *p* = .058) and the indirect effects were positive and significant (β = .182, *p* = .003; β = .104, *p* = .005).

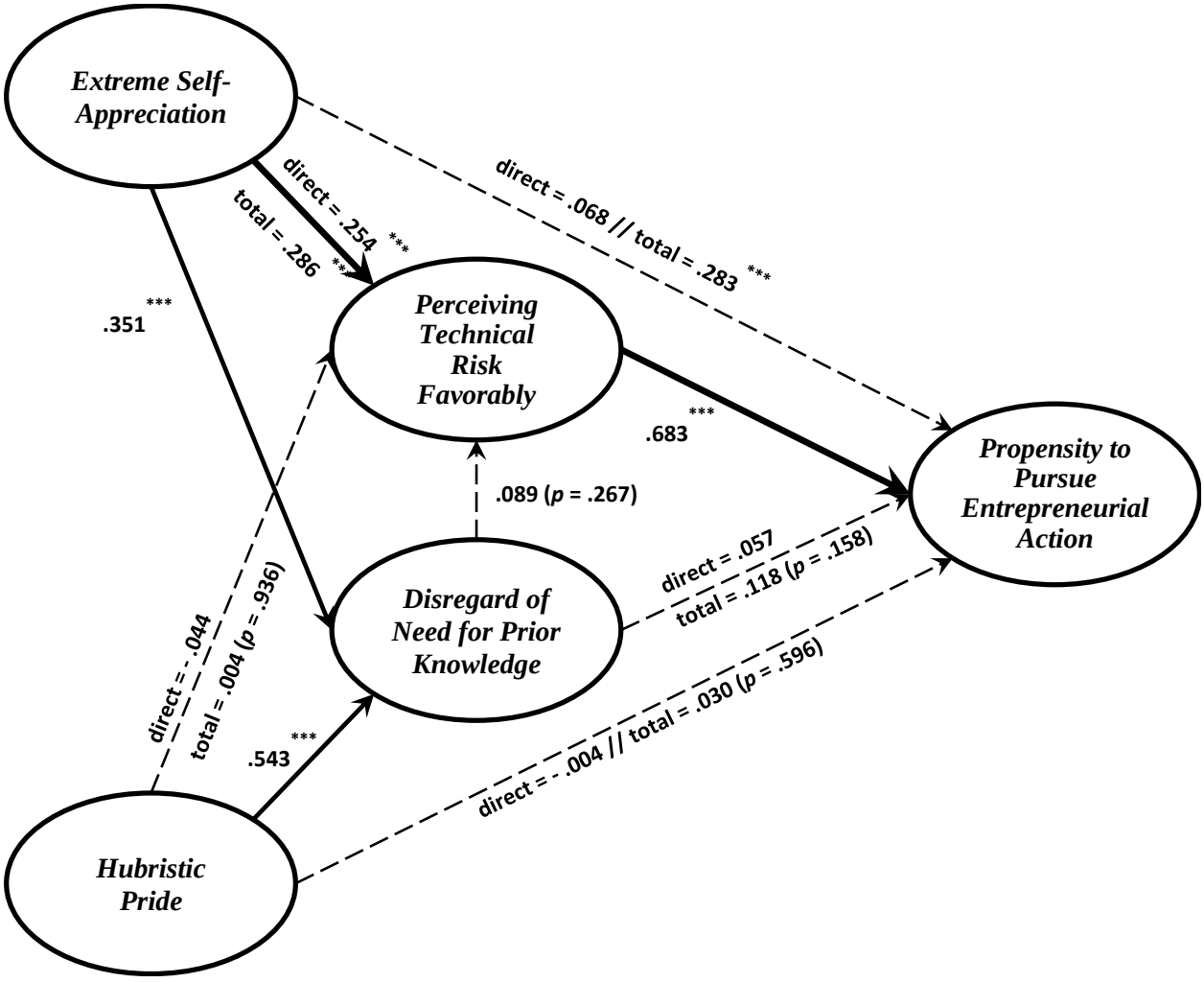
In distinct contrast to Models 1B and 2B, the main effect of *Perceiving Uncertainty Favorably* on *Propensity to Pursue Entrepreneurial Action* was significant (β = .786, *p* < .001; β = .798, *p* < .001) while the main effect of *Disregard of the Need for Prior Knowledge* on *Propensity to Pursue Entrepreneurial Action* was not significant (β = .026, *p* = .709; β = .029, *p* = .615). Also in contrast to Models 1B and 2B, when *Favorable Perceptions of Risk / Uncertainty* was operationalized as *Perceiving Uncertainty Favorably*, all significant paths go through *Perceiving Uncertainty Favorably*. In other words, *Perceiving Uncertainty Favorably* acts as a mediator in ALL instances (Models 3B and 4B) wherein *Percent Time Uncertainty Perceived as Risk* did not act as a mediator in ANY instance (Models 1B and 2B). As stated previously, it bears noting that Models 3B and 4B exclude any respondents who consistently perceived uncertainty as uncertainty and/or risk as uncertainty.

With respect to the effect of *Extreme Self-Appreciation* on *Propensity to Pursue Entrepreneurial Action*, we observe two paths, both of which go through *Perceiving Uncertainty Favorably*. As such, we can say *Perceiving Uncertainty Favorably* fully mediates the effect of *Extreme Self-Appreciation* on *Propensity to Pursue Entrepreneurial Action*. However, a portion of the effect of *Extreme Self-Appreciation* on *Perceiving Uncertainty Favorably* is mediated by *Disregard of the Need for Prior Knowledge*. Similarly, *Disregard of the Need for Prior Knowledge* fully mediates the effect of *Hubristic Pride* on *Perceiving*

Uncertainty Favorably and *Perceiving Uncertainty Favorably* fully mediates the effect of *Disregard of the Need for Prior Knowledge* on *Propensity to Pursue Entrepreneurial Action*.

Favorable Perceptions of Risk under Conditions of Probabilistic Risk (Models 5B and 6B)

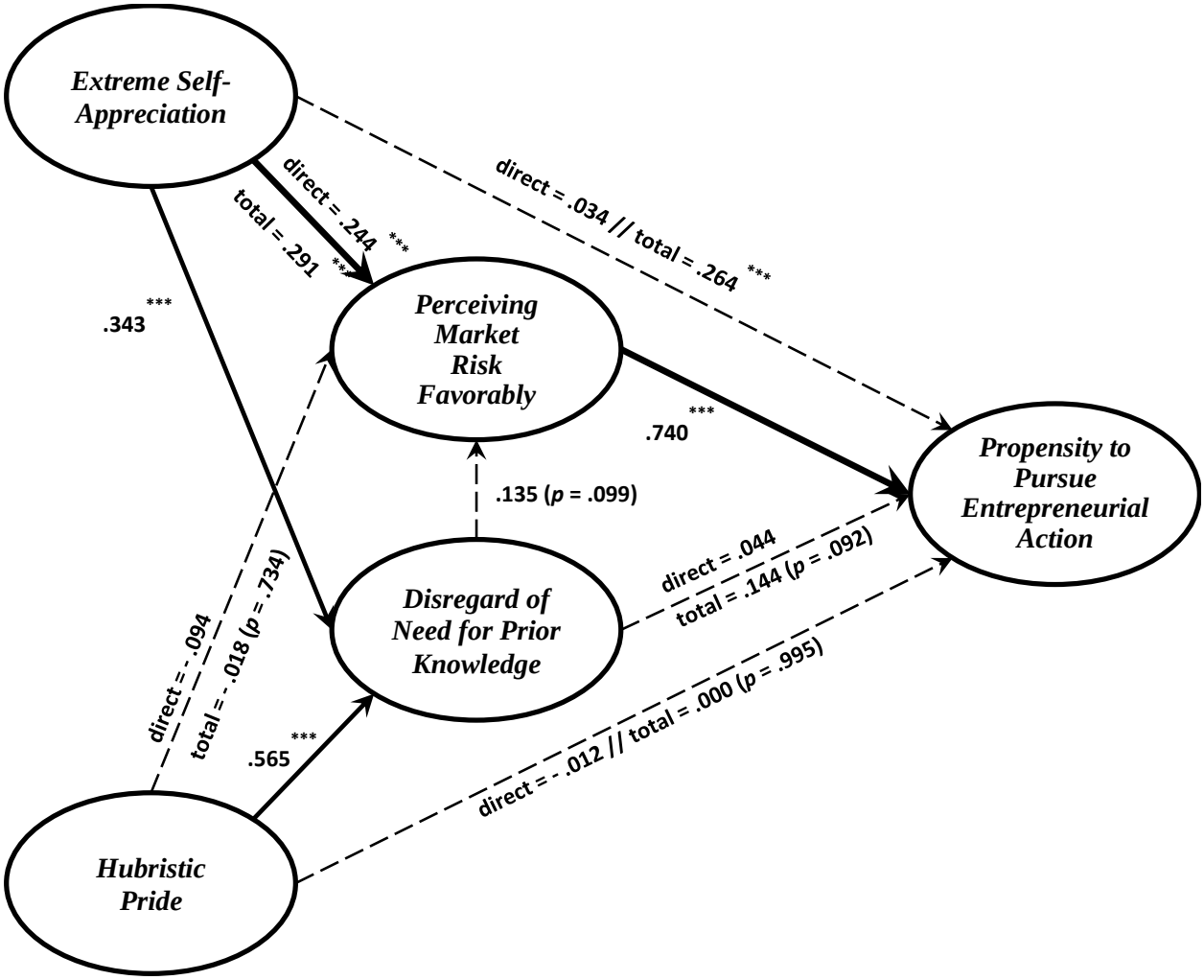
Model 5B, shown in Figure 22, depicts the main and mediating effects related to *Perceiving*



n = 399; standardized coefficients are reported: * = p < .05; ** = p < .01; *** = p < .001
thin dashed line = insignificant direct effect (a or b) (p > .05)
solid line = significant direct effect (a or b) (p < .05)
thick solid line = significant indirect effect (ab) (p < .05)
insignificant p-values close to .05 are reported

Figure 22 – Model 5B (Perceived Technical Risk under Conditions of Technical Risk with Sequential Mediation)

Technical Risk Favorably specifically under conditions of technical and market risk (i.e. probabilistic risk in the Knightian sense) (SRMR = .077; RMSEA = .042; CFI = .920; TLI = .914). Similarly, Model 6B (Figure 23) demonstrates the main and mediating effects related to *Perceiving Market Risk Favorably* under conditions of technical and market risk (SRMR =



n = 413; standardized coefficients are reported: * = p < .05; ** = p < .01; *** = p < .001
thin dashed line = insignificant direct effect (a or b) (p > .05)
solid line = significant direct effect (a or b) (p < .05)
thick solid line = significant indirect effect (ab) (p < .05)
insignificant p-values close to .05 are reported

Figure 23– Model 6B (Perceived Market Risk under Conditions of Market Risk with Sequential Mediation)

.076; RMSEA = .041; CFI = .922; TLI = .016).

All relationships associated with Model 5B have the exact same significance, sign, and relative magnitude as those of Model 6B. As such, we conclude that, with respect to the operationalization of *Perceiving Risk Favorably*, the effects are the same regardless of the 'field' of uncertainty (i.e. whether technical or market). With that being the case, we will use the generic terminology for the hypothesized mediator, *Perceiving Risk Favorably*, and we will refrain from constantly repeating the fact that the observed effects hold for both technical uncertainty and market uncertainty.

Under conditions of technical and market risk, we observe that the main effects of *Extreme Self-Appreciation* on *Perceiving Risk Favorably* were both positive and significant ($\beta = .254$, $p < .001$; $\beta = .244$, $p < .001$), as was the main effect of *Extreme Self-Appreciation* on *Disregard of the Need for Prior Knowledge* ($\beta = .351$, $p < .001$; $\beta = .343$, $p < .001$) and also the main effect of *Hubristic Pride* on *Disregard of the Need for Prior Knowledge* ($\beta = .534$, $p < .001$; $\beta = .565$, $p < .001$); but the main effect of *Hubristic Pride* on *Perceiving Risk Favorably* was not significant, neither the direct effect ($\beta = -.044$, $p = .534$; $\beta = -.094$, $p = .193$) nor the total effect ($\beta = .004$, $p = .936$; $\beta = -.018$, $p = .734$) nor the indirect effect ($\beta = .048$, $p = .268$; $\beta = .076$, $p = .103$). In addition, we observe that the main effect of *Perceiving Risk Favorably* on *Propensity to Pursue Entrepreneurial Action* was positive and significant ($\beta = .683$, $p < .001$; $\beta = .740$, $p < .001$) while the main effect of *Disregard of the Need for Prior Knowledge* on *Propensity to Pursue Entrepreneurial Action* was not significant as a direct effect ($\beta = .057$, $p = .360$; $\beta = .044$, $p = .458$) or total effect ($\beta = .118$, $p = .158$; ($\beta = .144$, $p = .092$) or indirect effect ($\beta = .061$, $p = .269$; $\beta = .100$, $p = .101$).

The most notable difference we observe with respect to Models 5B and 6B (i.e. conditions of technical and market risk) relative to all the other models (i.e. conditions of Knightian uncertainty) lies in the fact that the total effect from *Hubristic Pride* to *Propensity to Pursue Entrepreneurial Action* completely goes away($\beta = .030$, $p = .596$; $\beta = .000$, $p = .995$). We still observe *Hubristic Pride* having a positive and significant effect on *Disregard of the Need for Prior Knowledge* ($\beta = .543$, $p < .001$; $\beta = .565$, $p < .001$), but that effect becomes essentially meaningless because even the link between *Disregard of the Need for Prior Knowledge* and *Propensity to Pursue Entrepreneurial Action* (and also the link between *Disregard of the Need for Prior Knowledge* and *Favorable Perceptions of Risk / Uncertainty*) has disappeared ($\beta = .057$, $p = .360$; $\beta = .044$, $p = .458$). In other words, whenever the nature of the unknowns are merely probabilistic rather than uncertain (in the Knightian sense), we observe the following:

- *Hubristic Pride* no longer leads to an increased *Propensity to Pursue Entrepreneurial Action*.
- *Hubristic Pride* still leads to an increased *Disregard of the Need for Prior Knowledge*.
- *Disregard of the Need for Prior Knowledge* no longer leads to an increase in *Favorable Perceptions of Risk / Uncertainty*.
- *Disregard of the Need for Prior Knowledge* no longer leads to an increased *Propensity to Pursue Entrepreneurial Action*.

With respect to the effect of *Extreme Self-Appreciation* on *Propensity to Pursue Entrepreneurial Action*, under conditions of technical and market risk, we observe that *Perceiving Risk Favorably* partially mediates the relationship (69% = .286 * .683 / .283; 82% =

.291 * .740 / .264), with *Disregard of the Need for Prior Knowledge* playing at most a subdued role in the entrepreneurial decision-making process.

CHAPTER VII

DISCUSSION

Should we Discuss Models 1 to 6 or Models 1B to 6B?

We presented and fully analyzed Models 1 to 6 (Figure 5 to Figure 10) because they operationalized the empirical model originally hypothesized (Figure 3). However, we then presented and analyzed Models 1B to 6B (Figure 18 to Figure 23) because they represented a better incorporation of *Disregard of the Need for Prior Knowledge* (as a mediator rather than moderator) and because our *post hoc* analysis of Models 1 to 6 strongly suggested the existence of a second mediator. In addition, our *post hoc* analysis investigating *Disregard of the Need for Prior Knowledge* as a mediator led us to further respecify models, embodying *Disregard of the Need for Prior Knowledge* as the first of two sequential mediators (the second being our originally-hypothesized mediator, *Favorable Perceptions of Risk / Uncertainty*) (see Figure 12).

The resulting SEM models (Models 1B to 6B) yielded consistent results that are theoretically and practically meaningful. In addition, none of our analyses based on Models 1B to 6B contradicted the results of our analyses of Models 1 to 6; rather, the revised models addressed important unanswered questions or filled in gaps that were left by the original models. As such, we believe the revised models are better specified and represent a better

theoretical depiction of the true process by which extremely self-focused individuals choose to pursue entrepreneurial endeavors in the midst of Knightian uncertainty. As such, we will focus our discussion primarily on the results observed from the revised models (1B to 6B).

Differences (or Lack Thereof) between Conditions of Technical Uncertainty (Models 1B and 3B) versus Market Uncertainty (Models 2B and 4B) and between Technical Risk (Model 5B) versus Market Risk (Model 6B)

The first notable observation we make with respect to Models 1B to 6B deals with the fact that, with one or two very minor exceptions, the sign, significance, and relative magnitude of every relationship under technical uncertainty matched every corresponding congruent relationship under market uncertainty. Similarly, the observed relationships under conditions of technical risk were practically the same as those for market risk. As such, we conclude that either individuals do not significantly or systematically distinguish between technical versus market risk / uncertainty when pursuing entrepreneurial endeavors, or that our conjoint experiment confused respondents such that they essentially confounded the two. The latter is possible due to the nature of our 'business launch commitment' question (which instructed respondents to assume the product was already fully developed, i.e. that the technical risk and uncertainty was essentially 'zero'), which we discussed at length in Chapter IV. Future research could disentangle the nuances related to this conundrum by completely separating hypothetical scenarios and commitment questions related to technical risk and uncertainty from those incorporating market risk and uncertainty.

Entrepreneurial Pursuits under Conditions of Knightian Uncertainty (Models 3B and 4B)

When we look at Models 3B and 4B, we observe that extremely self-focused individuals (whether high in self-appreciation or hubristic pride) pursue entrepreneurial endeavors more

readily than those low in extreme self-focus. We also observe that, for both types of self-focused individuals, all significant paths to entrepreneurial action involve perceiving uncertainty more favorably than individuals who are low in self-focus (i.e. viewing their own likelihood of success more highly than others). Unfortunately, although our results clearly show an increased willingness to pursue entrepreneurial endeavors amongst extremely self-focused individuals, they tell us nothing about whether that increase is due to those individuals possessing greater actual advantages (e.g. skills, abilities, insight) or due to them possessing self-perceived (but not actual) advantages or merely due to some other rationale or motivation. Future researchers may wish to explore those differences by explicitly asking respondents about the rationale behind their willingness to commit resources to each hypothetical entrepreneurial endeavor and/or testing them for specific relevant skills or other attributes that might be perceived (by them) to be advantageous to their success.

Entrepreneurial Pursuits under Conditions of Probabilistic Risk (Models 5B and 6B)

Although the overall aim of this study was to investigate the mechanisms relating prior knowledge to entrepreneurial action *in the midst of Knightian uncertainty*, we also examined those mechanisms and relationships within the context of *probabilistic risk.* We included conditions of probabilistic risk in our overall analysis because, in order to clearly understand the (limited) influence of prior knowledge on entrepreneurial action under conditions of Knightian uncertainty, we must be able to make direct comparisons with conditions NOT involving Knightian uncertainty, i.e. probabilistic risk.

When we look at Models 5B and 6B (which represents conditions of probabilistic risk rather than Knightian uncertainty), we observe, quite starkly, that the increased propensity to

pursue entrepreneurial action completely disappears for hubristic individuals, but remains strong for those who are extremely self-appreciative. We also note that, for extremely self-appreciative individuals, under conditions of probabilistic risk, disregard for prior knowledge no longer plays a significant role in their tendency to pursue entrepreneurial action. In addition, it bears noting that, even under conditions of Knightian uncertainty, the influence of disregard for prior knowledge, for individuals high in self-appreciation, is muted, with only about 30% of the effect involving disregard for prior knowledge.

In any event, it is safe to say that, whenever Knightian uncertainty is absent, hubristic individuals do not pursue entrepreneurial endeavors any more frequently or fervently than the average individual, and second, even though they still possess a blatant disregard for prior knowledge, that disregard no longer translates into favorable perceptions of their ability to successfully pursue a business opportunity (see Figure 22 and Figure 23). In that regard, perhaps they simply recognize that their own lack of interest, enthusiasm, and passion for commonplace endeavors would limit their ability to see the project through to success. Or perhaps they do not want to waste their time subjectively evaluating the potential favorability of such commonplace pursuits.

Nonetheless, our results reveal that hubristic individuals are less enthralled by entrepreneurial endeavors whenever their prospective rivals view them as achievable or doable. This interpretation follows directly from the way each hypothetical scenario in the conjoint experiment was worded. Technical risk was described with the following prompt: "According to your hypothetical rival, because the product builds upon already-proven technologies, successful development of the product ***seems promising***." Market risk was described using a similar prompt: "According to your hypothetical rival, due to the product's similarities with

existing products, it seems *reasonable* to assume the target customers would embrace the new product." It appears that hubristic individuals are indifferent to entrepreneurial opportunities they believe are commonplace or lack genuine novelty or are so readily achievable as to immediately invite a flurry of competitors.

Turning back to the extremely self-appreciative crowd, under conditions of risk or uncertainty, they are more likely to pursue entrepreneurial endeavors than the average person and they do so because they are also more prone to have an elevated view of their own likelihood of success in those endeavors. As discussed previously, under conditions of uncertainty (but not risk), a portion of that elevated view of likelihood of success is the direct result of their increased tendency to disregard the need for or importance of prior knowledge relevant to the opportunity being pursued. However, under conditions of risk only, although they still possess an increased disregard for prior knowledge, their elevated view of potential success is no longer even partially driven by that disregard. Taken together, this suggests that, when things look murky and uncertain, the self-appreciative and self-congratulatory person sometimes, but not always, just relies upon 'gut feelings' to drive the decision-making process. However, under conditions of probabilistic risk, that partial reliance goes away and is replaced fully by a subjective (though inflated) assessment of personal likelihood of success.

Differences between Extreme Self-Appreciation and Hubristic Pride

Characteristic Differences

It bears noting that, whereas *Extreme Self-Appreciation* was included in each of our models alongside *Hubristic Pride*, when we assess the effects of 'hubristic pride' we are actually referring to those aspects of hubristic pride that are not jointly captured by the *Extreme Self-*

Appreciation measures (i.e. *Narcissism / Egotism, Authentic Pride, Optimism, Perceived Self-Efficacy*, and *Entrepreneurial Self-Efficacy*). Similarly, when we discuss *Extreme Self-Appreciation*, we are generally referring to those aspects of *Extreme Self-Appreciation* that are not captured by *Hubristic Pride*. As such, within most of the *Extreme Self-Appreciation* constructs and items, we see a general tendency toward focusing on one's personal accomplishments and how others view the individual and/or the individual's accomplishments.

By contrast, the *Hubristic Pride* construct (and the items that comprise it) focus almost exclusively upon the individual's view of himself or herself absent any sense of true or past accomplishments. In other words, we could say the that an individual high in extreme self-appreciation has an oversized view of his or her importance based on past accomplishments and how the individual perceives others perceiving him or her. By contrast the individual high in hubristic pride exhibits an oversized view of himself or herself regardless of what others think, regardless of past accomplishments, and possibly even despite what others think and/or despite a lack of past accomplishments.

Differences in Misperceiving Uncertainty as Risk

When we look at *Percent Time Uncertainty Perceived as Risk* (see Figure 18 and Figure 19), we see that overly self-appreciative individuals are more likely to perceive uncertainty as risk. However, that effect does not hold at all for hubristic individuals. In other words, hubristic individuals are not more likely than the average person to view uncertainty as probabilistic risk, but extremely self-appreciative individuals are. Both sets of individuals are extremely self-focused, with the difference being the groundedness of that self-focus. It seems a bit counterintuitive, however, that, of self-focused individuals, those who are better grounded in

reality (the self-appreciative) are more likely to misperceive uncertainty as probabilistic risk than those who are ardently self-focused despite reality (the hubristic).

It may be that the extremely self-appreciative view the world through a more optimistic lens (indeed, optimism was one of our operationalizations of extreme self-appreciation) and that optimism causes them to see things 'in living color' when others merely see 'dull shades of black, white, and gray'. Hubristic individuals, on the other hand, only see themselves. So, they do not see things around them 'in living color' nor do they see 'dull shades black, white, and gray'. Rather, they see only themselves. As such, with their focus being so entirely inward, we should not be surprised to observe hubristic individuals being 'no different from average' in terms of their tendency to misperceive Knightian uncertainty as probabilistic risk, whereas, by contrast, the extremely self-appreciative don rose-colored glasses that allow them to see probabilistic risk where others see only uncertainty.

Differences in *Disregard of the Need for Prior Knowledge*

As we compare our results from Models 1B to 6B, looking at the differences between the two different types of extremely self-focused individuals identified in this study (those who are extremely self-appreciative and those who are high in hubristic pride), we see a significantly different role played by disregard of the need for prior knowledge. Both types of individuals have a much higher tendency to disregard prior knowledge related to entrepreneurial opportunities, however, the impact that increased disregard exerts on their actual decision-making is quite different. Our empirical models show that the path to entrepreneurial action for hubristic individuals always goes through disregard for prior knowledge, whereas for extremely self-appreciative individuals the influence of that disregard is noticeably muted (i.e. only about 30% of the effect goes through disregard). Furthermore, the tendency to disregard prior

knowledge is stronger for hubristic individuals as it is for those who are extremely self-appreciative (p = .016).

As mentioned above, extreme self-appreciation, although indicative of an inflated view of oneself, is grounded in either past accomplishments or the perception of others' perceptions. The fact that their self-inflated views are somewhat grounded in past accomplishments would suggest that the extremely self-appreciative individual's propensity to view inherently uncertain conditions more favorably would more likely stem from past experiences and prior knowledge. In contrast, we would expect the hubristic individual to be predominantly driven by a disregard for prior knowledge when it comes to pursuing entrepreneurial endeavors. The hubristic individual's self-focus is driven by a lack of grounding in past accomplishments, thus leading him or her to blatantly disregard prior knowledge and its importance or relevance to the opportunity. Our observations exactly match this expectation: under conditions of Knightian uncertainty, the hubristic individual's path to entrepreneurial action always involves disregard of the need for or importance of prior knowledge relevant to the opportunity being pursued. Even so, as mentioned previously, under conditions of probabilistic risk, we see that, although the hubristic individual still maintains a high disregard for prior knowledge, that disregard is rendered irrelevant (with respect to the decision to actually pursue an entrepreneurial endeavor) because such individuals ostensibly eschew entrepreneurial endeavors that lack Knightian uncertainty (i.e. those that prospective rivals view as 'promising' or 'reasonable').

Perceiving Uncertainty Favorably

Our empirical results show that both types of extremely self-focused individuals (extremely self-appreciative and hubristic) have a higher tendency to view uncertainty favorably. This means that they perceive their chances of success, when pursuing entrepreneurial endeavors,

more favorably (i.e. as 'more likely to succeed') compared to individuals who are low in self-focus. However, as noted above, a significant difference lies in how their disregard for prior knowledge influences their decision-making. This suggests that at least two different mechanisms are at work, causing extremely self-focused individuals to view uncertainty more favorably than those lacking that self-focus.

Certainly, we expect both mechanisms to be rooted in the common aspect of an overinflated view of oneself, to wit: "As I think more highly of myself (whether those thoughts are grounded in past accomplishments or not), I will ascribe to myself depictions of greatness, and whereas I consider myself one of the greatest, I will likely experience an inflated view of my own chances of success." However, as noted above, the hubristic individual, whose visions of his own greatness are not grounded in past accomplishments, must rely upon a level of disregard (disregard for the past, disregard for the importance of past experiences or past accomplishments, and disregard for the importance of prior knowledge) when assessing his chances for success. By contrast the extremely self-appreciative individual, being more grounded in the reality of past actions of accomplishments, has less need to rely upon a disregard for prior knowledge.

Two Movies, Three Perspectives

An individual low in self-focus walks into a theater where a black-and-white movie is being projected upon the screen. The individual looks at the movie screen and quickly decides that the black-and-white movie is uninteresting and not worth 'pursuing' and hastily walks out. A second individual, high in self-appreciation but low in hubristic pride, walks into the same theater, looks at the screen and 'sees' an exciting movie that is full of color and action (even

though in reality it is just a low-budget, black-and-white movie) and decides to 'pursue' the movie and sits down. A third individual, high in hubristic pride, walks into a neighboring theater where no movie is being played. When he looks up at the screen, he does not see the most recent release playing in full color with dramatic special effects, nor does he see a dull black-and-white humdrum rerun. Instead, he sees a documentary about himself, presiding over the ribbon-cutting of a magnificent new theme park packed with thousands of cheering, happy customers eager to line his pockets with their hard-earned cash (even though in reality it is just a blank screen) and he gets up and walks away briskly, to go break ground on that new theme park.

Although the above analogy does not directly relate to entrepreneurial pursuits, it does highlight a couple important aspects relevant to our study. First, the decision to 'pursue' the movie (or some other endeavor) is entirely based on each individual's perceptions about the movie and second, those perceptions are entirely dependent upon the individual, and only sometimes dependent upon or tied to 'reality'. Similarly, in accordance with McMullen and Shepherd's (2006) two-stage model of entrepreneurial action in the midst of uncertainty, any individuals decision to pursue an entrepreneurial endeavor is inextricably linked to the individual's beliefs and perceptions about the opportunity and about his or her belief that the opportunity is 'real' (i.e. a third person opportunity) and furthermore the belief that he or she possesses the abilities and resources needed to seize the opportunity (i.e. a first-person opportunity). In that vein, it does not matter what movie is actually being projected onto the screen; what matters is the perception by the would-be movie-goer as to whether the movie elicits interest and excitement. Some individuals pursue entrepreneurial endeavors because they misperceive the situation (i.e. they see a full-color movie even though it is, in reality,

merely black-and-white, or they see a movie playing out before them on what is, in reality, a blank screen, or they see themselves as so skilled and insightful that will succeed with any business opportunity they might choose to pursue).

We have argued that, within the context of Knightian uncertainty, the importance and influence of prior knowledge relevant to the opportunity being pursued is oftentimes limited and sometimes irrelevant, from the perspective of the individual contemplating pursuit of the entrepreneurial endeavor. As Knight (1921) explained in his discourse on "methods for meeting uncertainty", many factors potentially influence that process, one of which centers around the willingness and 'suitability' of the would-be entrepreneur to bear the uncertainty, which Knight succinctly reduced to two factors: the individual's subjective perceptions of uncertainty and "his conative feeling toward it" (:242).. Our analysis has provided empirical evidence demonstrating the existence of two such groups of individuals, namely those who are high in self-appreciation (operationalized as narcissism / egotism, authentic pride, optimism, perceived self-efficacy, and entrepreneurial self-efficacy) and those who are high in hubristic pride, with the former occasionally relying upon disregard of the need for prior knowledge and the latter almost exclusively relying upon such disregard.

Limitations

Although we have exerted considerable effort to conduct this research to the highest standards of excellence, we acknowledge that every experimental program, no matter how well-planned, well-intentioned, or well-executed, will be wrought with some level of shortcomings and limitations. In that regard, I must first explain that this document has been written in first-person plural to recognize the vast contributions of my advisor and committee chair, my

committee, and various faculty and colleagues who have contributed directly and indirectly to this research project. However, although I freely credit the aforementioned contributors for their assistance in all that is positive regarding this project, I take full responsibility for any inaccuracies, errors, or inconsistencies herein. As such, as I address the inadequacies and limitations of this study, I predominantly shift to the singular voice, because I bear the sole responsibility for any shortcomings herein.

Reliance upon Directly-Incentivized Survey Respondents

The pilot data for this study were collected from students who volunteered to participate, but who were granted extra credit for doing so. Similarly, the respondents who participated in the full study were directly incentivized by various monetary equivalents, such as frequent flyer miles, points to be redeemed for gift cards, etc. This approach was taken primarily due to the lengthy nature of the survey (after discarding 'intentionally inattentive' respondents, the median completion time was 24.4 minutes and the average was 38.4 minutes).

My previous experience with collecting data from students receiving extra credit led me to conduct this current study with the utmost of care and concern about data quality. Numerous steps were taken to ensure the collection of only high-quality responses from well-intentioned research participants. Indeed, a portion of this dissertation has been devoted to explaining that process (see Chapter IV). Even so, despite our best efforts to ensure the quality of the data we collected, reliance upon incentivized individuals creates its own limitations for the generalizability of the study's results. To that end, perhaps I should have prefaced each of our conclusory statements with a disclaiming caveat: "we find that extremely self-focused individuals (who are willing to take an online survey in return for a small monetary incentive) …". In any event, we have strived to be open and transparent so that each reader can ultimately

reach his or her own decision about the suitability of making generalizations based on the results of this study.

Limited Sample Size with respect to # of Previous Entrepreneurial Failures

When it came to testing the hypothesized moderator *# of Past Entrepreneurial Failures*, our sample size was significantly diminished (from 631 to 241 for the 0/1 relationship and 78 for the many/1 relationship), thus greatly reducing the power of the related statistical tests. In retrospect, I should have expected that we would have very few respondents who would have already experienced multiple entrepreneurial failures.

Common Method Variance

Researchers should always be mindful of common method variance, especially when conducting research that relies upon self-report data. This project is no different. Two significant strides were taken up front to limit the potential negative effects of common method variance for this study. First, in accordance with one of the two *ex ante* remedies recommended by Chang, Witteloostuijn, and Eden (2010), all questionnaire items for the exogenous variables were randomized in terms of the position of each item on a given page and the order in which the pages were presented to the respondents. Although this does not eliminate the common method (and hence the common method variance), it does at least ensure that any method-related biases are spread randomly across all items, thus keeping systematic method bias from affecting any one item or group of items. Second, also in accordance the *ex ante* remedies suggested by Chang *et al.* (2010), I intentionally separated the collection of the exogenous variables from the endogenous variables within the survey instrument. This was

done by utilizing a conjoint experiment for collecting the endogenous variables, thus ensuring some degree of common-method separation between the exogenous and endogenous variables.

To assess the potential level of common method variance in the dataset, in accordance with one of the two *ex post* remedies identified by Chang *et al.* (2010), I conducted Harman's single-factor test and found that no single factor accounts for a majority of the observed variance.

Potential Contributions and Directions for Future Research

As I write this final section of the final chapter of this dissertation, I am truly honored and humbled by the fact that four exceptional scholars (Dr. Per Bylund, Dr. Robert Baron, Dr. Jeffery McMullen, Dr. Rick Wilson) have been willing to serve on my committee and have provide much-needed guidance, input, and feedback. I am especially grateful to Dr. McMullen for his willingness to serve, in that it was McMullen and Shepherd's (2006) seminal article in *Academy of Management Review* (*AMR*) that first caused me to contemplate and explore the connection between entrepreneurial action and uncertainty. Then, when I later learned about that article embodying a rearticulation of the theoretical and conceptual basis of Dr. McMullen's own dissertation (McMullen, 2003), I poured over that 'source material' and left amazed at the breadth of enquiry and depth of insight encompassed therein. I was also amazed at how little needed to be added to those core concepts from McMullen's (2003) dissertation, when those theoretical contributions were later published as an award-winning, conversation-starting article in *AMR*.

Now, as I contemplate my own humble attempts to try to extend the boundaries of McMullen and Shepherd's (2006) seminal model, I recognize that I am standing on the shoulders of giants, hoping to add but a hairsbreadth.

In any event, time itself will reveal whether any of the theoretical concepts or empirical findings documented herein make an actual impact or constitute a genuine contribution to the field of entrepreneurship research. As I contemplate and attempt to elucidate the potential contributions of this research, I switch back to first-person plural, in recognition of the collective guidance, assistance, and feedback provided by others, especially the outstanding scholars listed above.

At present, we view the potential contributions as six-fold, with those potential contributions enumerated below and explained in additional detail thereafter:

- Drafting a new definition of entrepreneurship, in the spirit of Frank Knight, but shifting the focus away from the uncertainty-bearing actions of the entrepreneur *per se*, to the respective <u>inaction</u> of prospective competitors and, more importantly, the rationale for their inaction (i.e. whenever their inaction is due to perceptions of Knightian uncertainty).
- Demonstrating the applicability of Frank Knight's six "methods for meeting uncertainty" to contemporary entrepreneurship research and hopefully spurring future researchers to explore and expand upon those six methods.
- Developing and demonstrating an experimental method for measuring an individual's willingness to pursue entrepreneurial action specifically within the context of Knightian uncertainty.

- Developing and validating a measurement construct for *Disregard of the Need for Prior Knowledge*.
- Empirically demonstrating, via one small piece of one of Frank Knight's six methods for meeting uncertainty, how blatant disregard of the need for and importance of prior knowledge plays a key role, at least for extremely self-focused individuals, in the entrepreneurial decision-making process.
- Developing and demonstrating a system and method for ensuring data quality when soliciting responses via online questionnaires, by systematically identifying and flagging 'intentionally inattentive' respondents.

A New Working Definition of Entrepreneurship

As stated in Chapter II, the question of 'Who is an entrepreneur?' has been asked and re-asked (without definitive resolution) for nearly 300 years. As such, I am in no way naïve enough nor hubristic enough to suggest that this new definition will finally answer this question and end this longstanding debate (we must also acknowledge that a vigorous debate also exists regarding the nature of uncertainty, apart from any consideration of its influence on the field of entrepreneurship). In any event, it seems fitting to bring Cantillon (1931 [1730]) and Knight (1921) back into this debate, by proposing a definition of entrepreneurship that is explicitly linked to bearing uncertainty and, in particular, the bearing of Knighting uncertainty. In addition, our new working definition integrates Hawley's (1893:469) view that the value of the entrepreneur's 'profit' is directly related not to the entrepreneur's own valuation, but rather to the subjective valuation of the entrepreneur's closest potential competitor, which according to Kirzner (1978), would represents the degree of 'error' that potential competitor is making by not pursuing the opportunity.

Proceeding onward through the debate-space, whereas Venkataraman (1997) introduced us to the notion of entrepreneurship as "the nexus of opportunity and enterprising individuals" (:121), we could restate our definition as an extension of his, by referring to entrepreneurship as 'the nexus of an enterprising individual and an opportunity, wherein that opportunity is not pursued by potential competitors, because they view the opportunity as being wrought with Knightian (i.e. non-probabilistic) uncertainty'. In that respect, we are somewhat combining Venkataraman's 'nexus' perspective with Casson's (2003 [1982]) notion that the entrepreneur is an individual who "believes that he is right, while … everyone else believes he is wrong" (:13-14), with our important caveat being they believe he is wrong for a very specific reason, which is not based on any sort of objective or subjective risk assessment, but based on their assessment that the likelihood of success is "anybody's guess" because the project is wrought with Knightian uncertainty.

Although our new working definition of entrepreneurship can, as described above, be closely linked to many of the great definitions and conceptualizations that have preceded it, we believe this definition can potentially alter the direction of future entrepreneurship research because it changes the frame of reference away from the entrepreneur *per se*, and onto the closest potential competitor. We assert that, the essential differentiation between whether an economic endeavor represents an *entrepreneurial* endeavor lies not within the cognition or the context of the individual pursuing the endeavor but within the context, cognition, and perceptions of the individuals who are NOT pursuing the endeavor. As such, we suggest a radical shift in focus, a shift that has the potential to yield groundbreaking theoretical insights and empirical discoveries as scholars turn their attention toward more thoroughly understanding the decision-making processes of individuals who potentially *could* pursue an

entrepreneurial endeavor but choose not to. This definition and approach also lends itself well to the recognition that, in many respects, entrepreneurial action is a socially constructed reality that hinges upon action by one social actor in the face of inaction by a vast number of others.

Relating Knight's Six Methods for Meeting Uncertainty to Contemporary Entrepreneurship Theories

During the summer of 2017, I was up late one night reading Frank Knight's (1921) *Risk, Uncertainty, and Profit* and contemplating the 'nature' of non-probabilistic uncertainty (in part because my advisor, Dr. Per Bylund, had taken exception to my previous usage of the term 'high Knightian uncertainty', asserting that uncertainty can be categorized as Knightian or non-Knightian, but that Knightian uncertainty cannot be segmented as 'high' or 'low'). All of a sudden, while reading *Risk, Uncertainty, and Profit* and contemplating Dr. Bylund's comments about Knightian uncertainty, a 'light bulb' switched on wherein I suddenly recognized a connection between all the various contemporary theories of entrepreneurship I had been studying and their significance to each other, within the context of Frank Knight's delineation of non-probabilistic, or non-insurable, uncertainty as the "*true uncertainty* which … accounts for the peculiar income of the entrepreneur" (:232). Over the next several months, I began writing out descriptions of the mechanisms wherein entrepreneurs, within the framework of various contemporary views of entrepreneurship (e.g. effectuation, alertness) perceive, manage, and otherwise deal with Knightian uncertainty.

It was almost exactly one year later, during the summer of 2018, that I was once again reading *Risk, Uncertainty, and Profit* and, once again, had an 'a ha' moment. At this time, I was writing out and enumerating Knight's six "methods for meeting uncertainty" (:239ff) when I suddenly realized that Knight himself had anticipated all the various 'paths' to entrepreneurial

action that are inherently embedded within our contemporary theories of entrepreneurship. And, although he somewhat dismissed his Methods #3, 4, and 5, it was those methods that most captured my attention that night, because Method #3 so clearly exemplified the effectual entrepreneur, Method #4, the causal entrepreneur, and Method #5, the crowdfunding entrepreneur. Then, as I compared Knight's six methods with the list of 'mechanisms' I had been compiling over the previous year, each of my 'mechanisms' fit squarely within one of Knight's six methods. It was as if Professor Knight and I had been 'thinking the same thoughts', albeit a hundred years apart from each other.

In any event, my hope is that, by drawing attention back to Knight's six methods, future researchers will focus greater attention specifically upon the uncertainty-bearing nature of entrepreneurs (hearkening back to Cantillon (1931 [1730]), relate that uncertainty-bearing back to Knight's original six methods, and further confirm Knight's prescience and/or identify gaps in our understanding, i.e. additional mechanisms by which individuals manage uncertainty that not even Frank Knight envisioned or anticipated.

An Experimental Method for Measuring Entrepreneurial Action in the Midst of Knightian Uncertainty

Following from the aforementioned new working definition of 'entrepreneurship', a measurement method or construct is needed to ascertain the perspective of a would-be entrepreneur's 'closest prospective competitor'. We expect and anticipate that future researchers will develop novel methods and measures that will enable them to capture the essence of this new focus (e.g. the reasons for lack of action by a 'closest prospective competitor'). Even so, we have provided an initial method for studying entrepreneurial action within the context of this new definition, by means of a series of hypothetical scenarios within

the context of a conjoint experiment. In the short term, we hope that other researchers will be able to meaningfully study entrepreneurial decision-making under conditions of Knightian uncertainty by emulating and even improving upon our conjoint-design hypothetical-scenario experiment.

A Validated Measurement Construct for Disregard of the Need for Prior Knowledge

Within our various propositional statements in Chapter III, we related each of Knight's six methods for meeting uncertainty to different perspectives about prior knowledge. In particular, we related them to various nuanced differences in an individual's potential disregard of the need for or importance of prior knowledge. For our empirical study, we narrowed in on what we deemed the most extreme form of disregard, what we referred to as 'conscious and blatant' disregard for prior knowledge. In order to study that 'conscious and blatant' disregard for prior knowledge, we developed and validated a meaningful measurement construct related to *Disregard of the Need for Prior Knowledge*. Even so, we recognize that this new construct will not suffice as a measure for capturing all the nuances of disregard that might influence individual decision-making with respect to the pursuit of entrepreneurial endeavors. As such, we are hopeful that future researchers will follow our lead and develop and validate additional measures of disregard of the need for or importance of prior knowledge and use those measures to empirically test and fully explore the various 'paths' to entrepreneurial action presented and proposed herein.

An Empirical Demonstration of the Influence of Disregard of the Need for Prior Knowledge on Entrepreneurial Decision-Making

We have successfully demonstrated one small set of conditions wherein disregard for prior knowledge functions as a mechanism to explain how and why certain individuals pursue

entrepreneurial endeavors when others ostensibly choose not to. However, in our propositions, we identify numerous nuances related to this notion of disregard of the need for or importance of prior knowledge (with each of those related back to one of Knight's six methods for meeting uncertainty). To wit, one could summarize our collective set of propositions as the intersection of Knight's methods for meeting uncertainty with the degree to which or the way in which prior knowledge (or lack thereof, or lack of emphasis thereupon) influences how an individual might use that method to manage uncertainty (from an entrepreneurial perspective). In addition, our propositions will hopefully inspire future scholars to study other factors and mechanisms that either act outside the boundaries of doubt-reduction (similar to disregard for prior knowledge) as well as those that operate within the realm of McMullen and Shepherd's (2006) model, wherein individuals reduce uncertainty by taking steps that reduce their individual doubt regarding the existence and nature of the opportunity.

In that regard, whereas we have focused on the distinctly negative side of prior knowledge, as in how the *disregard* for prior knowledge impacts an individual's decision to pursue an entrepreneurial endeavor, we recognize that additional investigation is needed into the mechanisms for entrepreneurial action wherein *high regard* for prior knowledge influences decision-making. For example, as suggested above with respect to McMullen and Shepherd's (2006) model, perhaps this treatise will encourage future scholars to explore how an individual's belief about the importance of prior knowledge influences his or her doubt regarding the existence of a third-person opportunity, the subsequent evaluation of that opportunity, and ultimately whether or not the opportunity is viewed as a first-person opportunity. In other words, we are optimistic that our intentional focus on the *disregard* of prior knowledge (and the subsequent expansion of the boundary conditions of McMullen and

Shepherd's (2006) model) might actually spur other scholars to investigate the nuances of *high regard* for prior knowledge *within* the current boundaries of that model.

A Method for Ensuring Data Quality by Flagging 'Intentionally Inattentive' Respondents

Although we did not envision all the effort that would ultimately be entailed in systematically assessing and ensuring the quality of our data, we nonetheless felt, after-the-fact, that the process was not only meaningful but worthy of sharing in detail, so that future researchers can take advantage of our discoveries in that regard. As such, although the process we followed does not represent any sort of theoretical contribution, we identify it herein as a practical contribution that becomes all the more important in this digital age when more and more data in the social sciences are being collected via online self-report questionnaires.

CHAPTER VII

REFERENCES

Alvarez, S. A., & Barney, J. B. (2007). Discovery and creation: Alternative theories of entrepreneurial action. *Strategic entrepreneurship journal*, *1*(1-2), 11-26.

Ames, D. R., Rose, P., & Anderson, C. P. (2006). The NPI-16 as a short measure of narcissism. *Journal of research in personality*, *40*(4), 440-450.NPI-16

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological bulletin*, *103*(3), 411.

Autio, E., Dahlander, L., & Frederiksen, L. (2013). Information exposure, opportunity evaluation, and entrepreneurial action: An investigation of an online user community. *Academy of Management Journal*, *56*(5), 1348-1371.

Back, M. D., Küfner, A. C., Dufner, M., Gerlach, T. M., Rauthmann, J. F., & Denissen, J. J. (2013). Narcissistic admiration and rivalry: Disentangling the bright and dark sides of narcissism. *Journal of Personality and Social Psychology*, *105*(6), 1013.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of personality and social psychology*, *51*(6), 1173.

Berinsky, A. J., Margolis, M. F., & Sances, M. W. (2014). Separating the shirkers from the workers? Making sure respondents pay attention on self-administered surveys. *American Journal of Political Science*, *58*(3), 739-753.

Busenitz, L. W., & Barney, J. B. (1997). Differences between entrepreneurs and managers in large organizations: Biases and heuristics in strategic decision-making. *Journal of business venturing*, *12*(1), 9-30.

Campbell, N.R. (1928). *An account of the principles of measurement and calculation*. Oxford, England: Longmans, Green.

Cantillon, R. (1931 [1730]) *Essai sur la Nature du Commerce en General*, edited and translated by H. Higgs, London: Macmillan.

Casson, M. (2003 [1982]). *The Entrepreneur: An Economic Theory*, 2nd ed. Edward Elgar, Northampton, MA.

Chang, S., Witteloostuijn, A. V., & Eden, L. (2009). Common method variance in international business research. Letter from the Editors. *Journal of International Business Studies*.

Chen, G., Gully, S. M., & Eden, D. (2001). Validation of a new general self-efficacy scale. *Organizational research methods*, *4*(1), 62-83.

Clark, J. B. (1892) Insurance and business profits, *Quarterly Journal of Economics 7*:45-54.

Clark, J. B. (1907) *Essentials of Economic Theory*, New York: Macmillan.

Cole, A. H. (1946) "An approach to the study of entrepreneurship: a tribute to Edwin F. Gay," *Journal of Economic History*, *6*:1-15.

Drucker, P. (1985). *Innovation and entrepreneurship.* New York: Harper and Row.

Edelen, M. O., & Reeve, B. B. (2007). Applying item response theory (IRT) modeling to questionnaire development, evaluation, and refinement. *Quality of Life Research*, *16*(1), 5.

Eggers, F., & McCabe, D. B. (2015). Is Planning Overrated? Effectual Marketing Practices Among Silicon Valley Tech Companies. In *Ideas in Marketing: Finding the New and Polishing the Old* (pp. 260-263). Springer, Cham.

Eggers, F., & McCabe, D. B. (2016). Trial-and-error marketing: the role of the customer in tech start-ups. *International Journal of Technology Marketing*, 11(2), 149-164.

Gartner, W.B. (1989). "Who is an entrepreneur?" Is the wrong question. *Entrepreneurship Theory and Practice*, 47-67.

Gebauer, J.E., Sedikides, C., Verplanken, B., & Maio, G.R. (2012). Communal narcissism. *Journal of Personality and Social Psychology, 103*, 854 878.

Hawley, F. B. (1893). The risk theory of profit. *The Quarterly Journal of Economics*, *7*(4), 459-479.

Hawley, F. B. (1900). Enterprise and profit. *The Quarterly Journal of Economics*, *15*(1), 75-105.

Hayward, M. L., Shepherd, D. A., & Griffin, D. (2006). A hubris theory of entrepreneurship. *Management Science*, *52*(2), 160-172.

Hébert, R. F., & Link, A. N. (2009). *A history of entrepreneurship*. Routledge.

Higgins, E. T., Kruglanski, A. W., & Pierro, A. (2003). Regulatory Mode: Locomotion and Assessment as Distinct Orientations. In M. P. Zanna (Ed.), *Advances in experimental social psychology*, Vol. 35, pp. 293-344. San Diego, CA, US: Elsevier Academic Press.

Hmieleski, K. M., & Baron, R. A. (2009). Entrepreneurs' optimism and new venture performance: A social cognitive perspective. *Academy of management Journal*, *52*(3), 473-488.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: a multidisciplinary journal*, *6*(1), 1-55.

Johnson, D., Newby, R., & Watson, J. (2005). Defining the entrepreneur: how useful is establishment status?. *Small Enterprise Research*, 13(2), 1-30.

Jones, D.N., & Paulhus, D.L. (2014). Introducing the Short Dark Triad (SD3): A brief measure of dark personalities. *Assessment, 21*, 27 40.

Judge, T. A., Erez, A., Bono, J. E., & Thoresen, C. J. (2003). The core self-evaluations scale: Development of a measure. *Personnel psychology*, *56*(2), 303-331.

Keynes, John Maynard. 1921. *A Treatise on Probability*. London: Macmillan.

Kirzner, I. M. (1973). *Competition and Entrepreneurship*. Chicago University Press.

Kirzner, I. M. (1978). Economics and error. *New directions in Austrian economics*, 57-76.

Kirzner, I. M. (1997). Entrepreneurial discovery and the competitive market process: An Austrian approach. *Journal of economic Literature*, *35*(1), 60-85.

Kirzner, I. M. (1999). Creativity and/or alertness: A reconsideration of the Schumpeterian entrepreneur. *The Review of Austrian Economics*, *11*(1), 5-17.

Knight, F. H. (1921). *Risk, Uncertainty and Profit*. University of Illinois at Urbana-Champaign's Academy for Entrepreneurial Leadership Historical Research Reference in Entrepreneurship.

Korsgaard, S., Berglund, H., Thrane, C., & Blenker, P. (2016). A tale of two Kirzners: Time, uncertainty, and the "nature" of opportunities. *Entrepreneurship Theory and Practice*, *40*(4), 867-889.

Leamer, E. E. (2010). Tantalus on the Road to Asymptopia. *Journal of Economic Perspectives*, *24*(2), 31-46.

Lichtenstein, S., & Fischhoff, B. (1977). Do those who know more also know more about how much they know. *Organizational behavior and human performance*, *20*(2), 159-183.

Matusik, S. F., George, J. M., & Heeley, M. B. (2008). Values and judgment under uncertainty: evidence from venture capitalist assessments of founders. *Strategic Entrepreneurship Journal, 2*(2), 95-115.

McGee, J. E., Peterson, M., Mueller, S. L., & Sequeira, J. M. (2009). Entrepreneurial self-efficacy: refining the measure. *Entrepreneurship theory and Practice, 33*(4), 965-988.

McKelvie, A., Haynie, J. M., & Gustavsson, V. (2011). Unpacking the uncertainty construct: Implications for entrepreneurial action. *Journal of Business Venturing, 26*(3), 273-292.

McMullen, J. S. (2003). *Entrepreneurial decision making and the firm's propensity for novel action: A regulatory focus perspective.*

McMullen, J. S., & Shepherd, D. A. (2006). Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur. *Academy of Management Review, 31*(1), 132-152.

Meade, A. W., & Craig, S. (2012). Identifying careless responses in survey data. *Psychological Methods, 17*(3), 437-455.

Menger, C. (1976 [1871]). *Principles of Economics*. Translated by James Dingwall and Bert F. Hoselitz. New York: New York University Press, Chapter VIII.

Mintzberg, H. (1994). *Rise and fall of strategic planning*. Simon and Schuster.

Mises, Ludwig von (1949). *Human Action: A Treatise on Economics*. New Haven: Yale University Press.

Mises, Ludwig von (1962). "Profit and Loss." In Ludwig von Mises (ed.), *Planning for Freedom and Other Essays and Addresses* (2nd edition). South Holland, ILL: Libertarian Press.

Morley, M. J. (2007). Person-organization fit. *Journal of Managerial Psychology*, *22*(2), 109-117.

Paunonen, S. V. (2002). *Design and construction of the Supernumerary Personality Inventory (Research Bulletin 763)*. London, Ontario: University of Western Ontario.

Sarasvathy, S. D. (1998). *How Do Firms Come to Be?: Towards a Theory of the Prefirm* (Doctoral dissertation, Carnegie Mellon University).

Sarasvathy, S. D. (2001). Causation and effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of management Review*, *26*(2), 243-263.

Sarasvathy, S. D. (2008). *Effectuation: Elements of Entrepreneurial Expertise*. Edward Elgar Publishing.

Sarasvathy, S. D., & Dew, N. (2005). New market creation through transformation. *Journal of Evolutionary Economics, 15*(5), 533-565.

Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): a reevaluation of the Life Orientation Test. *Journal of personality and social psychology, 67*(6), 1063.

Schumpeter, J. A. (1934 [1912]). The theory of economic development: An inquiry into profits, capital, credit, interest, and the business cycle (Vol. 55). Transaction publishers.

Scott, M. (2014). *Delphi: A History of the Center of the Ancient World*. Princeton University Press.

Shackle, G. L. S. (1939). Expectations and employment. *The Economic Journal*, 442-452.

Shackle, G. L. S. (1952). *Expectation in economics*. Cambridge University Press.

Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of management review*, *25*(1), 217-226.

Smits, N., Vorst, H. C. M., & Mellenbergh, G. J. (2002). The measurement versus prediction paradox in the application of planned missingness to psychological and educational tests. *Scholar Working Paper Series*, (WP 33/02).

Taussig, F. W. (1915) *Principles of Economics*, revised edition, vol. 2, New York: Macmillan.

Townsend, D. M., Hunt, R. A., McMullen, J. S., & Sarasvathy, S. D. (2018). Uncertainty, Knowledge Problems, and Entrepreneurial Action. *Academy of Management Annals*, *12*(2), 659-687.

Tracy, J. L., & Robins, R. W. (2007). The psychological structure of pride: a tale of two facets. *Journal of personality and social psychology, 92*(3), 506.

Venkataraman, S. (1997). The distinctive domain of entrepreneurship research. *Advances in entrepreneurship, firm emergence and growth, 3*(1), 119-138.

Weber, M., (1949 [1904]). "Objectivity in Social Science and Social Policy" in *The Methodology of the Social Sciences*, E. A. Shils and H. A. Finch (ed. and trans.), New York: Free Press.

Weigel, R.H., Hessing, D.J., & Elffers, H. (1999). Egoism: Concept, measurement and implications for deviance. *Psychology, Crime & Law*, *5*, 349 378.

APPENDIX A – SUMMARY OF VARIABLES AND OUTPUT FROM STATISTICAL ANALYSES

Codebook of Variable Names

Variable	Label
_aut_01	I generally feel successful.
_aut_02	I generally feel like I am achieving.
_aut_03	I generally feel fulfilled.
_aut_04	I generally feel accomplished.
_aut_05	I generally feel productive.
_aut_06	I generally feel confident.
_aut_07	I generally feel like I have self-worth.
_dis_01	If a new opportunity is truly groundbreaking, prior knowledg...
_dis_02	When launching a new venture, what you know (or think you kn...
_dis_03	When it comes to recognizing and pursuing new business ideas...
_dis_04	Prior information is essentially useless when deciding wheth...
_dis_05	Whenever I come across a new business opportunity, I instant...
_dis_06	When I pursue new business opportunities, I tend to go again...
_dis_08	Many times I find myself pursuing a new business opportunity...
_ese_01	I am confident in my ability to identify the need for a new ...
_ese_02	I am confident in my ability to design a product or service ...
_ese_03	I am confident in my ability to determine a competitive pric...
_ese_04	I am confident in my ability to design an effective marketin...
_ese_05	I am confident in my ability to estimate customer demand for...
_ese_06	I am confident in my ability to get others to identify with ...
_hub_01	I generally feel stuck-up.
_hub_02	I generally feel snobbish.
_hub_03	I generally feel conceited.
_hub_04	I generally feel smug.
_hub_05	I generally feel egotistical.
_hub_06	I generally feel arrogant.
_hub_07	I generally feel pompous.
_nar_01	In many ways, I am a remarkable, special person.
_nar_02	I think I am a special person.
_nar_03	I have touched many people’s lives in a positive way.
_nar_04	I am an extraordinary person.
_nar_05	I am great.
_nar_06	I deserve to be seen as a great personality.
_nar_07	Most of the time I am able to draw people’s attention to mys...
_nar_08	Everybody likes to hear my stories.
_nar_09	Being a very special person gives me a lot of strength.
_nar_10	I am good at everything that I do.
_opt_01	Overall, I expect more good things to happen to me than bad.
_opt_02	I’m always optimistic about my future.
_opt_03	In uncertain times, I usually expect the best.
_pse_01	I am confident that I can perform effectively on many differ...
_pse_02	In general, I think that I can obtain outcomes that are impo...
_pse_03	I will be able to successfully overcome many challenges.
_pse_04	When facing difficult tasks, I am certain that I will accomp...
_pse_05	I believe I can succeed at most any endeavor to which I set ...
_pse_06	Even when things are tough, I can perform quite well.
_pse_07	Compared to other people, I can do most tasks very well.
_pse_08	I will be able to achieve most of the goals that I have set ...
_y_lg1_2a	Global Launch Commit (0=‘Abs Not’) Scenario 2a
_y_lg1_2b	Global Launch Commit (0=‘Abs Not’) Scenario 2b
_y_lg1_4a	Global Launch Commit (0=‘Abs Not’) Scenario 4a

```
_y_lg1_4b       Global Launch Commit (0='Abs Not') Scenario 4b
_y_lg1_6a       Global Launch Commit (0='Abs Not') Scenario 6a
_y_lg1_6b       Global Launch Commit (0='Abs Not') Scenario 6b
_y_lg1_8a       Global Launch Commit (0='Abs Not') Scenario 8a
_y_lg1_8b       Global Launch Commit (0='Abs Not') Scenario 8b
_y_ll1_2a       Local Launch Commit (0='Abs Not') Scenario 2a
_y_ll1_2b       Local Launch Commit (0='Abs Not') Scenario 2b
_y_ll1_4a       Local Launch Commit (0='Abs Not') Scenario 4a
_y_ll1_4b       Local Launch Commit (0='Abs Not') Scenario 4b
_y_ll1_6a       Local Launch Commit (0='Abs Not') Scenario 6a
_y_ll1_6b       Local Launch Commit (0='Abs Not') Scenario 6b
_y_ll1_8a       Local Launch Commit (0='Abs Not') Scenario 8a
_y_ll1_8b       Local Launch Commit (0='Abs Not') Scenario 8b
_y_ln1_2a       Nat'l Launch Commit (0='Abs Not') Scenario 2a
_y_ln1_2b       Nat'l Launch Commit (0='Abs Not') Scenario 2b
_y_ln1_4a       Nat'l Launch Commit (0='Abs Not') Scenario 4a
_y_ln1_4b       Nat'l Launch Commit (0='Abs Not') Scenario 4b
_y_ln1_6a       Nat'l Launch Commit (0='Abs Not') Scenario 6a
_y_ln1_6b       Nat'l Launch Commit (0='Abs Not') Scenario 6b
_y_ln1_8a       Nat'l Launch Commit (0='Abs Not') Scenario 8a
_y_ln1_8b       Nat'l Launch Commit (0='Abs Not') Scenario 8b
age_yrs         Age, in years
edu_yrs         Education beyond high school, in years
esaXassess      Resid-cent intxn (extreme self-app and assessment orientation)
esaXdis         Resid-cent intxn (extreme self-app and disregard)
esaXfails01     Resid-cent intxn (extreme self-app and # failures zero vs one)
esaXfails21     Resid-cent intxn (extreme self-app and # failures many vs one)
esaXfailsO1     Resid-cent intxn (extreme self-app and # failures zero vs one)
esaXpsi         Resid-cent intxn (extreme self-app and positive self-image)
female          Gender (female = 1, male = 0)
hubXassess      Resid-cent intxn (hubristic pride and assessment orientation)
hubXdis         Resid-cent intxn (hubristic pride and disregard)
hubXfails01     Resid-cent intxn (hubristic pride and # failures zero vs one)
hubXfails21     Resid-cent intxn (hubristic pride and # failures many vs one)
hubXfailsO1     Resid-cent intxn (hubristic pride and # failures zero vs one)
hubXpsi         Resid-cent intxn (hubristic pride and positive self-image)
w_mr            Market Risk as Numeric Risk (Scenarios 6 & 8) (a & b)
w_mr_8          Market Risk as Numeric Risk (Scenario 8 (a & b)
w_mrXloco       Resid-cent intxn (fav perc of market risk and locomotion ori...
w_mt            Market % Time Perceive Uncertainty as Risk (Scenarios 2&4) (...
w_mt2           Market % Time Perceive Uncertainty as Risk (Scenario 2) (a & b)
w_mt4           Market % Time Perceive Uncertainty as Risk (Scenario 4) (a & b)
w_mtXloco       Resid-cent intxn (% time market uncertainty perceived as ris...
w_mu            Market Uncertainty as Numeric Risk (Scenarios 2 & 4) (a & b)
w_mu_2          Market Uncertainty as Numeric Risk (Scenario 2) (a & b)
w_mu_4          Market Uncertainty as Numeric Risk (Scenario 4) (a & b)
w_muXloco       Resid-cent intxn (fav perc of market uncertainty and locomot...
w_tr            Technical Risk as Numeric Risk (Scenarios 4 & 8) (a & b)
w_tr_8          Technical Risk as Numeric Risk (Scenario 8) (a & b)
w_trXloco       Resid-cent intxn (fav perc of tech risk and locomotion orien...
w_tt            Technical % Time Perceive Uncertainty as Risk (Scenarios 2&6...
w_tt2           Technical % Time Perceive Uncertainty as Risk (Scenario 2) (...
w_tt6           Technical % Time Perceive Uncertainty as Risk (Scenario 6) (...
w_ttXloco       Resid-cent intxn (% time tech uncertainty perceived as risk ...
w_tu            Technical Uncertainty as Numeric Risk (Scenarios 2 & 6) (a & b)
w_tu_2          Technical Uncertainty as Numeric Risk (Scenario 2) (a & b)
w_tu_6          Technical Uncertainty as Numeric Risk (Scenario 6) (a & b)
w_tuXloco       Resid-cent intxn (fav perc of tech uncertainty and locomotio...
x_esa           Extreme self-appreciation
x_hub           Hubristic pride
y_l_1           ALL Launch Comm (all 4 scenarios) (a & b)
```

Summary Statistics

```
    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
     _aut_01 |        625      3.6544    1.085563          1          5
     _aut_02 |        625      3.8192    .9988532          1          5
```

_aut_03	628	3.703822	1.061814	1	5
_aut_04	629	3.790143	1.014465	1	5
_aut_05	630	3.985714	.9593249	1	5
_aut_06	629	3.836248	1.067867	1	5
_aut_07	623	3.99679	1.008001	1	5
_dis_01	624	2.766026	1.192432	1	5
_dis_02	608	2.995066	1.076165	1	5
_dis_03	624	2.575321	1.165626	1	5
_dis_04	625	2.6448	1.304053	1	5
_dis_05	622	2.924437	1.098563	1	5
_dis_06	618	2.914239	1.079089	1	5
_dis_08	622	2.509646	1.145911	1	5
_ese_01	622	3.569132	1.10956	1	5
_ese_02	613	3.489396	1.206722	1	5
_ese_03	617	3.568882	1.091081	1	5
_ese_04	617	3.319287	1.244534	1	5
_ese_05	622	3.42283	1.143346	1	5
_ese_06	623	3.521669	1.075492	1	5
_hub_01	628	1.644904	.9034876	1	5
_hub_02	631	1.711569	.9423927	1	5
_hub_03	630	1.914286	1.054456	1	5
_hub_04	627	1.92823	1.01724	1	5
_hub_05	624	2.035256	1.075948	1	5
_hub_06	628	1.753185	.9755738	1	5
_hub_07	619	1.978998	1.087385	1	5
_nar_01	624	3.546474	1.094751	1	5
_nar_02	625	3.5296	1.12639	1	5
_nar_03	616	3.847403	.9607381	1	5
_nar_04	624	3.466346	1.11411	1	5
_nar_05	624	3.413462	1.124174	1	5
_nar_06	623	3.40931	1.123146	1	5
_nar_07	629	3.36089	1.116664	1	5
_nar_08	613	3.168026	1.046074	1	5
_nar_09	622	3.5209	1.08661	1	5
_nar_10	629	3.073132	1.144522	1	5
_opt_01	625	3.7632	1.053804	1	5
_opt_02	629	3.718601	1.115319	1	5
_opt_03	627	3.478469	1.074285	1	5
_pse_01	628	4.085987	.8313597	1	5
_pse_02	627	3.92823	.8717893	1	5
_pse_03	621	3.982287	.8639791	1	5
_pse_04	625	3.8144	.9858538	1	5
_pse_05	627	3.933014	.9383442	1	5
_pse_06	626	3.913738	.9289494	1	5
_pse_07	628	3.770701	.9237094	1	5
_pse_08	623	3.873194	.9445923	1	5
_y_lg1_2a	593	3.116358	2.562388	0	8
_y_lg1_2b	593	3.037099	2.606898	0	8
_y_lg1_4a	593	3.337268	2.473012	0	8
_y_lg1_4b	593	3.305228	2.528805	0	8
_y_lg1_6a	593	3.391231	2.545941	0	8
_y_lg1_6b	593	3.344013	2.489105	0	8
_y_lg1_8a	593	3.890388	2.464572	0	8
_y_lg1_8b	593	3.752108	2.459318	0	8
_y_ll1_2a	593	5.290051	2.547558	0	8
_y_ll1_2b	593	4.747049	2.493931	0	8
_y_ll1_4a	593	5.794266	2.192933	0	8
_y_ll1_4b	593	5.264755	2.30651	0	8

_y_ll1_6a	593	5.757167	2.297557	0	8
_y_ll1_6b	593	5.193929	2.286379	0	8
_y_ll1_8a	593	6.131535	2.169249	0	8
_y_ll1_8b	593	5.718381	2.18331	0	8
_y_ln1_2a	593	3.98145	2.480599	0	8
_y_ln1_2b	593	3.76054	2.54553	0	8
_y_ln1_4a	593	4.335582	2.345287	0	8
_y_ln1_4b	593	4.141653	2.38453	0	8
_y_ln1_6a	593	4.382799	2.395838	0	8
_y_ln1_6b	593	4.084317	2.343689	0	8
_y_ln1_8a	593	4.892074	2.248533	0	8
_y_ln1_8b	593	4.701518	2.289875	0	8
age_yrs	631	47.687	16.22789	18	99
edu_yrs	631	2.402758	2.263988	.01	10
esaXassess	631	-4.60e-10	.6486082	-3.996097	3.203597
esaXdis	631	-6.49e-11	.5753749	-3.729805	3.123001
esaXfails01	241	-4.39e-10	.2351479	-1.577855	.8165776
esaXfails21	78	1.17e-09	.2428879	-.7042815	.7911157
esaXfailsO1	603	1.69e-10	.1587843	-1.814939	.9315866
esaXpsi	631	-9.27e-10	.7875871	-2.289033	3.688336
female	628	.6257962	.4843024	0	1
hubXassess	631	2.29e-10	.6064943	-3.119308	5.344912
hubXdis	631	9.55e-10	.5918991	-1.852806	5.929554
hubXfails01	241	9.04e-10	.3046646	-.6564614	1.885357
hubXfails21	78	3.20e-09	.3914735	-.8999501	1.011275
hubXfailsO1	603	-3.73e-10	.2031908	-.7663004	2.129992
hubXpsi	631	-5.05e-10	.7206096	-5.994814	4.337595
w_mr	483	63.27588	22.60255	0	100
w_mr_8	532	66.41682	23.88843	0	100
w_mrXloco	353	-5.52e-08	17.77636	-47.63763	135.3908
w_mt	593	.8722597	.2644032	0	1
w_mt2	593	.8617201	.295407	0	1
w_mt4	593	.8827993	.2790687	0	1
w_mtXloco	593	-8.94e-10	.1917541	-.8291909	1.571686
w_mu	442	57.43015	25.42386	0	100
w_mu_2	473	53.21512	28.16484	0	100
w_mu_4	493	60.34888	25.61293	0	100
w_muXloco	353	2.29e-08	18.39451	-57.18496	114.9383
w_tr	465	64.17823	22.90342	0	100
w_tr_8	515	66.30049	23.83629	0	100
w_trXloco	353	-4.31e-09	18.28021	-48.42421	136.0173
w_tt	593	.8326307	.295164	0	1
w_tt2	593	.811973	.3408678	0	1
w_tt6	593	.8532884	.3040717	0	1
w_ttXloco	593	-8.58e-10	.217589	-1.068799	1.525263
w_tu	405	52.65926	27.31291	0	100
w_tu_2	438	49.26941	29.65332	0	100
w_tu_6	467	55.01231	27.27262	0	100
w_tuXloco	353	8.91e-09	18.93316	-57.38748	107.2446
x_esa	631	3.659872	.7138257	1.197143	5
x_hub	631	1.85429	.7672716	1	5
y_l_1	593	4.389615	1.820225	0	8

Correlation Matrix

* indicates $p < .05$

	_aut_01	_aut_02	_aut_03	_aut_04	_aut_05	_aut_06	_aut_07
_aut_01	1.0000						
_aut_02	0.6896*	1.0000					
_aut_03	0.6532*	0.6454*	1.0000				
_aut_04	0.6605*	0.6611*	0.5995*	1.0000			
_aut_05	0.5848*	0.6366*	0.5405*	0.6363*	1.0000		
_aut_06	0.6596*	0.6276*	0.5531*	0.5978*	0.5751*	1.0000	
_aut_07	0.5942*	0.6137*	0.5609*	0.5328*	0.4966*	0.5305*	1.0000
_dis_01	0.0292	0.0393	-0.0043	0.0590	0.0170	0.0511	-0.0074
_dis_02	0.0973*	0.0880*	0.0700	0.1172*	0.0944*	0.0935*	0.0263
_dis_03	0.0451	0.0774	-0.0041	0.0552	0.0151	0.0683	-0.0602
_dis_04	0.0684	0.0746	0.0301	0.0598	0.0935*	0.0366	0.0202
_dis_05	0.2885*	0.3812*	0.2508*	0.3444*	0.3275*	0.3033*	0.1884*
_dis_06	0.1540*	0.1646*	0.1117*	0.1292*	0.1197*	0.1879*	0.0772
_dis_08	0.1035*	0.1498*	0.0859*	0.1333*	0.1022*	0.1629*	0.0524
_ese_01	0.4216*	0.4627*	0.3705*	0.4157*	0.4195*	0.4602*	0.3403*
_ese_02	0.4343*	0.4474*	0.3319*	0.4431*	0.4143*	0.4481*	0.3421*
_ese_03	0.4514*	0.4847*	0.3646*	0.4481*	0.4528*	0.4581*	0.3825*
_ese_04	0.3987*	0.4299*	0.3068*	0.3747*	0.3912*	0.4112*	0.3059*
_ese_05	0.4214*	0.4563*	0.3333*	0.3777*	0.3716*	0.4495*	0.3452*
_ese_06	0.4602*	0.4715*	0.3806*	0.4161*	0.4165*	0.4566*	0.3092*
_hub_01	-0.0194	-0.0008	-0.0985*	-0.0750	-0.0951*	-0.0678	-0.1572*
_hub_02	0.0022	-0.0125	-0.0737	-0.0652	-0.0819*	-0.0342	-0.1335*
_hub_03	0.1066*	0.1029*	0.0169	0.0635	0.0005	0.0813*	-0.0367
_hub_04	-0.0090	0.0099	-0.0274	-0.0126	-0.0452	-0.0367	-0.1285*
_hub_05	0.0483	0.0360	0.0355	0.0201	-0.0515	0.0229	-0.0586
_hub_06	0.0186	0.0009	-0.0245	-0.0091	-0.0805*	-0.0430	-0.1404*
_hub_07	0.0906*	0.0906*	-0.0046	0.0252	0.0463	0.0709	-0.0404
_nar_01	0.4890*	0.5048*	0.4081*	0.4569*	0.4252*	0.4548*	0.4228*
_nar_02	0.4078*	0.4099*	0.4016*	0.4323*	0.3712*	0.3988*	0.3283*
_nar_03	0.4052*	0.4097*	0.3339*	0.4368*	0.4308*	0.4031*	0.3736*
_nar_04	0.4563*	0.4382*	0.3770*	0.4470*	0.4178*	0.4463*	0.3523*
_nar_05	0.5295*	0.5085*	0.4039*	0.4875*	0.4397*	0.5500*	0.4215*
_nar_06	0.2862*	0.3377*	0.2144*	0.3121*	0.2380*	0.2941*	0.1985*
_nar_07	0.3467*	0.3940*	0.2851*	0.3323*	0.3087*	0.3516*	0.2141*
_nar_08	0.3156*	0.3217*	0.2544*	0.3743*	0.2791*	0.3594*	0.2617*
_nar_09	0.3866*	0.4150*	0.2995*	0.3954*	0.3739*	0.4087*	0.2486*
_nar_10	0.4391*	0.4410*	0.3643*	0.4575*	0.3769*	0.4729*	0.2921*
_opt_01	0.5383*	0.4991*	0.4974*	0.5431*	0.4746*	0.5425*	0.4893*
_opt_02	0.6280*	0.6150*	0.5634*	0.5427*	0.5868*	0.5818*	0.5335*
_opt_03	0.5054*	0.4450*	0.3912*	0.4065*	0.4110*	0.4955*	0.4010*
_pse_01	0.4095*	0.4684*	0.3883*	0.4484*	0.4766*	0.4503*	0.4129*
_pse_02	0.5335*	0.5831*	0.4578*	0.5196*	0.4697*	0.5501*	0.4457*
_pse_03	0.4927*	0.5740*	0.4336*	0.4634*	0.4469*	0.4878*	0.4609*
_pse_04	0.4773*	0.5072*	0.4825*	0.4822*	0.4606*	0.5143*	0.4111*
_pse_05	0.5395*	0.5791*	0.5053*	0.5614*	0.5354*	0.5524*	0.4711*
_pse_06	0.4626*	0.4357*	0.4284*	0.4645*	0.4642*	0.5058*	0.4375*
_pse_07	0.4046*	0.4097*	0.3010*	0.4631*	0.4146*	0.4827*	0.3138*
_pse_08	0.6076*	0.6258*	0.5552*	0.5700*	0.5264*	0.5601*	0.5701*
_y_lg1_2a	0.1359*	0.1541*	0.0879*	0.1196*	0.1223*	0.1374*	0.0662
_y_lg1_2b	0.1019*	0.1200*	0.0918*	0.1432*	0.1224*	0.1412*	0.0555
_y_lg1_4a	0.1510*	0.1436*	0.1203*	0.1188*	0.1345*	0.1423*	0.0262
_y_lg1_4b	0.1260*	0.1216*	0.0981*	0.0986*	0.1264*	0.1366*	0.0576
_y_lg1_6a	0.0953*	0.0895*	0.0648	0.1174*	0.0746	0.0949*	-0.0002
_y_lg1_6b	0.0722	0.0756	0.0731	0.1092*	0.1191*	0.1336*	0.0077
_y_lg1_8a	0.1236*	0.1264*	0.1306*	0.1302*	0.1432*	0.1580*	0.0620
_y_lg1_8b	0.0792	0.0868*	0.0931*	0.0672	0.1013*	0.0892*	0.0192
_y_ll1_2a	0.1091*	0.1399*	0.0959*	0.1049*	0.1427*	0.1336*	0.0806
_y_ll1_2b	0.1037*	0.1233*	0.0662	0.1196*	0.1269*	0.1816*	0.0639
_y_ll1_4a	0.1919*	0.1737*	0.1276*	0.1491*	0.1654*	0.1933*	0.1486*
_y_ll1_4b	0.1346*	0.1303*	0.1111*	0.1096*	0.1314*	0.1574*	0.0811*
_y_ll1_6a	0.1415*	0.1344*	0.0906*	0.1198*	0.1092*	0.1832*	0.0830*
_y_ll1_6b	0.0933*	0.0738	0.0367	0.1383*	0.1000*	0.1512*	0.0601
_y_ll1_8a	0.0976*	0.1406*	0.1371*	0.1129*	0.1382*	0.1374*	0.1078*

_y_ll1_8b	0.0980*	0.1150*	0.0783	0.1104*	0.1558*	0.1699*	0.0738
_y_ln1_2a	0.1287*	0.1523*	0.0828*	0.1111*	0.1586*	0.1646*	0.0629
_y_ln1_2b	0.1010*	0.1167*	0.0890*	0.1172*	0.1177*	0.1389*	0.0465
_y_ln1_4a	0.1821*	0.1522*	0.1302*	0.1570*	0.1353*	0.1688*	0.0804
_y_ln1_4b	0.1590*	0.1391*	0.1377*	0.1226*	0.1654*	0.1732*	0.0897*
_y_ln1_6a	0.1350*	0.1183*	0.0834*	0.1117*	0.0895*	0.1472*	0.0536
_y_ln1_6b	0.1046*	0.1054*	0.0725	0.1398*	0.1223*	0.1415*	0.0550
_y_ln1_8a	0.1549*	0.1362*	0.1385*	0.1303*	0.1501*	0.1839*	0.0934*
_y_ln1_8b	0.1058*	0.0984*	0.0780	0.0800	0.1127*	0.1580*	0.0307
age_yrs	0.0402	0.0159	0.1011*	0.0844*	0.0576	0.0653	0.1534*
edu_yrs	0.1441*	0.1582*	0.1482*	0.1663*	0.1166*	0.1443*	0.1156*
esaXassess	0.0085	0.0113	0.0584	0.0633	0.0923*	0.0741	0.0452
esaXdis	0.0037	-0.0325	0.0233	0.0446	0.0319	-0.0103	0.0046
esaXfails01	0.0035	0.0734	0.0109	0.0280	0.0696	0.0281	-0.0016
esaXfails21	0.0535	0.0424	0.0455	-0.0200	0.0828	0.0542	0.0914
esaXfailsO1	-0.0045	0.0235	-0.0011	0.0153	0.0173	0.0179	-0.0111
esaXpsi	-0.0793*	-0.0682	-0.1280*	-0.0718	-0.0941*	-0.1122*	-0.1091*
female	-0.0811*	-0.0319	-0.0110	-0.1047*	-0.0700	-0.0942*	-0.0805*
hubXassess	0.0807*	0.0468	0.1225*	0.0798*	0.1078*	0.1069*	0.0726
hubXdis	0.0623	0.0594	0.0891*	0.1015*	0.1153*	0.0808*	0.0611
hubXfails01	0.0452	0.1107	0.0753	0.1077	0.0642	0.0492	0.0418
hubXfails21	-0.0129	0.0453	0.0610	0.1230	0.0077	-0.0345	0.0693
hubXfailsO1	0.0229	0.0454	0.0403	0.0606	0.0191	0.0361	0.0272
hubXpsi	-0.1261*	-0.1120*	-0.1477*	-0.0774	-0.0866*	-0.0973*	-0.0562
w_mr	0.1544*	0.1531*	0.1161*	0.1564*	0.1559*	0.1747*	0.1385*
w_mr_8	0.1451*	0.1610*	0.1303*	0.1415*	0.1598*	0.1800*	0.1533*
w_mrXloco	0.0456	-0.0621	0.0285	0.0822	-0.0182	-0.0011	0.0072
w_mt	0.1925*	0.1475*	0.1310*	0.1404*	0.1493*	0.1496*	0.1328*
w_mt2	0.1646*	0.1324*	0.1083*	0.1139*	0.1209*	0.1270*	0.1127*
w_mt4	0.1904*	0.1390*	0.1335*	0.1454*	0.1548*	0.1491*	0.1324*
w_mtXloco	0.0285	-0.0052	-0.0017	-0.0045	0.0055	0.0569	-0.0169
w_mu	0.2072*	0.2561*	0.1613*	0.2130*	0.2111*	0.2135*	0.1787*
w_mu_2	0.1495*	0.2062*	0.1142*	0.1769*	0.1763*	0.1707*	0.1371*
w_mu_4	0.2469*	0.2751*	0.2030*	0.2156*	0.2058*	0.2391*	0.1958*
w_muXloco	0.0255	-0.0896	0.0214	0.0210	-0.0465	-0.0139	0.0224
w_tr	0.1646*	0.2012*	0.1303*	0.1488*	0.1894*	0.1622*	0.1593*
w_tr_8	0.1513*	0.1452*	0.1269*	0.1221*	0.1598*	0.1624*	0.1695*
w_trXloco	0.0485	-0.0349	0.0546	0.0919	-0.0102	0.0054	0.0322
w_tt	0.1808*	0.1276*	0.1415*	0.1640*	0.1375*	0.1197*	0.1027*
w_tt2	0.1709*	0.1384*	0.1260*	0.1389*	0.1367*	0.1196*	0.0683
w_tt6	0.1597*	0.0924*	0.1335*	0.1626*	0.1138*	0.0983*	0.1231*
w_ttXloco	0.0116	-0.0136	-0.0098	0.0183	-0.0073	-0.0049	0.0113
w_tu	0.1820*	0.1875*	0.0953	0.1993*	0.1925*	0.1962*	0.1259*
w_tu_2	0.1721*	0.2014*	0.0767	0.1921*	0.1783*	0.1986*	0.1206*
w_tu_6	0.1490*	0.1245*	0.0922*	0.1444*	0.1471*	0.1616*	0.0887
w_tuXloco	0.0340	-0.0760	0.0220	0.0373	-0.0415	-0.0084	0.0527
x_esa	0.7591*	0.7640*	0.6644*	0.7287*	0.6972*	0.7537*	0.6412*
x_hub	0.0477	0.0432	-0.0291	-0.0086	-0.0614	-0.0007	-0.1290*
y_l_1	0.1608*	0.1629*	0.1266*	0.1557*	0.1679*	0.1979*	0.0815*

	_dis_01	_dis_02	_dis_03	_dis_04	_dis_05	_dis_06	_dis_08
_dis_01	1.0000						
_dis_02	0.3229*	1.0000					
_dis_03	0.3927*	0.4020*	1.0000				
_dis_04	0.3711*	0.3088*	0.3792*	1.0000			
_dis_05	0.2138*	0.2779*	0.2537*	0.2769*	1.0000		
_dis_06	0.3836*	0.3395*	0.3196*	0.3052*	0.3560*	1.0000	
_dis_08	0.3731*	0.3139*	0.3953*	0.3312*	0.2996*	0.4229*	1.0000
_ese_01	0.0996*	0.2298*	0.1122*	0.1300*	0.5456*	0.2992*	0.2969*
_ese_02	0.1506*	0.2523*	0.1679*	0.1968*	0.5181*	0.3281*	0.3166*
_ese_03	0.0977*	0.2047*	0.1654*	0.1719*	0.4902*	0.2705*	0.2754*
_ese_04	0.1864*	0.2195*	0.1717*	0.1821*	0.5503*	0.3434*	0.2940*
_ese_05	0.1808*	0.2322*	0.1344*	0.1394*	0.4905*	0.2946*	0.2843*
_ese_06	0.0892*	0.1863*	0.1190*	0.1116*	0.4566*	0.2195*	0.2661*
_hub_01	0.2500*	0.1604*	0.2884*	0.1980*	0.1612*	0.1702*	0.3130*
_hub_02	0.1490*	0.1425*	0.1745*	0.2107*	0.1470*	0.1361*	0.2750*
_hub_03	0.2992*	0.2422*	0.3382*	0.2307*	0.2244*	0.2509*	0.3755*
_hub_04	0.2780*	0.1904*	0.2718*	0.2114*	0.1715*	0.2015*	0.2783*
_hub_05	0.2873*	0.2668*	0.2987*	0.2842*	0.2098*	0.2274*	0.3187*

_hub_06	0.2656*	0.1493*	0.2942*	0.2330*	0.1582*	0.1876*	0.3246*
_hub_07	0.2221*	0.3361*	0.3222*	0.2560*	0.2337*	0.1994*	0.3597*
_nar_01	0.1046*	0.1972*	0.1866*	0.1228*	0.3393*	0.1951*	0.2016*
_nar_02	0.1210*	0.2206*	0.1532*	0.1199*	0.3308*	0.1499*	0.2006*
_nar_03	0.0042	0.0982*	0.0302	0.0337	0.2961*	0.1151*	0.0826*
_nar_04	0.1250*	0.1537*	0.1712*	0.1450*	0.3616*	0.1923*	0.2201*
_nar_05	0.1351*	0.2107*	0.2197*	0.1337*	0.4004*	0.1495*	0.1780*
_nar_06	0.1497*	0.2814*	0.2158*	0.1588*	0.3539*	0.2121*	0.2170*
_nar_07	0.1293*	0.1742*	0.1578*	0.0676	0.3827*	0.1774*	0.1895*
_nar_08	0.1015*	0.1760*	0.1455*	0.1015*	0.3309*	0.2216*	0.2324*
_nar_09	0.1553*	0.2680*	0.2141*	0.1903*	0.3600*	0.2500*	0.2397*
_nar_10	0.2135*	0.2256*	0.2109*	0.1817*	0.4834*	0.2877*	0.2718*
_opt_01	0.0329	0.0546	0.0479	0.0626	0.2007*	0.1276*	0.0672
_opt_02	0.0697	0.1568*	0.1141*	0.1382*	0.2953*	0.1681*	0.1766*
_opt_03	0.0988*	0.0687	0.1270*	0.0884*	0.3393*	0.1691*	0.1534*
_pse_01	-0.0143	0.0750	-0.0220	0.0291	0.2925*	0.1496*	0.0890*
_pse_02	0.0573	0.1029*	0.0739	0.0589	0.3286*	0.1644*	0.0896*
_pse_03	0.0335	0.1240*	0.0594	0.0759	0.3734*	0.2460*	0.1443*
_pse_04	0.0504	0.1276*	0.0697	0.0531	0.3230*	0.1874*	0.1324*
_pse_05	0.0069	0.1339*	0.0792*	0.0357	0.3830*	0.2146*	0.1806*
_pse_06	0.0247	0.0177	0.0309	-0.0173	0.2500*	0.1262*	0.0870*
_pse_07	0.0503	0.1262*	0.1266*	0.0520	0.3599*	0.1681*	0.0500
_pse_08	0.0480	0.1181*	0.0447	0.0287	0.3297*	0.2237*	0.1424*
_y_lg1_2a	0.1594*	0.1842*	0.1893*	0.1778*	0.2816*	0.2062*	0.2389*
_y_lg1_2b	0.1829*	0.2110*	0.1829*	0.1949*	0.2882*	0.2339*	0.2370*
_y_lg1_4a	0.1251*	0.1538*	0.1696*	0.1552*	0.2366*	0.1560*	0.1758*
_y_lg1_4b	0.1477*	0.1715*	0.1649*	0.1511*	0.2505*	0.2142*	0.1950*
_y_lg1_6a	0.1489*	0.2098*	0.2062*	0.1755*	0.2323*	0.1789*	0.1939*
_y_lg1_6b	0.1746*	0.2195*	0.1818*	0.1508*	0.2625*	0.2340*	0.2195*
_y_lg1_8a	0.1559*	0.1795*	0.1391*	0.1177*	0.2512*	0.1564*	0.1820*
_y_lg1_8b	0.0665	0.0973*	0.0779	0.0727	0.2007*	0.1628*	0.1365*
_y_ll1_2a	0.0965*	0.1670*	0.0854*	0.1483*	0.1571*	0.1541*	0.1903*
_y_ll1_2b	0.1383*	0.2551*	0.1512*	0.1778*	0.2389*	0.2021*	0.2562*
_y_ll1_4a	0.0609	0.1677*	0.0569	0.0633	0.1673*	0.1336*	0.1485*
_y_ll1_4b	0.0758	0.1211*	0.0198	0.0870*	0.1698*	0.1649*	0.1476*
_y_ll1_6a	0.0996*	0.2015*	0.0959*	0.1077*	0.1906*	0.1695*	0.1830*
_y_ll1_6b	0.0901*	0.2041*	0.0610	0.1189*	0.1902*	0.1427*	0.1548*
_y_ll1_8a	0.0204	0.1132*	-0.0344	-0.0046	0.0847*	0.0931*	0.1355*
_y_ll1_8b	0.0111	0.1179*	0.0086	0.0601	0.1395*	0.1077*	0.1242*
_y_ln1_2a	0.1407*	0.1679*	0.1754*	0.1750*	0.2624*	0.2281*	0.2516*
_y_ln1_2b	0.1738*	0.2559*	0.1688*	0.2273*	0.2756*	0.2502*	0.2903*
_y_ln1_4a	0.1211*	0.1669*	0.1206*	0.1197*	0.2171*	0.1911*	0.2172*
_y_ln1_4b	0.1525*	0.1798*	0.1176*	0.1470*	0.2355*	0.2337*	0.2293*
_y_ln1_6a	0.1488*	0.1963*	0.1398*	0.1574*	0.2223*	0.2126*	0.2146*
_y_ln1_6b	0.1449*	0.1879*	0.1232*	0.1486*	0.2441*	0.2128*	0.2138*
_y_ln1_8a	0.0979*	0.1392*	0.0605	0.0642	0.1913*	0.1280*	0.1808*
_y_ln1_8b	0.0743	0.1376*	0.0762	0.1064*	0.2274*	0.1827*	0.2048*
age_yrs	-0.1642*	-0.1698*	-0.1807*	-0.1023*	-0.1807*	-0.1255*	-0.2476*
edu_yrs	0.0233	-0.0886*	-0.0820*	-0.0791*	0.0510	-0.0168	0.0051
esaXassess	0.0068	0.1006*	0.2001*	0.0668	0.0250	0.0776	0.0992*
esaXdis	-0.0021	0.0442	0.0625	0.0096	-0.0097	-0.0219	-0.0540
esaXfails01	0.1625*	0.1375*	0.0404	0.1518*	-0.0781	0.0582	0.0595
esaXfails21	0.1022	0.0058	-0.1616	-0.0475	-0.1392	0.0499	-0.1247
esaXfailsO1	0.1013*	0.0980*	0.0181	0.0635	-0.0557	0.0227	0.0090
esaXpsi	-0.0512	-0.0094	-0.1054*	-0.1267*	0.0737	-0.0554	-0.1070*
female	-0.0759	-0.0400	-0.0047	-0.0325	-0.0266	-0.1615*	-0.1220*
hubXassess	-0.0020	0.0407	0.1055*	0.0269	0.1032*	0.0563	0.0202
hubXdis	-0.0314	-0.0291	0.0696	-0.0341	0.0448	-0.0129	-0.0018
hubXfails01	0.0488	-0.0358	-0.0070	0.0582	0.0839	0.0107	-0.0040
hubXfails21	-0.0586	-0.1213	-0.1138	-0.0818	0.1680	-0.1060	-0.0593
hubXfailsO1	0.0324	0.0064	0.0054	0.0389	0.0440	0.0087	0.0052
hubXpsi	0.0243	0.0527	-0.0272	0.0317	-0.0485	0.0173	0.0293
w_mr	0.0922*	0.1384*	0.0644	0.1117*	0.2671*	0.1997*	0.2261*
w_mr_8	0.0619	0.0876*	0.0295	0.0598	0.2086*	0.1450*	0.1621*
w_mrXloco	-0.0028	0.0343	0.0129	-0.0832	-0.0068	0.0310	-0.0059
w_mt	0.0314	0.0335	0.0317	0.0333	0.1162*	0.0759	0.1194*
w_mt2	0.0283	0.0338	0.0423	0.0141	0.0954*	0.0491	0.1084*
w_mt4	0.0296	0.0277	0.0154	0.0485	0.1192*	0.0916*	0.1114*
w_mtXloco	-0.0203	-0.0830*	-0.0076	-0.0202	0.0024	-0.0093	0.0156
w_mu	0.1613*	0.2097*	0.1279*	0.1711*	0.3437*	0.2409*	0.2716*

w_mu_2	0.2001*	0.2102*	0.1691*	0.2054*	0.3225*	0.2439*	0.2781*
w_mu_4	0.1007*	0.1490*	0.0836	0.1159*	0.3074*	0.2339*	0.2255*
w_muXloco	-0.0255	0.0080	-0.0278	-0.0665	-0.0316	0.0146	-0.0458
w_tr	0.0930*	0.1248*	0.0705	0.0767	0.2850*	0.1860*	0.2258*
w_tr_8	0.0648	0.0987*	0.0278	0.0251	0.2155*	0.1359*	0.1512*
w_trXloco	0.0043	0.0340	0.0155	-0.1065*	0.0436	0.0449	0.0124
w_tt	0.0218	0.0236	0.0788	0.0362	0.1568*	0.0602	0.1424*
w_tt2	0.0306	0.0069	0.0703	0.0457	0.1600*	0.0817*	0.1281*
w_tt6	0.0080	0.0384	0.0742	0.0190	0.1250*	0.0249	0.1333*
w_ttXloco	-0.0489	-0.0831*	-0.0181	-0.0633	-0.0075	-0.0299	0.0172
w_tu	0.2088*	0.2681*	0.2054*	0.2472*	0.4075*	0.2827*	0.3133*
w_tu_2	0.1958*	0.2412*	0.2183*	0.2462*	0.3899*	0.2351*	0.2850*
w_tu_6	0.2028*	0.2533*	0.1681*	0.2145*	0.3555*	0.2743*	0.2618*
w_tuXloco	-0.0193	0.0240	-0.0111	-0.0498	-0.0298	0.0282	-0.0562
x_esa	0.1166*	0.2124*	0.1547*	0.1447*	0.5302*	0.2868*	0.2589*
x_hub	0.3316*	0.2820*	0.3772*	0.3039*	0.2458*	0.2575*	0.4235*
y_l_1	0.1569*	0.2318*	0.1543*	0.1729*	0.2886*	0.2408*	0.2620*

	_ese_01	_ese_02	_ese_03	_ese_04	_ese_05	_ese_06	_hub_01
_ese_01	1.0000						
_ese_02	0.6738*	1.0000					
_ese_03	0.6572*	0.6519*	1.0000				
_ese_04	0.6457*	0.7084*	0.6111*	1.0000			
_ese_05	0.6665*	0.6729*	0.6744*	0.6508*	1.0000		
_ese_06	0.6053*	0.5997*	0.5848*	0.5834*	0.5811*	1.0000	
_hub_01	0.0051	0.0209	0.0193	0.0752	0.0604	0.0347	1.0000
_hub_02	0.0355	0.0282	0.0699	0.0698	0.0479	0.0102	0.6262*
_hub_03	0.1402*	0.1162*	0.1171*	0.1896*	0.1385*	0.1006*	0.5863*
_hub_04	0.0828*	0.0939*	0.0461	0.0604	0.0658	0.0498	0.5039*
_hub_05	0.1562*	0.0777	0.1159*	0.1512*	0.1193*	0.1211*	0.4632*
_hub_06	0.0573	0.0692	0.0259	0.0842*	0.0709	0.0542	0.6069*
_hub_07	0.1299*	0.1390*	0.1600*	0.1815*	0.1833*	0.1060*	0.4725*
_nar_01	0.3875*	0.4106*	0.3924*	0.4133*	0.4270*	0.4334*	0.0444
_nar_02	0.4215*	0.3850*	0.3607*	0.4025*	0.3906*	0.4324*	0.0608
_nar_03	0.3852*	0.4035*	0.3491*	0.3229*	0.3517*	0.4036*	-0.0893*
_nar_04	0.4366*	0.4307*	0.4554*	0.4523*	0.4089*	0.4331*	0.0472
_nar_05	0.3846*	0.3989*	0.3968*	0.3703*	0.3531*	0.3810*	0.0649
_nar_06	0.3568*	0.3617*	0.3591*	0.3656*	0.3674*	0.3457*	0.1415*
_nar_07	0.4334*	0.4002*	0.4187*	0.3946*	0.4340*	0.5015*	0.0578
_nar_08	0.3724*	0.4199*	0.3659*	0.3564*	0.3657*	0.3532*	0.0944*
_nar_09	0.4212*	0.4403*	0.4507*	0.4353*	0.4693*	0.4357*	0.0887*
_nar_10	0.4425*	0.4434*	0.4447*	0.4747*	0.3884*	0.3900*	0.0883*
_opt_01	0.3574*	0.3677*	0.3616*	0.3007*	0.3470*	0.3120*	-0.0976*
_opt_02	0.4627*	0.4272*	0.4979*	0.3917*	0.4241*	0.3900*	0.0018
_opt_03	0.3789*	0.3803*	0.3861*	0.3789*	0.3699*	0.3699*	0.0479
_pse_01	0.4322*	0.4804*	0.4816*	0.4048*	0.4216*	0.4646*	-0.1636*
_pse_02	0.4686*	0.4488*	0.4495*	0.4116*	0.3918*	0.4735*	-0.0723
_pse_03	0.5022*	0.5007*	0.4606*	0.4689*	0.4909*	0.5026*	-0.0612
_pse_04	0.4912*	0.4668*	0.4672*	0.4641*	0.4208*	0.4870*	-0.0979*
_pse_05	0.5307*	0.5384*	0.5037*	0.4820*	0.4902*	0.5003*	-0.0934*
_pse_06	0.4455*	0.4349*	0.4397*	0.3786*	0.4189*	0.4353*	-0.1391*
_pse_07	0.4239*	0.4440*	0.4287*	0.4473*	0.4179*	0.4414*	-0.0301
_pse_08	0.4345*	0.4958*	0.4848*	0.4397*	0.5055*	0.4416*	-0.0581
_y_lg1_2a	0.2373*	0.2643*	0.1777*	0.2413*	0.2611*	0.2197*	0.2113*
_y_lg1_2b	0.2525*	0.3114*	0.2062*	0.2458*	0.2620*	0.1920*	0.1442*
_y_lg1_4a	0.2565*	0.2460*	0.1992*	0.2268*	0.2569*	0.2233*	0.1152*
_y_lg1_4b	0.2536*	0.2842*	0.2014*	0.2343*	0.2715*	0.2264*	0.1283*
_y_lg1_6a	0.2174*	0.2804*	0.1929*	0.2189*	0.2255*	0.1700*	0.1447*
_y_lg1_6b	0.2503*	0.2755*	0.1934*	0.2580*	0.2455*	0.1950*	0.1032*
_y_lg1_8a	0.2451*	0.2752*	0.1873*	0.2273*	0.2240*	0.2274*	0.0921*
_y_lg1_8b	0.2130*	0.2259*	0.1457*	0.1889*	0.2110*	0.1532*	0.0909*
_y_ll1_2a	0.2211*	0.2436*	0.1625*	0.2417*	0.1891*	0.2553*	0.0566
_y_ll1_2b	0.2739*	0.3366*	0.2626*	0.2679*	0.2515*	0.2703*	0.0851*
_y_ll1_4a	0.3008*	0.2954*	0.2535*	0.2898*	0.2679*	0.3090*	-0.0122
_y_ll1_4b	0.2736*	0.2919*	0.1840*	0.2643*	0.1964*	0.2614*	0.0230
_y_ll1_6a	0.2430*	0.2778*	0.2300*	0.2750*	0.1933*	0.2591*	0.0083
_y_ll1_6b	0.2490*	0.2651*	0.1956*	0.2360*	0.1778*	0.2208*	0.0018
_y_ll1_8a	0.2228*	0.2291*	0.1915*	0.1999*	0.1612*	0.2497*	-0.0525
_y_ll1_8b	0.2400*	0.2484*	0.1788*	0.2299*	0.1531*	0.2335*	-0.0350

_y_ln1_2a	0.2849*	0.2956*	0.2109*	0.2834*	0.2779*	0.2855*	0.1375*
_y_ln1_2b	0.2810*	0.3301*	0.2362*	0.2675*	0.2579*	0.2356*	0.1164*
_y_ln1_4a	0.2840*	0.2919*	0.2307*	0.2700*	0.2862*	0.2843*	0.0919*
_y_ln1_4b	0.2884*	0.3239*	0.2324*	0.2836*	0.2721*	0.2842*	0.0920*
_y_ln1_6a	0.2474*	0.2744*	0.2197*	0.2461*	0.2467*	0.2203*	0.0990*
_y_ln1_6b	0.2691*	0.2845*	0.1934*	0.2519*	0.2419*	0.2237*	0.0875*
_y_ln1_8a	0.2681*	0.2913*	0.2037*	0.2458*	0.2495*	0.2827*	-0.0011
_y_ln1_8b	0.2197*	0.2752*	0.1717*	0.2426*	0.1923*	0.2235*	0.0488
age_yrs	-0.1076*	-0.1833*	-0.1017*	-0.2200*	-0.1616*	-0.1524*	-0.2467*
edu_yrs	0.1028*	0.1096*	0.0503	0.0832*	0.0664	0.1291*	-0.0003
esaXassess	-0.0264	-0.0230	0.0403	-0.0291	-0.0589	-0.0459	0.0394
esaXdis	-0.0610	-0.0877*	-0.0634	-0.0458	-0.0617	-0.0795*	-0.0763
esaXfails01	-0.0495	-0.0794	0.0731	-0.0229	0.0647	-0.0156	0.1053
esaXfails21	0.0483	-0.1439	0.1986	-0.0057	0.1267	-0.0601	0.0511
esaXfails01	-0.0435	-0.0522	0.0253	-0.0148	0.0212	-0.0116	0.0508
esaXpsi	0.0706	0.1323*	0.0394	0.0821*	0.1092*	0.0484	-0.1739*
female	-0.1386*	-0.1564*	-0.1715*	-0.1305*	-0.1140*	-0.1120*	-0.0386
hubXassess	0.0430	0.0436	0.0623	0.0929*	0.0437	0.0694	0.0516
hubXdis	0.0061	-0.0181	0.0253	0.0327	0.0278	0.0124	0.0650
hubXfails01	0.0894	0.0649	0.1561*	0.0366	0.0728	0.1327*	0.0052
hubXfails21	0.0996	0.0818	0.1420	0.0257	0.0881	0.1645	-0.1023
hubXfails01	0.0061	-0.0160	0.0525	-0.0102	0.0081	0.0520	-0.0025
hubXpsi	-0.0400	-0.0393	-0.0506	-0.0692	-0.0675	-0.1219*	-0.0668
w_mr	0.3385*	0.3572*	0.2863*	0.3042*	0.2759*	0.2979*	-0.0058
w_mr_8	0.3188*	0.3133*	0.2277*	0.2854*	0.2325*	0.2577*	-0.0189
w_mrXloco	0.0066	0.0264	0.0413	0.0458	0.0362	0.0319	-0.0588
w_mt	0.2057*	0.1876*	0.2248*	0.1765*	0.1826*	0.2213*	0.0676
w_mt2	0.1660*	0.1595*	0.1925*	0.1556*	0.1457*	0.1768*	0.0956*
w_mt4	0.2135*	0.1864*	0.2241*	0.1702*	0.1926*	0.2320*	0.0268
w_mtXloco	-0.0410	-0.0035	0.0253	0.0191	0.0126	0.0035	-0.0335
w_mu	0.3670*	0.4275*	0.3435*	0.3670*	0.3232*	0.3516*	0.0506
w_mu_2	0.3396*	0.3896*	0.3121*	0.3338*	0.2834*	0.2950*	0.0797
w_mu_4	0.3798*	0.4332*	0.3293*	0.3828*	0.3320*	0.3572*	0.0321
w_muXloco	-0.0484	-0.0145	0.0117	0.0115	0.0015	-0.0328	-0.0466
w_tr	0.3274*	0.3639*	0.2537*	0.3017*	0.2579*	0.3074*	0.0440
w_tr_8	0.2866*	0.2996*	0.2014*	0.2339*	0.2158*	0.2561*	-0.0129
w_trXloco	0.0199	0.0609	0.0699	0.0871	0.0720	0.0607	-0.0503
w_tt	0.1931*	0.1999*	0.2312*	0.1935*	0.1799*	0.2235*	0.0556
w_tt2	0.1774*	0.1834*	0.2060*	0.1868*	0.1706*	0.1962*	0.0532
w_tt6	0.1758*	0.1824*	0.2192*	0.1662*	0.1579*	0.2140*	0.0482
w_ttXloco	-0.0550	-0.0095	0.0562	0.0209	-0.0094	-0.0198	-0.0398
w_tu	0.3930*	0.4425*	0.3857*	0.3781*	0.3410*	0.3370*	0.1212*
w_tu_2	0.3574*	0.4114*	0.3393*	0.3585*	0.3175*	0.3029*	0.1071*
w_tu_6	0.3257*	0.3807*	0.3483*	0.3169*	0.2861*	0.3109*	0.1314*
w_tuXloco	-0.0367	-0.0254	-0.0065	0.0026	-0.0030	-0.0503	-0.0771
x_esa	0.7106*	0.7159*	0.7143*	0.6769*	0.6937*	0.6843*	-0.0166
x_hub	0.1175*	0.1045*	0.1025*	0.1517*	0.1301*	0.0908*	0.7910*
y_l_1	0.3342*	0.3687*	0.2668*	0.3250*	0.3079*	0.3127*	0.1016*

	_hub_02	_hub_03	_hub_04	_hub_05	_hub_06	_hub_07	_nar_01
_hub_02	1.0000						
_hub_03	0.5206*	1.0000					
_hub_04	0.3998*	0.4634*	1.0000				
_hub_05	0.4534*	0.5185*	0.4879*	1.0000			
_hub_06	0.5418*	0.5557*	0.4403*	0.5373*	1.0000		
_hub_07	0.5644*	0.4827*	0.4064*	0.5358*	0.4431*	1.0000	
_nar_01	0.0717	0.1714*	0.0667	0.1512*	0.0621	0.2147*	1.0000
_nar_02	0.0760	0.1940*	0.0845*	0.1771*	0.1074*	0.1777*	0.6314*
_nar_03	-0.0450	0.0253	-0.0402	0.0144	-0.0390	-0.0010	0.3960*
_nar_04	0.0871*	0.1988*	0.1027*	0.1824*	0.0916*	0.2180*	0.6608*
_nar_05	0.0604	0.1851*	0.0991*	0.1121*	0.1005*	0.1786*	0.6108*
_nar_06	0.1206*	0.2502*	0.1605*	0.2115*	0.1764*	0.2645*	0.5748*
_nar_07	0.0302	0.1458*	0.1133*	0.1681*	0.1004*	0.1286*	0.3735*
_nar_08	0.0651	0.1955*	0.0971*	0.1547*	0.1386*	0.1649*	0.3765*
_nar_09	0.0803*	0.2223*	0.0826*	0.2026*	0.1108*	0.2177*	0.5689*
_nar_10	0.1154*	0.2237*	0.0684	0.2079*	0.1098*	0.2007*	0.4810*
_opt_01	-0.0868*	-0.0078	-0.0430	-0.0115	-0.0504	0.0294	0.4096*
_opt_02	0.0248	0.1446*	0.0462	0.0807*	0.0109	0.1661*	0.4551*
_opt_03	0.0301	0.1131*	0.0295	0.0725	0.0679	0.1037*	0.3461*

_pse_01	-0.1169*	-0.0517	-0.0933*	-0.0232	-0.1025*	-0.0396	0.3352*
_pse_02	-0.0794*	0.0094	-0.0546	-0.0331	-0.0302	-0.0293	0.4315*
_pse_03	-0.0736	0.0588	0.0059	0.0288	-0.0618	0.0530	0.4859*
_pse_04	-0.1013*	0.0263	-0.0376	0.0286	-0.0539	-0.0232	0.4049*
_pse_05	-0.1119*	0.0299	-0.0453	0.0148	-0.0847*	0.0014	0.4588*
_pse_06	-0.0928*	-0.0128	-0.0920*	0.0367	-0.0635	-0.0019	0.3455*
_pse_07	-0.0627	0.0632	-0.0684	0.0089	-0.0431	0.0481	0.4507*
_pse_08	-0.0621	0.0623	-0.0480	0.0477	-0.0269	0.0341	0.4331*
_y_lg1_2a	0.1585*	0.2531*	0.1942*	0.2505*	0.1956*	0.2249*	0.2029*
_y_lg1_2b	0.1247*	0.1957*	0.2148*	0.2246*	0.1670*	0.1845*	0.1872*
_y_lg1_4a	0.1051*	0.1786*	0.1204*	0.1638*	0.1156*	0.2233*	0.2129*
_y_lg1_4b	0.1103*	0.1787*	0.1165*	0.2044*	0.1573*	0.1560*	0.2155*
_y_lg1_6a	0.1260*	0.1929*	0.1476*	0.1808*	0.1428*	0.2012*	0.1425*
_y_lg1_6b	0.0758	0.1492*	0.1499*	0.2072*	0.1226*	0.1663*	0.1741*
_y_lg1_8a	0.0663	0.1612*	0.1213*	0.2098*	0.1229*	0.1715*	0.1923*
_y_lg1_8b	0.0743	0.1353*	0.0907*	0.0875*	0.1090*	0.0807	0.1380*
_y_ll1_2a	0.0587	0.1128*	0.1039*	0.1005*	0.0692	0.0993*	0.1169*
_y_ll1_2b	0.0612	0.1173*	0.1455*	0.1115*	0.1201*	0.1588*	0.1129*
_y_ll1_4a	-0.0078	0.0464	0.0264	0.0720	0.0582	0.0318	0.1534*
_y_ll1_4b	0.0081	0.0762	0.0431	0.0412	0.0660	0.0199	0.1154*
_y_ll1_6a	0.0305	0.0669	0.0445	0.0526	0.0354	0.0667	0.1080*
_y_ll1_6b	0.0286	0.0814*	0.0619	0.0685	0.0773	0.0762	0.0738
_y_ll1_8a	-0.0707	-0.0460	-0.0057	-0.0378	-0.0200	-0.0674	0.0576
_y_ll1_8b	-0.0158	0.0179	0.0062	-0.0765	0.0143	-0.0279	0.1033*
_y_ln1_2a	0.1258*	0.2151*	0.1645*	0.2087*	0.1325*	0.1848*	0.2002*
_y_ln1_2b	0.1015*	0.1714*	0.1652*	0.1816*	0.1055*	0.1704*	0.1600*
_y_ln1_4a	0.1038*	0.1618*	0.1097*	0.1391*	0.1446*	0.1652*	0.1811*
_y_ln1_4b	0.0799	0.1402*	0.1107*	0.1546*	0.1202*	0.1122*	0.2107*
_y_ln1_6a	0.1090*	0.1479*	0.1311*	0.1433*	0.0902*	0.1565*	0.1306*
_y_ln1_6b	0.0755	0.1743*	0.1190*	0.1534*	0.1159*	0.1228*	0.1363*
_y_ln1_8a	0.0213	0.0745	0.0602	0.0877*	0.0439	0.0787	0.1392*
_y_ln1_8b	0.0513	0.1142*	0.0684	0.0702	0.0969*	0.0587	0.1243*
age_yrs	-0.2145*	-0.2451*	-0.1703*	-0.1331*	-0.1369*	-0.2436*	-0.0889*
edu_yrs	-0.0232	0.0091	-0.0030	-0.0224	0.0204	-0.0954*	0.0352
esaXassess	0.0556	0.1010*	0.0626	0.0802*	0.0887*	0.0915*	-0.0200
esaXdis	-0.0541	0.0746	-0.0937*	-0.0589	-0.0399	-0.0413	0.0334
esaXfails01	0.0689	0.0751	0.1195	0.1189	0.1065	0.0721	0.0489
esaXfails21	-0.0844	-0.0021	0.2042	0.1725	0.1170	0.0289	0.0525
esaXfailsO1	0.0248	0.0525	0.0540	0.0637	0.0492	0.0423	0.0583
esaXpsi	-0.1570*	-0.1685*	-0.1730*	-0.1436*	-0.1586*	-0.1158*	0.0093
female	-0.0249	-0.0697	-0.0255	-0.0512	-0.0341	-0.0274	0.0031
hubXassess	-0.0152	0.0096	-0.0047	-0.0144	0.0127	-0.0250	0.0345
hubXdis	-0.0192	0.0273	-0.0201	-0.0238	-0.0034	-0.0195	0.0544
hubXfails01	-0.0357	0.0297	0.0170	0.0274	-0.0694	0.0184	0.1013
hubXfails21	-0.0950	0.0543	0.1228	0.0252	0.0834	-0.0644	0.0925
hubXfailsO1	-0.0188	0.0294	-0.0011	0.0251	-0.0450	0.0202	0.0640
hubXpsi	0.0178	0.0167	-0.0420	0.0638	-0.0047	0.0442	-0.0356
w_mr	0.0403	0.1053*	0.0727	0.0865	0.0607	0.0477	0.1565*
w_mr_8	-0.0158	0.0574	0.0187	0.0076	0.0228	-0.0346	0.1476*
w_mrXloco	-0.0373	0.0292	-0.0653	-0.1128*	-0.0835	-0.0191	0.0338
w_mt	0.0728	0.1062*	-0.0086	0.0501	0.0857*	0.0234	0.0820*
w_mt2	0.0892*	0.1220*	0.0026	0.0647	0.1104*	0.0490	0.0709
w_mt4	0.0436	0.0720	-0.0191	0.0264	0.0454	-0.0074	0.0805
w_mtXloco	0.0382	0.0308	-0.0221	0.0115	-0.0073	-0.0414	0.0667
w_mu	0.0718	0.1288*	0.1482*	0.1390*	0.1021*	0.1251*	0.1952*
w_mu_2	0.1186*	0.1562*	0.1691*	0.1740*	0.1162*	0.1407*	0.1791*
w_mu_4	0.0278	0.1222*	0.0789	0.1142*	0.0858	0.0941*	0.2335*
w_muXloco	-0.0241	0.0602	-0.0588	-0.1053*	-0.0546	-0.0222	0.0072
w_tr	0.0610	0.1187*	0.0780	0.0875	0.0951*	0.0819	0.1453*
w_tr_8	0.0063	0.0864	0.0386	0.0374	0.0456	0.0260	0.1204*
w_trXloco	-0.0250	0.0157	-0.0676	-0.1045	-0.0837	-0.0049	0.0541
w_tt	0.0567	0.0732	-0.0291	0.0487	0.0731	0.0230	0.0977*
w_tt2	0.0545	0.0584	-0.0317	0.0369	0.0728	0.0045	0.0836*
w_tt6	0.0490	0.0766	-0.0210	0.0534	0.0602	0.0395	0.0962*
w_ttXloco	0.0233	0.0173	-0.0401	0.0208	-0.0127	-0.0435	0.0278
w_tu	0.1405*	0.1989*	0.1785*	0.2058*	0.1440*	0.1695*	0.2047*
w_tu_2	0.1374*	0.1980*	0.1781*	0.2016*	0.1387*	0.1795*	0.1897*
w_tu_6	0.1083*	0.1846*	0.1741*	0.1982*	0.1363*	0.1386*	0.1741*
w_tuXloco	-0.0279	0.0501	-0.0680	-0.1395*	-0.0814	-0.0466	0.0170
x_esa	-0.0066	0.1461*	0.0276	0.1125*	0.0275	0.1468*	0.6673*

x_hub	0.7651*	0.7822*	0.6997*	0.7619*	0.7738*	0.7435*	0.1434*
y_l_1	0.0912*	0.1757*	0.1419*	0.1692*	0.1348*	0.1585*	0.1986*

	_nar_02	_nar_03	_nar_04	_nar_05	_nar_06	_nar_07	_nar_08
_nar_02	1.0000						
_nar_03	0.3214*	1.0000					
_nar_04	0.6466*	0.3379*	1.0000				
_nar_05	0.5839*	0.3366*	0.6111*	1.0000			
_nar_06	0.4891*	0.3051*	0.5397*	0.4956*	1.0000		
_nar_07	0.3666*	0.3891*	0.3340*	0.3452*	0.3533*	1.0000	
_nar_08	0.2942*	0.4652*	0.3992*	0.3333*	0.3968*	0.4621*	1.0000
_nar_09	0.5910*	0.3734*	0.6099*	0.5622*	0.5933*	0.3407*	0.3679*
_nar_10	0.4277*	0.3497*	0.5020*	0.5342*	0.3933*	0.3052*	0.3940*
_opt_01	0.3644*	0.3814*	0.3643*	0.3516*	0.2329*	0.2648*	0.3436*
_opt_02	0.4170*	0.3511*	0.4767*	0.4975*	0.3098*	0.2880*	0.3006*
_opt_03	0.3214*	0.3078*	0.3436*	0.4170*	0.2099*	0.2817*	0.2875*
_pse_01	0.3081*	0.3844*	0.3912*	0.3353*	0.2481*	0.3343*	0.3403*
_pse_02	0.4276*	0.3994*	0.3658*	0.4545*	0.3269*	0.3953*	0.2874*
_pse_03	0.4128*	0.4052*	0.4495*	0.4061*	0.3635*	0.3689*	0.3603*
_pse_04	0.3904*	0.3082*	0.4099*	0.3776*	0.3024*	0.3303*	0.3319*
_pse_05	0.3970*	0.4640*	0.4523*	0.4203*	0.3199*	0.4181*	0.4104*
_pse_06	0.2801*	0.4538*	0.4029*	0.3445*	0.2188*	0.3508*	0.3825*
_pse_07	0.3903*	0.3247*	0.4583*	0.4330*	0.3066*	0.3287*	0.3002*
_pse_08	0.3408*	0.4090*	0.3908*	0.3992*	0.3120*	0.3523*	0.3659*
_y_lg1_2a	0.2084*	0.1214*	0.2302*	0.2726*	0.2765*	0.2214*	0.1810*
_y_lg1_2b	0.2089*	0.1327*	0.2209*	0.2296*	0.2659*	0.1757*	0.1683*
_y_lg1_4a	0.2378*	0.1020*	0.2477*	0.2428*	0.2547*	0.2144*	0.1922*
_y_lg1_4b	0.2531*	0.1952*	0.2470*	0.2559*	0.2711*	0.2135*	0.1951*
_y_lg1_6a	0.1743*	0.0647	0.1740*	0.2269*	0.2121*	0.1633*	0.1919*
_y_lg1_6b	0.1950*	0.0831*	0.1758*	0.2300*	0.2137*	0.1786*	0.1689*
_y_lg1_8a	0.2284*	0.1239*	0.2302*	0.2591*	0.2410*	0.1879*	0.1903*
_y_lg1_8b	0.1958*	0.1005*	0.2176*	0.1986*	0.1915*	0.1393*	0.1358*
_y_ll1_2a	0.1518*	0.0696	0.1660*	0.1664*	0.1757*	0.1471*	0.1775*
_y_ll1_2b	0.1754*	0.1075*	0.1702*	0.1604*	0.2170*	0.1265*	0.1993*
_y_ll1_4a	0.1911*	0.1620*	0.1949*	0.1916*	0.1941*	0.1596*	0.1997*
_y_ll1_4b	0.2030*	0.1411*	0.1847*	0.1795*	0.2144*	0.1448*	0.2002*
_y_ll1_6a	0.1618*	0.1029*	0.1915*	0.1627*	0.1604*	0.1521*	0.2091*
_y_ll1_6b	0.1347*	0.0777	0.1276*	0.1456*	0.1599*	0.0729	0.1476*
_y_ll1_8a	0.1417*	0.0644	0.1064*	0.0894*	0.0867*	0.1247*	0.1443*
_y_ll1_8b	0.1695*	0.1199*	0.1832*	0.1504*	0.1460*	0.1109*	0.1709*
_y_ln1_2a	0.1999*	0.1180*	0.2416*	0.2504*	0.2385*	0.2119*	0.1836*
_y_ln1_2b	0.2215*	0.1091*	0.2168*	0.2009*	0.2432*	0.1675*	0.2017*
_y_ln1_4a	0.2127*	0.1575*	0.2420*	0.2390*	0.2162*	0.1992*	0.2104*
_y_ln1_4b	0.2646*	0.1829*	0.2704*	0.2675*	0.2421*	0.2171*	0.2119*
_y_ln1_6a	0.1681*	0.0962*	0.2022*	0.2003*	0.1875*	0.1553*	0.1956*
_y_ln1_6b	0.1901*	0.1045*	0.1862*	0.2104*	0.2177*	0.1241*	0.1644*
_y_ln1_8a	0.2017*	0.1349*	0.1978*	0.2121*	0.1726*	0.1701*	0.1855*
_y_ln1_8b	0.1909*	0.1397*	0.2011*	0.2165*	0.1578*	0.1455*	0.1622*
age_yrs	-0.0763	0.0720	-0.1554*	-0.1105*	-0.2211*	-0.1199*	-0.0958*
edu_yrs	0.0673	0.1633*	0.0087	-0.0089	-0.0283	0.0775	0.0404
esaXassess	0.0035	-0.0497	0.0124	-0.0046	-0.0775	-0.0393	-0.0459
esaXdis	0.0414	0.0261	-0.0257	0.0779	0.0619	0.0008	0.0765
esaXfails01	0.0056	-0.0062	0.0357	0.0558	0.0601	-0.0592	-0.0119
esaXfails21	-0.0272	0.0131	-0.0259	-0.0266	0.0687	-0.1300	-0.1425
esaXfailsO1	0.0217	0.0092	0.0375	0.0432	0.0767	-0.0472	0.0140
esaXpsi	-0.0105	0.1061*	0.0292	-0.0182	0.1062*	0.0923*	0.0547
female	0.0092	-0.0440	-0.0810*	0.0118	0.0416	-0.0090	-0.1033*
hubXassess	0.0635	0.1105*	0.0570	0.0655	-0.0203	0.0428	0.0844*
hubXdis	0.0353	0.1077*	0.0218	0.0648	-0.0232	0.0434	0.1187*
hubXfails01	0.1132	0.0161	0.1193	0.0286	0.0548	0.1236	0.0303
hubXfails21	0.2210	0.1077	0.2591*	-0.0354	0.0330	0.0010	-0.0240
hubXfailsO1	0.0566	0.0190	0.0565	0.0254	0.0450	0.0731	0.0189
hubXpsi	-0.0801*	-0.0824*	-0.0506	-0.0785	-0.0205	-0.0181	-0.0395
w_mr	0.1807*	0.1568*	0.2465*	0.2216*	0.2378*	0.1469*	0.2186*
w_mr_8	0.1928*	0.1893*	0.2363*	0.2051*	0.2102*	0.1275*	0.2199*
w_mrXloco	0.0917	0.0572	0.0605	0.0293	-0.0058	0.0843	0.0675
w_mt	0.1196*	0.0491	0.1522*	0.1142*	0.0696	0.1267*	0.0963*
w_mt2	0.0783	0.0304	0.1139*	0.0777	0.0538	0.0903*	0.0810
w_mt4	0.1438*	0.0605	0.1674*	0.1343*	0.0753	0.1444*	0.0967*

w_mtXloco	0.0238	0.0273	0.1040*	0.0507	0.0234	0.0066	0.0368
w_mu	0.2356*	0.1966*	0.2603*	0.2847*	0.2602*	0.2117*	0.3168*
w_mu_2	0.2149*	0.1556*	0.2347*	0.2498*	0.2420*	0.1846*	0.2548*
w_mu_4	0.2568*	0.2261*	0.2838*	0.2670*	0.2663*	0.2159*	0.3153*
w_muXloco	0.0575	0.0134	0.0465	-0.0112	0.0273	0.0415	0.0772
w_tr	0.1934*	0.2181*	0.2381*	0.2098*	0.2359*	0.1850*	0.2548*
w_tr_8	0.1847*	0.1811*	0.2009*	0.1958*	0.1641*	0.1316*	0.1885*
w_trXloco	0.0741	0.0343	0.0853	0.0519	-0.0191	0.0927	0.0413
w_tt	0.1001*	0.0854*	0.1383*	0.0669	0.0530	0.0829*	0.1402*
w_tt2	0.0644	0.0770	0.1220*	0.0573	0.0491	0.0840*	0.1495*
w_tt6	0.1222*	0.0791	0.1314*	0.0657	0.0479	0.0668	0.1046*
w_ttXloco	-0.0131	0.0182	0.0867*	0.0160	0.0260	-0.0069	0.0539
w_tu	0.2007*	0.1830*	0.2748*	0.2956*	0.2785*	0.2025*	0.3056*
w_tu_2	0.1879*	0.1630*	0.2313*	0.2834*	0.2499*	0.1955*	0.2416*
w_tu_6	0.2031*	0.1651*	0.2655*	0.2571*	0.2781*	0.1900*	0.2884*
w_tuXloco	0.0823	0.0599	0.0466	-0.0023	0.0126	0.0370	0.0572
x_esa	0.6144*	0.5689*	0.6625*	0.6578*	0.5043*	0.5373*	0.5311*
x_hub	0.1672*	-0.0328	0.1779*	0.1525*	0.2516*	0.1385*	0.1707*
y_l_1	0.2573*	0.1545*	0.2662*	0.2741*	0.2746*	0.2168*	0.2412*

	_nar_09	_nar_10	_opt_01	_opt_02	_opt_03	_pse_01	_pse_02
_nar_09	1.0000						
_nar_10	0.4640*	1.0000					
_opt_01	0.3186*	0.2960*	1.0000				
_opt_02	0.3809*	0.3921*	0.5555*	1.0000			
_opt_03	0.3649*	0.3788*	0.4783*	0.5605*	1.0000		
_pse_01	0.3384*	0.3490*	0.3895*	0.4365*	0.3614*	1.0000	
_pse_02	0.4085*	0.4116*	0.4560*	0.4406*	0.4284*	0.5008*	1.0000
_pse_03	0.4252*	0.3948*	0.4177*	0.4515*	0.3880*	0.5465*	0.5929*
_pse_04	0.3830*	0.4564*	0.4520*	0.4579*	0.3862*	0.5092*	0.5391*
_pse_05	0.4044*	0.4568*	0.4891*	0.4882*	0.3962*	0.5297*	0.6057*
_pse_06	0.3143*	0.3810*	0.4281*	0.4417*	0.4004*	0.5901*	0.5059*
_pse_07	0.3861*	0.4936*	0.3347*	0.3730*	0.3042*	0.4473*	0.5125*
_pse_08	0.3648*	0.4175*	0.5394*	0.5155*	0.4312*	0.5078*	0.5826*
_y_lg1_2a	0.2760*	0.2212*	0.0690	0.2031*	0.2324*	0.0992*	0.1002*
_y_lg1_2b	0.2309*	0.2110*	0.0653	0.1749*	0.1746*	0.1248*	0.1176*
_y_lg1_4a	0.3030*	0.1830*	0.0898*	0.1860*	0.2096*	0.0909*	0.1132*
_y_lg1_4b	0.2698*	0.1955*	0.0808	0.1829*	0.2049*	0.1377*	0.0984*
_y_lg1_6a	0.2449*	0.1681*	0.0366	0.1160*	0.1493*	0.0770	0.0614
_y_lg1_6b	0.2280*	0.2160*	0.0469	0.1298*	0.1758*	0.1315*	0.0995*
_y_lg1_8a	0.2677*	0.2106*	0.0678	0.1747*	0.1850*	0.1745*	0.1127*
_y_lg1_8b	0.2172*	0.1637*	0.0555	0.1086*	0.1234*	0.1561*	0.0919*
_y_ll1_2a	0.2238*	0.1051*	0.0760	0.1507*	0.1590*	0.1628*	0.1086*
_y_ll1_2b	0.1962*	0.1710*	0.0649	0.1472*	0.2024*	0.1814*	0.1365*
_y_ll1_4a	0.2594*	0.1119*	0.1778*	0.1899*	0.2093*	0.2416*	0.2229*
_y_ll1_4b	0.1833*	0.1224*	0.0796	0.1419*	0.1832*	0.2173*	0.1491*
_y_ll1_6a	0.2308*	0.1425*	0.0735	0.0849*	0.1551*	0.2047*	0.1811*
_y_ll1_6b	0.1411*	0.1218*	0.0700	0.1276*	0.1466*	0.1878*	0.1443*
_y_ll1_8a	0.1303*	0.0486	0.1048*	0.1183*	0.1378*	0.2165*	0.1753*
_y_ll1_8b	0.1902*	0.1387*	0.1218*	0.1257*	0.1812*	0.2331*	0.1694*
_y_ln1_2a	0.3013*	0.2164*	0.0870*	0.2004*	0.2176*	0.1497*	0.1232*
_y_ln1_2b	0.2503*	0.2056*	0.0960*	0.1756*	0.1925*	0.1488*	0.1528*
_y_ln1_4a	0.2947*	0.1822*	0.1317*	0.2113*	0.2051*	0.1227*	0.1292*
_y_ln1_4b	0.2691*	0.2220*	0.1097*	0.1940*	0.2234*	0.1895*	0.1682*
_y_ln1_6a	0.2612*	0.1559*	0.0806	0.1491*	0.1851*	0.1230*	0.0950*
_y_ln1_6b	0.2199*	0.1803*	0.0945*	0.1655*	0.1775*	0.1618*	0.1357*
_y_ln1_8a	0.2314*	0.1523*	0.0951*	0.1836*	0.1760*	0.2098*	0.1477*
_y_ln1_8b	0.2322*	0.1942*	0.0909*	0.1274*	0.1798*	0.1851*	0.1306*
age_yrs	-0.1565*	-0.0435	0.1178*	0.0123	0.0465	-0.0362	0.0167
edu_yrs	-0.0370	0.0423	0.1394*	0.0620	0.0854*	0.1431*	0.1289*
esaXassess	0.0075	0.0915*	-0.0182	0.0178	-0.0167	0.0130	-0.0478
esaXdis	0.0308	0.0428	0.0556	-0.0208	-0.0269	0.0285	-0.0090
esaXfails01	0.1250	0.0384	0.0637	0.0169	-0.0508	-0.0583	-0.0720
esaXfails21	0.0725	-0.0190	-0.0233	0.1177	-0.0865	-0.1163	-0.1246
esaXfails01	0.0986*	0.0373	0.0480	0.0178	-0.0301	-0.0523	-0.0613
esaXpsi	0.0913*	-0.0134	-0.0312	-0.0935*	0.0119	0.0115	-0.0247
female	-0.0413	-0.1421*	-0.0317	-0.0804*	-0.0558	-0.0309	-0.0209
hubXassess	0.0753	0.0895*	0.1050*	0.0371	0.1321*	0.1306*	0.0923*
hubXdis	-0.0004	0.0879*	0.0806*	0.0582	0.0785*	0.0176	0.0281

hubXfails01	0.1023	0.0656	0.0935	0.0999	0.0325	0.1171	0.0358
hubXfails21	0.0850	-0.0040	0.1602	0.1404	-0.0023	0.0959	0.0041
hubXfailsO1	0.0545	0.0583	0.0505	0.0295	0.0004	0.0269	0.0114
hubXpsi	-0.0526	-0.0444	-0.0920*	-0.1273*	-0.1748*	-0.0922*	-0.1527*
w_mr	0.2463*	0.2449*	0.1591*	0.1391*	0.2301*	0.2425*	0.2083*
w_mr_8	0.2347*	0.2133*	0.1673*	0.1469*	0.2101*	0.2350*	0.2327*
w_mrXloco	0.0490	0.0549	0.0285	0.0220	0.0426	0.0146	-0.0303
w_mt	0.0888*	0.0730	0.1294*	0.1673*	0.1143*	0.1588*	0.1107*
w_mt2	0.0590	0.0854*	0.1129*	0.1458*	0.1187*	0.1115*	0.0910*
w_mt4	0.1062*	0.0479	0.1253*	0.1627*	0.0910*	0.1829*	0.1132*
w_mtXloco	-0.0219	0.0795	0.0015	0.0079	0.0288	0.0521	-0.0244
w_mu	0.2805*	0.3026*	0.1947*	0.2010*	0.2871*	0.2558*	0.2428*
w_mu_2	0.2549*	0.2918*	0.1625*	0.1844*	0.2639*	0.2272*	0.1817*
w_mu_4	0.2777*	0.2938*	0.2094*	0.2306*	0.2471*	0.2493*	0.2693*
w_muXloco	0.0653	0.0495	0.0327	0.0076	0.0422	0.0014	-0.0415
w_tr	0.2455*	0.2226*	0.1389*	0.1277*	0.2035*	0.2299*	0.2119*
w_tr_8	0.2128*	0.1974*	0.1332*	0.1143*	0.1930*	0.2144*	0.1890*
w_trXloco	0.0448	0.0702	0.0533	0.0493	0.0779	-0.0014	-0.0225
w_tt	0.0393	0.1225*	0.1059*	0.1782*	0.1191*	0.1393*	0.1275*
w_tt2	0.0406	0.1190*	0.0881*	0.1599*	0.1035*	0.1361*	0.1151*
w_tt6	0.0309	0.1044*	0.1067*	0.1667*	0.1153*	0.1179*	0.1181*
w_ttXloco	-0.0133	0.0921*	0.0176	-0.0288	0.0219	0.0051	-0.0864*
w_tu	0.3004*	0.3424*	0.1895*	0.1730*	0.2803*	0.2446*	0.2032*
w_tu_2	0.2741*	0.3451*	0.1724*	0.1739*	0.2706*	0.2196*	0.1984*
w_tu_6	0.2743*	0.2879*	0.1309*	0.1235*	0.2104*	0.2182*	0.1811*
w_tuXloco	0.0666	0.0468	0.0347	0.0205	0.0263	0.0514	-0.0182
x_esa	0.6169*	0.6216*	0.6764*	0.7539*	0.6530*	0.6373*	0.6969*
x_hub	0.1906*	0.1924*	-0.0526	0.0918*	0.0867*	-0.1109*	-0.0553
y_l_1	0.3110*	0.2239*	0.1122*	0.2083*	0.2412*	0.2134*	0.1720*

	_pse_03	_pse_04	_pse_05	_pse_06	_pse_07	_pse_08	_y_lg~2a
_pse_03	1.0000						
_pse_04	0.5147*	1.0000					
_pse_05	0.5759*	0.5989*	1.0000				
_pse_06	0.5262*	0.5084*	0.5236*	1.0000			
_pse_07	0.4546*	0.4754*	0.5134*	0.4421*	1.0000		
_pse_08	0.6159*	0.5537*	0.6109*	0.5195*	0.4698*	1.0000	
_y_lg1_2a	0.1222*	0.1211*	0.1897*	0.1116*	0.1496*	0.1481*	1.0000
_y_lg1_2b	0.1485*	0.1030*	0.1928*	0.0926*	0.1301*	0.1526*	0.7350*
_y_lg1_4a	0.1358*	0.1313*	0.1931*	0.1000*	0.1445*	0.1393*	0.7170*
_y_lg1_4b	0.1240*	0.0963*	0.1658*	0.1001*	0.1451*	0.1345*	0.7018*
_y_lg1_6a	0.1059*	0.0934*	0.1664*	0.0609	0.1298*	0.0826*	0.7198*
_y_lg1_6b	0.1386*	0.1440*	0.1736*	0.1193*	0.1341*	0.1390*	0.6998*
_y_lg1_8a	0.1665*	0.1685*	0.1856*	0.1403*	0.1646*	0.1621*	0.6790*
_y_lg1_8b	0.1372*	0.1042*	0.1477*	0.0959*	0.1353*	0.1037*	0.6074*
_y_ll1_2a	0.1447*	0.1491*	0.1701*	0.0977*	0.0850*	0.1274*	0.5626*
_y_ll1_2b	0.2265*	0.1800*	0.1928*	0.1232*	0.1295*	0.1848*	0.4846*
_y_ll1_4a	0.2810*	0.2578*	0.2514*	0.2131*	0.1734*	0.2145*	0.3897*
_y_ll1_4b	0.1973*	0.1912*	0.1469*	0.1003*	0.1368*	0.1208*	0.3675*
_y_ll1_6a	0.2194*	0.1806*	0.2176*	0.1561*	0.1389*	0.1366*	0.3574*
_y_ll1_6b	0.1847*	0.1676*	0.1599*	0.1293*	0.1120*	0.1497*	0.4067*
_y_ll1_8a	0.2344*	0.2288*	0.1927*	0.1163*	0.1164*	0.1552*	0.2434*
_y_ll1_8b	0.2130*	0.1731*	0.1811*	0.1275*	0.1757*	0.1290*	0.2631*
_y_ln1_2a	0.1405*	0.1482*	0.2178*	0.1217*	0.1365*	0.1552*	0.8189*
_y_ln1_2b	0.1913*	0.1500*	0.2039*	0.1100*	0.1559*	0.1661*	0.6522*
_y_ln1_4a	0.2118*	0.1781*	0.2259*	0.1639*	0.1641*	0.1937*	0.6408*
_y_ln1_4b	0.1731*	0.1787*	0.2020*	0.1454*	0.1948*	0.1601*	0.5693*
_y_ln1_6a	0.1538*	0.1406*	0.2025*	0.1070*	0.1269*	0.1165*	0.6286*
_y_ln1_6b	0.1792*	0.1570*	0.1705*	0.1376*	0.1094*	0.1444*	0.6279*
_y_ln1_8a	0.2052*	0.2044*	0.2028*	0.1613*	0.1607*	0.1581*	0.4974*
_y_ln1_8b	0.1845*	0.1467*	0.1595*	0.1270*	0.1409*	0.1051*	0.4942*
age_yrs	-0.0364	0.0105	-0.0091	-0.0153	-0.0335	0.0083	-0.2278*
edu_yrs	0.1475*	0.1290*	0.0812*	0.1465*	0.0870*	0.1226*	-0.0876*
esaXassess	-0.0651	0.0076	0.0226	-0.0188	-0.0017	-0.0474	0.0568
esaXdis	-0.0006	0.0013	0.0278	0.0609	0.0507	-0.0146	0.0517
esaXfails01	-0.0783	-0.0885	-0.1026	-0.1138	-0.0453	-0.0970	-0.0002
esaXfails21	-0.1017	-0.0364	0.0040	-0.1216	-0.1147	-0.1822	0.0864
esaXfailsO1	-0.0537	-0.0603	-0.0450	-0.0773	-0.0312	-0.0532	0.0111
esaXpsi	0.0163	-0.0071	-0.0081	-0.0002	0.0324	0.0104	0.0017

female	-0.1011*	-0.1213*	-0.0697	-0.1160*	-0.0426	-0.0676	-0.0253
hubXassess	0.0921*	0.0779	0.1041*	0.1297*	0.0423	0.0972*	0.0165
hubXdis	0.0477	0.0129	0.0831*	0.0555	0.0625	0.0338	0.0098
hubXfails01	0.0611	0.1138	0.0767	0.0575	0.0977	-0.0003	-0.0809
hubXfails21	-0.0003	0.2106	0.1545	0.0370	0.1641	-0.0905	-0.1076
hubXfailsO1	0.0158	0.0420	0.0469	0.0046	0.0480	-0.0231	-0.0488
hubXpsi	-0.0922*	-0.0581	-0.0696	-0.1352*	-0.0844*	-0.1303*	-0.0517
w_mr	0.2521*	0.2340*	0.2730*	0.2010*	0.1996*	0.1821*	0.4620*
w_mr_8	0.2445*	0.2232*	0.2721*	0.1987*	0.2226*	0.1796*	0.3433*
w_mrXloco	-0.0658	0.0912	-0.0323	0.0594	0.0228	0.0391	0.0274
w_mt	0.1688*	0.1667*	0.1378*	0.1494*	0.0872*	0.1380*	0.1067*
w_mt2	0.1320*	0.1389*	0.1033*	0.1168*	0.0731	0.1310*	0.1195*
w_mt4	0.1801*	0.1689*	0.1516*	0.1595*	0.0878*	0.1230*	0.0758
w_mtXloco	0.0220	-0.0208	-0.0309	-0.0222	0.0265	-0.0260	-0.0300
w_mu	0.2766*	0.2418*	0.3255*	0.2004*	0.2173*	0.2370*	0.5513*
w_mu_2	0.2058*	0.2069*	0.2754*	0.1783*	0.1706*	0.1950*	0.5821*
w_mu_4	0.3265*	0.2795*	0.3455*	0.2074*	0.2421*	0.2537*	0.4662*
w_muXloco	-0.0558	0.0659	-0.0370	-0.0004	-0.0221	0.0589	0.0416
w_tr	0.2428*	0.2096*	0.2977*	0.1939*	0.1632*	0.1760*	0.4161*
w_tr_8	0.2107*	0.1964*	0.2695*	0.1608*	0.1691*	0.1602*	0.3541*
w_trXloco	-0.0723	0.0949	-0.0333	0.0709	0.0385	0.0470	0.0362
w_tt	0.1828*	0.1676*	0.1405*	0.1783*	0.1341*	0.1574*	0.0844*
w_tt2	0.1511*	0.1567*	0.1412*	0.1651*	0.1326*	0.1337*	0.0908*
w_tt6	0.1860*	0.1496*	0.1151*	0.1612*	0.1117*	0.1560*	0.0621
w_ttXloco	-0.0444	-0.0403	-0.0387	-0.0570	0.0005	-0.0252	-0.0551
w_tu	0.2594*	0.2573*	0.3269*	0.2234*	0.2120*	0.2722*	0.5790*
w_tu_2	0.2428*	0.2228*	0.3036*	0.1950*	0.1728*	0.2538*	0.5749*
w_tu_6	0.2473*	0.2354*	0.2886*	0.1944*	0.1976*	0.2124*	0.5116*
w_tuXloco	-0.0422	0.0774	-0.0080	0.0404	0.0030	0.0488	0.0226
x_esa	0.6981*	0.6814*	0.7436*	0.6497*	0.6124*	0.7431*	0.2628*
x_hub	-0.0103	-0.0519	-0.0541	-0.0679	-0.0180	-0.0082	0.2840*
y_l_1	0.2294*	0.2062*	0.2477*	0.1612*	0.1858*	0.1915*	0.7725*

	_y_lg~2b	_y_lg~4a	_y_lg~4b	_y_lg~6a	_y_lg~6b	_y_lg~8a	_y_lg~8b
_y_lg1_2b	1.0000						
_y_lg1_4a	0.6769*	1.0000					
_y_lg1_4b	0.7365*	0.6547*	1.0000				
_y_lg1_6a	0.6914*	0.7469*	0.6573*	1.0000			
_y_lg1_6b	0.7392*	0.6641*	0.7138*	0.7078*	1.0000		
_y_lg1_8a	0.6537*	0.7167*	0.6409*	0.7065*	0.6587*	1.0000	
_y_lg1_8b	0.6635*	0.6553*	0.7015*	0.6708*	0.6953*	0.6897*	1.0000
_y_ll1_2a	0.4547*	0.3960*	0.4134*	0.4429*	0.4291*	0.3580*	0.3496*
_y_ll1_2b	0.6432*	0.4107*	0.5046*	0.4463*	0.5079*	0.4160*	0.4222*
_y_ll1_4a	0.3793*	0.4433*	0.3851*	0.3591*	0.3661*	0.3684*	0.3632*
_y_ll1_4b	0.4282*	0.3403*	0.5601*	0.3301*	0.3695*	0.3201*	0.3844*
_y_ll1_6a	0.3913*	0.3507*	0.3271*	0.5008*	0.3838*	0.3682*	0.3382*
_y_ll1_6b	0.4650*	0.3765*	0.4104*	0.4237*	0.5721*	0.3815*	0.4003*
_y_ll1_8a	0.2444*	0.2874*	0.2747*	0.3085*	0.3054*	0.4419*	0.3525*
_y_ll1_8b	0.2894*	0.3420*	0.3564*	0.3195*	0.3498*	0.3480*	0.5347*
_y_ln1_2a	0.6471*	0.6299*	0.5990*	0.6292*	0.6059*	0.5487*	0.5267*
_y_ln1_2b	0.8358*	0.6118*	0.6769*	0.6176*	0.6891*	0.5553*	0.5922*
_y_ln1_4a	0.6171*	0.7811*	0.5894*	0.6513*	0.5760*	0.6274*	0.5817*
_y_ln1_4b	0.6410*	0.5505*	0.8318*	0.5496*	0.6190*	0.5203*	0.5974*
_y_ln1_6a	0.6146*	0.6131*	0.5631*	0.8048*	0.5985*	0.5919*	0.5820*
_y_ln1_6b	0.6611*	0.5628*	0.6204*	0.6136*	0.8139*	0.5651*	0.6138*
_y_ln1_8a	0.5079*	0.5871*	0.5352*	0.5964*	0.5505*	0.7886*	0.5957*
_y_ln1_8b	0.5446*	0.5240*	0.5916*	0.5541*	0.6066*	0.6063*	0.7970*
age_yrs	-0.2235*	-0.2443*	-0.2110*	-0.2251*	-0.2114*	-0.2421*	-0.1925*
edu_yrs	-0.0799	-0.0782	-0.0787	-0.0695	-0.0281	-0.0320	-0.0494
esaXassess	0.0675	0.0075	0.0858*	0.0122	0.0442	-0.0292	-0.0264
esaXdis	0.0320	0.0029	0.0546	0.0431	0.0560	0.0330	0.0712
esaXfails01	-0.0237	-0.0109	-0.0684	-0.0421	-0.0372	-0.0047	0.0054
esaXfails21	-0.0656	0.0877	-0.0355	0.0696	0.0169	0.0772	-0.0450
esaXfailsO1	-0.0123	0.0145	-0.0395	-0.0106	-0.0077	0.0037	0.0037
esaXpsi	-0.0004	0.0525	0.0220	0.0588	0.0150	0.0645	0.0518
female	-0.0410	0.0292	-0.0397	-0.0166	-0.0466	0.0411	-0.0069
hubXassess	0.0275	-0.0149	0.0380	0.0303	0.0482	0.0467	0.0627
hubXdis	0.0310	-0.0290	0.0317	-0.0067	0.0086	-0.0015	0.0042
hubXfails01	-0.0756	-0.0529	-0.0239	-0.0181	-0.0757	0.0009	0.0611

hubXfails21	-0.0186	-0.1453	-0.0586	-0.0507	-0.1420	-0.0234	0.0920
hubXfailsO1	-0.0251	-0.0268	-0.0052	-0.0011	-0.0282	-0.0003	0.0469
hubXpsi	-0.0411	-0.0456	-0.0258	0.0043	0.0034	-0.0379	-0.0424
w_mr	0.5086*	0.4593*	0.5048*	0.5027*	0.5728*	0.5080*	0.5277*
w_mr_8	0.4020*	0.3972*	0.4272*	0.3806*	0.4484*	0.4967*	0.5454*
w_mrXloco	0.0280	0.0359	0.0502	0.0162	0.0410	-0.0051	0.0113
w_mt	0.0988*	0.1151*	0.1121*	0.1151*	0.1054*	0.0796	0.1038*
w_mt2	0.1054*	0.1137*	0.0984*	0.1304*	0.1176*	0.0940*	0.1004*
w_mt4	0.0756	0.0978*	0.1082*	0.0801	0.0752	0.0513	0.0905*
w_mtXloco	0.0062	-0.0082	0.0386	-0.0195	-0.0318	-0.0173	-0.0054
w_mu	0.6408*	0.5128*	0.5913*	0.4953*	0.5432*	0.4391*	0.4517*
w_mu_2	0.6575*	0.4957*	0.5442*	0.4885*	0.5486*	0.4061*	0.4154*
w_mu_4	0.5434*	0.4564*	0.5730*	0.4224*	0.4648*	0.4076*	0.4338*
w_muXloco	0.0302	0.0596	0.0256	0.0250	0.0229	-0.0108	0.0220
w_tr	0.4656*	0.4603*	0.5327*	0.4345*	0.4828*	0.4653*	0.5247*
w_tr_8	0.4030*	0.3888*	0.4526*	0.3641*	0.4517*	0.4749*	0.5367*
w_trXloco	0.0369	0.0479	0.0578	0.0335	0.0542	0.0191	0.0237
w_tt	0.0975*	0.0931*	0.0612	0.1216*	0.1291*	0.0763	0.0806*
w_tt2	0.0944*	0.0874*	0.0510	0.1170*	0.1003*	0.0830*	0.0843*
w_tt6	0.0836*	0.0828*	0.0616	0.1048*	0.1382*	0.0551	0.0620
w_ttXloco	-0.0292	-0.0569	-0.0015	-0.0327	-0.0501	-0.0497	-0.0179
w_tu	0.6415*	0.5049*	0.5669*	0.5374*	0.6047*	0.4501*	0.4399*
w_tu_2	0.6632*	0.4939*	0.5567*	0.4838*	0.5562*	0.4251*	0.4068*
w_tu_6	0.5654*	0.4531*	0.5113*	0.5407*	0.5992*	0.4251*	0.4212*
w_tuXloco	0.0189	0.0306	0.0009	0.0082	0.0021	-0.0437	0.0252
x_esa	0.2484*	0.2606*	0.2611*	0.2026*	0.2278*	0.2596*	0.1938*
x_hub	0.2410*	0.1914*	0.2024*	0.2136*	0.1855*	0.1769*	0.1275*
y_l_1	0.7942*	0.7568*	0.7799*	0.7801*	0.7892*	0.7499*	0.7584*

	_y_ll~2a	_y_ll~2b	_y_ll~4a	_y_ll~4b	_y_ll~6a	_y_ll~6b	_y_ll~8a
_y_ll1_2a	1.0000						
_y_ll1_2b	0.6380*	1.0000					
_y_ll1_4a	0.6708*	0.5643*	1.0000				
_y_ll1_4b	0.5759*	0.6548*	0.6089*	1.0000			
_y_ll1_6a	0.6490*	0.6054*	0.6331*	0.5722*	1.0000		
_y_ll1_6b	0.6228*	0.6995*	0.6235*	0.6469*	0.6241*	1.0000	
_y_ll1_8a	0.5414*	0.4689*	0.6342*	0.5524*	0.6107*	0.5711*	1.0000
_y_ll1_8b	0.4912*	0.5506*	0.6085*	0.6686*	0.6033*	0.6207*	0.6687*
_y_ln1_2a	0.7271*	0.5595*	0.5117*	0.4656*	0.4731*	0.5207*	0.3640*
_y_ln1_2b	0.5533*	0.7972*	0.4708*	0.5413*	0.4984*	0.5734*	0.3554*
_y_ln1_4a	0.5305*	0.5159*	0.6700*	0.4813*	0.4779*	0.5051*	0.4236*
_y_ln1_4b	0.4798*	0.5784*	0.4901*	0.7527*	0.4531*	0.5059*	0.3932*
_y_ln1_6a	0.5508*	0.5477*	0.5082*	0.4466*	0.6954*	0.5325*	0.4561*
_y_ln1_6b	0.5210*	0.5840*	0.4914*	0.5136*	0.5067*	0.7466*	0.4284*
_y_ln1_8a	0.4549*	0.4554*	0.5374*	0.4540*	0.4955*	0.4996*	0.6550*
_y_ln1_8b	0.4205*	0.5304*	0.5011*	0.5328*	0.4845*	0.5199*	0.5075*
age_yrs	-0.1598*	-0.1599*	-0.1365*	-0.1345*	-0.1530*	-0.1203*	-0.1125*
edu_yrs	-0.0987*	-0.0794	0.0209	-0.0243	-0.0155	-0.0413	0.0380
esaXassess	-0.0209	0.0505	-0.0750	0.0096	-0.0148	-0.0537	-0.0933*
esaXdis	-0.0103	-0.0026	-0.0116	0.0261	0.0177	-0.0245	-0.0557
esaXfails01	0.0061	-0.0409	0.0047	-0.1002	-0.0668	-0.0114	-0.1116
esaXfails21	-0.0627	-0.1111	-0.0611	-0.1123	-0.2211	-0.0759	-0.0858
esaXfailsO1	-0.0091	-0.0486	-0.0111	-0.0697	-0.0554	-0.0272	-0.0786
esaXpsi	0.0340	-0.0282	0.0488	0.0309	0.0533	0.0248	0.0554
female	-0.0306	-0.1114*	-0.0555	-0.0804	-0.0763	-0.1009*	-0.0500
hubXassess	-0.0084	0.0212	0.0417	0.0327	0.0458	0.0126	0.0214
hubXdis	-0.0494	0.0092	-0.0932*	0.0159	-0.0670	-0.0577	-0.0728
hubXfails01	-0.0935	-0.1618*	-0.0829	-0.0883	-0.1001	-0.1523*	-0.0230
hubXfails21	-0.2081	-0.1741	-0.0094	-0.0891	-0.0493	-0.1379	-0.0567
hubXfailsO1	-0.0577	-0.0724	-0.0403	-0.0302	-0.0373	-0.0578	-0.0047
hubXpsi	0.0103	0.0179	-0.0526	-0.0430	-0.0051	0.0388	-0.0250
w_mr	0.5374*	0.5975*	0.5763*	0.5798*	0.6328*	0.6730*	0.5748*
w_mr_8	0.4348*	0.5056*	0.5468*	0.5456*	0.5147*	0.5438*	0.6135*
w_mrXloco	-0.0941	-0.0541	-0.1238*	-0.0434	-0.0884	-0.0820	-0.1370*
w_mt	0.1360*	0.1507*	0.1651*	0.1407*	0.0809*	0.1347*	0.1044*
w_mt2	0.1073*	0.1301*	0.1333*	0.0898*	0.0699	0.1135*	0.0825*
w_mt4	0.1441*	0.1479*	0.1717*	0.1716*	0.0794	0.1350*	0.1106*
w_mtXloco	0.0068	0.0192	-0.0218	0.0599	-0.0138	0.0421	-0.0481
w_mu	0.6665*	0.7345*	0.5969*	0.6525*	0.5763*	0.6011*	0.4017*

w_mu_2	0.6660*	0.7239*	0.5024*	0.5270*	0.5236*	0.5705*	0.3038*
w_mu_4	0.5536*	0.6312*	0.6219*	0.6851*	0.5240*	0.5314*	0.4431*
w_muXloco	-0.0698	-0.0278	-0.0694	-0.0092	-0.0552	-0.0734	-0.1333*
w_tr	0.4651*	0.5466*	0.5653*	0.6205*	0.5021*	0.5416*	0.5279*
w_tr_8	0.4087*	0.4799*	0.5320*	0.5207*	0.4705*	0.5179*	0.5625*
w_trXloco	-0.1128*	-0.0492	-0.1319*	-0.0719	-0.1019	-0.1053*	-0.1473*
w_tt	0.0776	0.0973*	0.1294*	0.0640	0.0813*	0.1389*	0.0912*
w_tt2	0.0736	0.0731	0.1041*	0.0548	0.0645	0.0913*	0.0803
w_tt6	0.0681	0.1069*	0.1345*	0.0627	0.0855*	0.1673*	0.0869*
w_ttXloco	-0.0513	-0.0266	-0.0848*	0.0122	-0.0640	-0.0308	-0.1041*
w_tu	0.6171*	0.7388*	0.5269*	0.5475*	0.5870*	0.6473*	0.3544*
w_tu_2	0.6129*	0.7311*	0.4596*	0.5059*	0.5121*	0.5682*	0.2805*
w_tu_6	0.5556*	0.6498*	0.5293*	0.5192*	0.6308*	0.6722*	0.4117*
w_tuXloco	-0.0341	-0.0204	-0.0592	-0.0094	-0.0262	-0.0557	-0.1087*
x_esa	0.2220*	0.2567*	0.3101*	0.2458*	0.2403*	0.2094*	0.2126*
x_hub	0.1152*	0.1532*	0.0379	0.0564	0.0605	0.0772	-0.0619
y_l_1	0.7054*	0.7480*	0.6848*	0.6862*	0.6766*	0.7242*	0.5995*

	_y_ll~8b	_y_ln~2a	_y_ln~2b	_y_ln~4a	_y_ln~4b	_y_ln~6a	_y_ln~6b
_y_ll1_8b	1.0000						
_y_ln1_2a	0.3780*	1.0000					
_y_ln1_2b	0.4161*	0.6978*	1.0000				
_y_ln1_4a	0.4536*	0.6785*	0.6549*	1.0000			
_y_ln1_4b	0.5164*	0.6390*	0.7255*	0.6500*	1.0000		
_y_ln1_6a	0.4511*	0.6933*	0.6950*	0.7037*	0.6235*	1.0000	
_y_ln1_6b	0.4761*	0.6778*	0.7367*	0.6393*	0.6755*	0.6985*	1.0000
_y_ln1_8a	0.5282*	0.5863*	0.5630*	0.6895*	0.6052*	0.6724*	0.6207*
_y_ln1_8b	0.7238*	0.5417*	0.6412*	0.6572*	0.6819*	0.6499*	0.6783*
age_yrs	-0.0873*	-0.1627*	-0.1953*	-0.2206*	-0.1733*	-0.1860*	-0.1782*
edu_yrs	0.0217	-0.1106*	-0.0947*	-0.0175	-0.0366	-0.0425	-0.0356
esaXassess	-0.0766	0.0524	0.0655	-0.0285	0.0519	-0.0219	-0.0181
esaXdis	0.0419	0.0064	0.0384	-0.0155	0.0488	0.0119	0.0342
esaXfails01	-0.0631	-0.0041	-0.0873	-0.0639	-0.1223	-0.0752	-0.0451
esaXfails21	-0.2569*	0.0042	-0.2287*	-0.0542	-0.1327	-0.0650	-0.0929
esaXfailsO1	-0.0518	-0.0018	-0.0557	-0.0274	-0.0698	-0.0336	-0.0130
esaXpsi	0.0415	0.0148	-0.0020	0.0530	0.0380	0.0815*	0.0464
female	-0.0677	-0.0424	-0.0606	-0.0340	-0.0560	-0.0827*	-0.0932*
hubXassess	0.0762	0.0288	0.0208	0.0108	0.0405	0.0416	0.0436
hubXdis	-0.0267	-0.0123	0.0072	-0.0190	0.0312	-0.0279	-0.0316
hubXfails01	0.0001	-0.0761	-0.1301	-0.0844	-0.0388	-0.1235	-0.0924
hubXfails21	0.0400	-0.1224	-0.1055	-0.0402	-0.1044	-0.0654	-0.0351
hubXfailsO1	0.0205	-0.0491	-0.0623	-0.0428	-0.0181	-0.0614	-0.0422
hubXpsi	-0.0491	-0.0098	-0.0227	-0.0382	-0.0518	-0.0169	-0.0245
w_mr	0.6163*	0.5188*	0.5970*	0.5503*	0.6007*	0.6159*	0.6630*
w_mr_8	0.6699*	0.4124*	0.4926*	0.4937*	0.5331*	0.4822*	0.5105*
w_mrXloco	-0.0874	-0.0048	0.0337	0.0088	0.0396	0.0016	0.0399
w_mt	0.1227*	0.1670*	0.1471*	0.1714*	0.1547*	0.1413*	0.1346*
w_mt2	0.0993*	0.1659*	0.1457*	0.1488*	0.1226*	0.1370*	0.1364*
w_mt4	0.1273*	0.1408*	0.1245*	0.1673*	0.1633*	0.1228*	0.1107*
w_mtXloco	0.0196	-0.0174	0.0172	-0.0068	0.0690	-0.0263	0.0156
w_mu	0.4897*	0.6277*	0.7235*	0.6019*	0.6685*	0.5612*	0.5861*
w_mu_2	0.3964*	0.6610*	0.7134*	0.5263*	0.5737*	0.5311*	0.5754*
w_mu_4	0.5034*	0.5397*	0.6331*	0.5971*	0.6863*	0.5099*	0.5191*
w_muXloco	-0.0601	-0.0014	0.0455	0.0312	0.0552	0.0113	0.0308
w_tr	0.6088*	0.4704*	0.5298*	0.5392*	0.6176*	0.5064*	0.5273*
w_tr_8	0.6375*	0.4111*	0.4554*	0.4632*	0.5123*	0.4503*	0.5029*
w_trXloco	-0.1228*	-0.0174	0.0370	0.0239	0.0433	-0.0119	0.0255
w_tt	0.0827*	0.1180*	0.1028*	0.1282*	0.0793	0.1236*	0.1407*
w_tt2	0.0785	0.1307*	0.0969*	0.1203*	0.0765	0.1203*	0.1087*
w_tt6	0.0725	0.0826*	0.0909*	0.1142*	0.0683	0.1050*	0.1513*
w_ttXloco	-0.0426	-0.0635	-0.0157	-0.0634	0.0151	-0.0405	-0.0227
w_tu	0.4395*	0.6140*	0.7132*	0.5240*	0.5954*	0.5993*	0.6374*
w_tu_2	0.3717*	0.6284*	0.7121*	0.4974*	0.5654*	0.5147*	0.5670*
w_tu_6	0.4558*	0.5471*	0.6390*	0.4990*	0.5602*	0.6235*	0.6477*
w_tuXloco	-0.0327	0.0093	0.0224	0.0171	0.0152	0.0128	0.0154
x_esa	0.2323*	0.2797*	0.2643*	0.2925*	0.3002*	0.2379*	0.2442*
x_hub	-0.0251	0.2241*	0.1949*	0.1732*	0.1565*	0.1676*	0.1639*
y_l_1	0.6480*	0.8042*	0.8394*	0.8150*	0.8076*	0.8228*	0.8310*

	_y_ln~8a	_y_ln~8b	age_yrs	edu_yrs	esaXas~s	esaXdis	esaXf~01
_y_ln1_8a	1.0000						
_y_ln1_8b	0.7076*	1.0000					
age_yrs	-0.1988*	-0.1510*	1.0000				
edu_yrs	0.0163	0.0137	0.0167	1.0000			
esaXassess	-0.0690	-0.0414	0.0102	-0.0875*	1.0000		
esaXdis	0.0172	0.0623	-0.0542	0.0205	0.2607*	1.0000	
esaXfails01	-0.0650	-0.0854	-0.0370	-0.0336	-0.0440	0.0772	1.0000
esaXfails21	-0.1024	-0.2344*	0.0986	0.0856	-0.2117	-0.2153	1.0000*
esaXfailsO1	-0.0329	-0.0539	-0.0329	-0.0033	-0.0768	0.1372*	0.9504*
esaXpsi	0.1031*	0.0616	-0.0508	0.0385	-0.4516*	0.0241	-0.1549*
female	-0.0071	-0.0526	-0.0571	-0.1437*	-0.1087*	-0.0598	-0.0334
hubXassess	0.0524	0.0969*	-0.0422	0.1181*	0.1676*	0.2221*	-0.0220
hubXdis	-0.0468	0.0130	-0.0079	0.0746	0.2195*	0.3160*	0.0435
hubXfails01	0.0316	0.0190	0.0157	-0.0363	-0.0541	0.0618	0.2280*
hubXfails21	0.0676	0.0837	0.0882	-0.0471	-0.0651	0.0597	0.2824*
hubXfailsO1	0.0203	0.0400	0.0188	-0.0136	0.0244	0.0975*	0.2494*
hubXpsi	-0.0447	-0.0345	0.0142	-0.0672	-0.0122	-0.0337	0.0105
w_mr	0.5934*	0.6245*	-0.1596*	-0.0018	0.0313	0.0972*	-0.1166
w_mr_8	0.6075*	0.6532*	-0.1406*	0.0239	-0.0219	0.0944*	-0.1059
w_mrXloco	-0.0106	-0.0054	-0.0358	0.0293	0.0741	0.1548*	-0.1157
w_mt	0.1416*	0.1524*	-0.0295	0.1199*	-0.0147	-0.0336	-0.1198
w_mt2	0.1377*	0.1449*	-0.0008	0.0984*	-0.0127	-0.0181	-0.0922
w_mt4	0.1225*	0.1355*	-0.0549	0.1231*	-0.0144	-0.0445	-0.1338*
w_mtXloco	-0.0033	0.0221	0.0374	0.0480	0.0618	0.1353*	-0.0376
w_mu	0.4768*	0.5176*	-0.1867*	-0.0700	0.1325*	0.1270*	-0.1050
w_mu_2	0.3939*	0.4390*	-0.1657*	-0.0821	0.1441*	0.1033*	-0.0590
w_mu_4	0.4874*	0.5310*	-0.1618*	-0.0246	0.0902*	0.1223*	-0.1003
w_muXloco	-0.0293	-0.0054	-0.0386	0.0482	0.0946	0.2421*	-0.0643
w_tr	0.5465*	0.5965*	-0.1718*	0.0250	0.0606	0.1140*	-0.1306
w_tr_8	0.5826*	0.6146*	-0.1193*	0.0230	-0.0066	0.1163*	-0.1233
w_trXloco	-0.0174	-0.0182	-0.0360	0.0297	0.1170*	0.0933	-0.0560
w_tt	0.1299*	0.1228*	-0.0557	0.1321*	-0.0421	-0.0145	-0.1130
w_tt2	0.1344*	0.1238*	-0.0529	0.1229*	-0.0276	-0.0140	-0.0950
w_tt6	0.1016*	0.0995*	-0.0489	0.1188*	-0.0509	-0.0125	-0.1146
w_ttXloco	-0.0530	-0.0107	0.0296	0.0711	0.1298*	0.1748*	-0.0601
w_tu	0.4289*	0.4910*	-0.1969*	-0.0713	0.1199*	0.1278*	-0.0727
w_tu_2	0.3681*	0.4365*	-0.1853*	-0.0765	0.1750*	0.1133*	-0.0639
w_tu_6	0.4538*	0.4793*	-0.1508*	-0.0393	0.0690	0.1079*	-0.0872
w_tuXloco	-0.0427	-0.0203	-0.0369	0.0557	0.1097*	0.2765*	-0.0726
x_esa	0.2685*	0.2281*	-0.0435	0.1391*	0.0000	0.0000	0.0000
x_hub	0.0669	0.0941*	-0.2597*	-0.0249	0.1001*	-0.0554	0.1266*
y_1_1	0.7773*	0.7950*	-0.2389*	-0.0571	-0.0006	0.0299	-0.0625

	esaXf~21	esaXf~O1	esaXpsi	female	hubXas~s	hubXdis	hubXf~01
esaXfails21	1.0000						
esaXfailsO1	1.0000*	1.0000					
esaXpsi	-0.1200	0.0182	1.0000				
female	-0.1467	-0.0342	0.0068	1.0000			
hubXassess	0.0006	0.0309	-0.0739	-0.0562	1.0000		
hubXdis	-0.0181	0.0671	-0.1043*	-0.0440	0.5206*	1.0000	
hubXfails01	0.2824*	0.2477*	0.0861	-0.0359	-0.0606	-0.0151	1.0000
hubXfails21	0.1299	0.2824*	0.0251	-0.1004	-0.0697	-0.1208	1.0000*
hubXfailsO1	0.2824*	0.2682*	0.0105	-0.0319	0.0189	0.0806*	0.9507*
hubXpsi	0.0239	-0.0172	0.0772	-0.0598	-0.5626*	-0.3463*	0.0703
w_mr	-0.4437*	-0.0768	0.1071*	-0.0622	0.0456	0.0096	-0.1035
w_mr_8	-0.4041*	-0.0670	0.1215*	-0.0337	0.0739	0.0197	-0.0766
w_mrXloco	-0.4326*	0.0167	0.1599*	-0.1665*	0.0644	0.0691	0.0197
w_mt	0.0269	-0.0529	-0.0338	-0.0892*	0.0473	0.0183	0.0137
w_mt2	0.0113	-0.0359	-0.0202	-0.0842*	0.0509	0.0150	0.0063
w_mt4	0.0410	-0.0622	-0.0427	-0.0798	0.0358	0.0188	0.0199
w_mtXloco	-0.0186	0.0175	0.0497	-0.0036	0.0457	0.0798	-0.0132
w_mu	-0.4368*	-0.0767	0.0750	-0.0411	0.0390	0.0601	-0.0822
w_mu_2	-0.3953*	-0.0556	0.0346	-0.0631	0.0103	0.0263	-0.0790
w_mu_4	-0.3566*	-0.0640	0.0872	-0.0474	0.0663	0.0741	-0.0871
w_muXloco	-0.3974*	0.0499	0.1596*	-0.1366*	0.1015	0.0364	0.0551
w_tr	-0.3888*	-0.0844	0.1038*	-0.0620	0.0585	0.0230	-0.0694
w_tr_8	-0.3310*	-0.0792	0.0905*	-0.0803	0.0815	0.0131	-0.0332

w_trXloco	-0.3866*	0.0283	0.1431*	-0.1682*	0.0695	0.0928	0.0387
w_tt	-0.0962	-0.0529	-0.0200	-0.0808*	0.0906*	0.0629	0.0410
w_tt2	-0.0768	-0.0480	-0.0060	-0.0495	0.0950*	0.0720	0.0260
w_tt6	-0.0981	-0.0491	-0.0321	-0.1015*	0.0694	0.0414	0.0510
w_ttXloco	-0.1623	0.0139	0.0873*	-0.0731	0.0766	0.1139*	0.0061
w_tu	-0.3048*	-0.0470	0.0849	-0.0993*	0.0707	0.0504	-0.0968
w_tu_2	-0.2444	-0.0511	0.0543	-0.1063*	0.0825	0.0682	-0.0988
w_tu_6	-0.2886*	-0.0571	0.0889	-0.0923*	0.0278	0.0126	-0.1468*
w_tuXloco	-0.3922*	0.0368	0.1266*	-0.1376*	0.0690	0.0476	0.0738
x_esa	-0.0000	-0.0000	-0.0000	-0.1107*	0.1173*	0.0759	0.1201
x_hub	0.0849	0.0627	-0.2053*	-0.0522	-0.0000	0.0000	-0.0000
y_l_1	-0.0865	-0.0364	0.0497	-0.0600	0.0452	-0.0194	-0.0850

	hubXf~21	hubXf~O1	hubXpsi	w_mr	w_mr_8	w_mrXl~o	w_mt
hubXfails21	1.0000						
hubXfailsO1	1.0000*	1.0000					
hubXpsi	0.0667	0.0692	1.0000				
w_mr	-0.2110	-0.0459	-0.0242	1.0000			
w_mr_8	-0.1378	-0.0392	-0.0551	0.9207*	1.0000		
w_mrXloco	0.0424	0.0578	-0.0281	-0.0000	-0.0286	1.0000	
w_mt	-0.1998	-0.0140	-0.0206	0.0513	0.0531	.	1.0000
w_mt2	-0.2037	-0.0158	-0.0240	0.0186	0.0262	.	0.9251*
w_mt4	-0.1556	-0.0098	-0.0137	0.0739	0.0708	.	0.9156*
w_mtXloco	-0.0384	-0.0124	-0.0176	0.1874*	0.1499*	0.0000	0.0000
w_mu	-0.1195	-0.0355	-0.0122	0.8192*	0.7336*	-0.0000	.
w_mu_2	-0.1366	-0.0470	-0.0027	0.7511*	0.6241*	0.0132	0.1166*
w_mu_4	-0.1324	-0.0391	-0.0387	0.8095*	0.7699*	-0.0143	0.0639
w_muXloco	0.1349	0.0778	-0.0525	0.0000	-0.0246	0.8715*	.
w_tr	-0.1550	-0.0292	-0.0243	0.8572*	0.8663*	-0.0000	0.0377
w_tr_8	-0.0723	-0.0044	-0.0221	0.8284*	0.8818*	-0.0009	0.0381
w_trXloco	0.0811	0.0715	-0.0506	-0.0000	-0.0255	0.9117*	.
w_tt	-0.0693	0.0027	-0.0450	0.0419	0.0418	.	0.7632*
w_tt2	-0.0842	-0.0002	-0.0360	0.0318	0.0409	.	0.7545*
w_tt6	-0.0293	0.0054	-0.0470	0.0431	0.0322	.	0.6358*
w_ttXloco	0.0275	0.0077	-0.0021	0.1885*	0.1625*	0.0000	-0.0352
w_tu	-0.2260	-0.0611	-0.0060	0.8190*	0.6813*	-0.0000	0.0689
w_tu_2	-0.2457	-0.0550	-0.0128	0.7273*	0.5910*	0.0003	0.1528*
w_tu_6	-0.2960*	-0.0902	0.0078	0.8329*	0.6800*	-0.0003	0.0761
w_tuXloco	0.2182	0.1033	-0.0402	-0.0000	-0.0340	0.8762*	.
x_esa	0.1363	0.0436	-0.1330*	0.3164*	0.3037*	0.0416	0.2152*
x_hub	-0.0000	0.0000	-0.0000	0.0790	0.0070	-0.0660	0.0751
y_l_1	-0.0829	-0.0328	-0.0320	0.7424*	0.6561*	-0.0178	0.1690*

	w_mt2	w_mt4	w_mtXl~o	w_mu	w_mu_2	w_mu_4	w_muXl~o
w_mt2	1.0000						
w_mt4	0.6944*	1.0000					
w_mtXloco	0.0097	-0.0103	1.0000				
w_mu	.	.	0.2818*	1.0000			
w_mu_2	.	0.1166*	0.2119*	0.9524*	1.0000		
w_mu_4	0.0639	.	0.2847*	0.9432*	0.7971*	1.0000	
w_muXloco	.	.	0.0000	0.0000	0.0045	-0.0049	1.0000
w_tr	0.0354	0.0261	0.2001*	0.8016*	0.6846*	0.8392*	0.0000
w_tr_8	0.0351	0.0304	0.1526*	0.6866*	0.5799*	0.7255*	-0.0174
w_trXloco	.	.	-0.0000	-0.0000	0.0053	-0.0058	0.8125*
w_tt	0.7706*	0.6304*	0.0108	0.0007	0.0158	0.0311	.
w_tt2	0.7772*	0.6070*	0.0366	-0.0178	-0.0042	0.0215	.
w_tt6	0.6247*	0.5435*	-0.0201	0.0202	0.0321	0.0344	.
w_ttXloco	0.0106	-0.0780	0.7821*	0.2147*	0.1741*	0.2034*	0.0000
w_tu	-0.0018	0.0832	0.2701*	0.9003*	0.9079*	0.7978*	0.0000
w_tu_2	0.0777	0.1436*	0.2712*	0.8949*	0.9232*	0.7617*	-0.0014
w_tu_6	0.0583	0.0706	0.1941*	0.8196*	0.8016*	0.7445*	0.0016
w_tuXloco	.	.	0.0000	0.0000	0.0198	-0.0215	0.9147*
x_esa	0.1803*	0.2169*	0.0204	0.3881*	0.3360*	0.4116*	0.0138
x_hub	0.1007*	0.0356	-0.0035	0.1475*	0.1824*	0.1077*	-0.0489
y_l_1	0.1566*	0.1545*	0.0036	0.7481*	0.7050*	0.7016*	-0.0046

	w_tr	w_tr_8	w_trXl~o	w_tt	w_tt2	w_tt6	w_ttXl~o

```
      w_tr |   1.0000
     w_tr_8 |   0.9371*  1.0000
  w_trXloco |  -0.0000   0.0005   1.0000
      w_tt |  -0.0472  -0.0069        .   1.0000
     w_tt2 |  -0.0204   0.0053        .   0.9249*  1.0000
     w_tt6 |  -0.0672  -0.0198        .   0.9046*  0.6746*  1.0000
  w_ttXloco |   0.2136*  0.1514* -0.0000  -0.0000   0.0145  -0.0162   1.0000
      w_tu |   0.7567*  0.6716* -0.0000        .        .        .   0.2607*
     w_tu_2 |   0.6847*  0.5837*  0.0057   0.0781        .   0.0781   0.2481*
     w_tu_6 |   0.7447*  0.6868* -0.0061   0.0350   0.0350        .   0.2227*
  w_tuXloco |  -0.0000  -0.0148   0.7816*       .        .        .   0.0000
      x_esa |   0.3109*  0.2700*  0.0655   0.2146*  0.1951*  0.1979*  0.0030
      x_hub |   0.1094*  0.0448  -0.0610   0.0569   0.0458   0.0591  -0.0133
      y_l_1 |   0.6799*  0.6304* -0.0204   0.1344*  0.1230*  0.1230* -0.0511

             |     w_tu   w_tu_2   w_tu_6 w_tuXl~o    x_esa    x_hub    y_l_1
-------------+------------------------------------------------------------------
       w_tu |   1.0000
     w_tu_2 |   0.9618*  1.0000
     w_tu_6 |   0.9556*  0.8384*  1.0000
  w_tuXloco |   0.0000  -0.0018   0.0019   1.0000
      x_esa |   0.3803*  0.3561*  0.3246*  0.0222   1.0000
      x_hub |   0.2210*  0.2162*  0.2059* -0.0747   0.0828*  1.0000
      y_l_1 |   0.7339*  0.6930*  0.7055* -0.0112   0.3277*  0.1853*  1.0000
```

Regression Results for Testing Moderator Hypotheses (Positive Self-Image, Assessment Orientation, Disregard of the Need for Prior Knowledge)

Percent Time Technical Uncertainty Perceived as Technical Risk

```
      Source |       SS           df       MS      Number of obs   =       590
-------------+----------------------------------   F(11, 578)      =      4.10
       Model |   3.7294488        11    .3390408   Prob > F        =    0.0000
    Residual |  47.7836868       578  .082670738   R-squared       =    0.0724
-------------+----------------------------------   Adj R-squared   =    0.0547
       Total |  51.5131356       589  .087458634   Root MSE        =    .28753

------------------------------------------------------------------------------
        w_tt |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
       x_esa |    .077057     .01693     4.55   0.000                  .18741
       x_hub |     .01161   .0166394     0.70   0.486                .0299571

    esaXpsi |  -.0178333   .0175589    -1.02   0.310               -.0478837
    hubXpsi |   .0149341   .0200724     0.74   0.457                .0369155

  esaXassess |  -.0363902   .0218689    -1.66   0.097               -.0814389
  hubXassess |   .0339208   .0261157     1.30   0.195                .0704998

    esaXdis |  -.0115891   .0226786    -0.51   0.610               -.0228256
    hubXdis |   .0182458   .0242646     0.75   0.452                .0366259

    edu_yrs |   .0119607   .0055199     2.17   0.031                .0895889
    age_yrs |  -.0008191   .0007587    -1.08   0.281               -.0453634
     female |  -.0304807   .0252452    -1.21   0.228               -.0500615
      _cons |   .5589277    .085997     6.50   0.000                       .
------------------------------------------------------------------------------

  Estimation sample regress               Number of obs =        590

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------------
          w_tt |     .8322034      .2957341           0            1
```

```
        x_esa |     3.664869      .7192539     1.197143            5
        x_hub |     1.857482      .7630821            1            5
      esaXpsi |     .0077895      .7940701    -2.289033     3.688336
      hubXpsi |    -.0004107      .7310212    -5.994814     4.337595
   esaXassess |    -.0063099      .6618343    -3.996097     3.203597
   hubXassess |    -.0043937      .6146434    -3.119308     5.344912
      esaXdis |     .0089024      .5824709    -3.729805     3.123001
      hubXdis |    -.0086469      .5936451    -1.852806     5.929554
      edu_yrs |     2.312712      2.215129          .01           10
      age_yrs |     47.75847      16.37741           18           99
       female |      .620339      .4857143            0            1
  ------------------------------------------------------------------------------
```

Percent Time Market Uncertainty Perceived as Market Risk

```
      Source |       SS           df       MS      Number of obs   =       590
-------------+----------------------------------   F(11, 578)      =      3.63
       Model |  2.67336553        11   .24303323   Prob > F        =    0.0001
    Residual |  38.6636048       578   .06689205   R-squared       =    0.0647
-------------+----------------------------------   Adj R-squared   =    0.0469
       Total |  41.3369703       589  .070181613   Root MSE        =    .25863

------------------------------------------------------------------------------
        w_mt |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
       x_esa |   .0712804   .0152289     4.68   0.000                .1935267
       x_hub |   .0168423   .0149675     1.13   0.261                .0485132

     esaXpsi |  -.0134297   .0157946    -0.85   0.396               -.0402543
     hubXpsi |   .0111857   .0180556     0.62   0.536                .030866

  esaXassess |  -.0150956   .0196715    -0.77   0.443               -.0377127
  hubXassess |   .0178069   .0234916     0.76   0.449                .0413142

     esaXdis |  -.0142782   .0203999    -0.70   0.484               -.0313931
     hubXdis |  -.0013973   .0218266    -0.06   0.949               -.0031311

     edu_yrs |   .0097106   .0049653     1.96   0.051                .0811957
     age_yrs |  -.0002491   .0006825    -0.37   0.715               -.0154022
      female |   -.030314   .0227086    -1.33   0.182               -.0555793
       _cons |   .5875456   .0773561     7.60   0.000                       .
------------------------------------------------------------------------------

  Estimation sample regress                 Number of obs =        590

  ------------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------------------
          w_mt |     .8716102      .2649181           0            1
         x_esa |     3.664869      .7192539     1.197143            5
         x_hub |     1.857482      .7630821            1            5
       esaXpsi |     .0077895      .7940701    -2.289033     3.688336
       hubXpsi |    -.0004107      .7310212    -5.994814     4.337595
    esaXassess |    -.0063099      .6618343    -3.996097     3.203597
    hubXassess |    -.0043937      .6146434    -3.119308     5.344912
       esaXdis |     .0089024      .5824709    -3.729805     3.123001
       hubXdis |    -.0086469      .5936451    -1.852806     5.929554
       edu_yrs |     2.312712      2.215129          .01           10
       age_yrs |     47.75847      16.37741           18           99
        female |      .620339      .4857143            0            1
  ------------------------------------------------------------------------------
```

Perceiving Technical Uncertainty Favorably

```
      Source |       SS           df       MS      Number of obs   =       403
-------------+----------------------------------   F(11, 391)      =     11.12
       Model |  71709.7869        11  6519.07153   Prob > F        =    0.0000
    Residual |  229283.905       391  586.403849   R-squared       =    0.2382
-------------+----------------------------------   Adj R-squared   =    0.2168
       Total |  300993.692       402  748.740527   Root MSE        =    24.216

------------------------------------------------------------------------------
        w_tu |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
       x_esa |   13.83731   1.798594     7.69   0.000                .3544087
       x_hub |   6.058638   1.678627     3.61   0.000                .1729552

    esaXpsi |   4.924909     1.7789     2.77   0.006                .1422654
    hubXpsi |   .2683978   1.942839     0.14   0.890                .0075597

  esaXassess |   4.708035   2.392529     1.97   0.050                .1059858
  hubXassess |  -.0981202   2.653212    -0.04   0.971               -.0022167

    esaXdis |   2.688088   2.185105     1.23   0.219                .0596853
    hubXdis |  -1.346988   2.365489    -0.57   0.569               -.0313491

    edu_yrs |  -1.483989   .5420357    -2.74   0.006               -.1246334
    age_yrs |  -.1801445   .0786236    -2.29   0.022                -.107038
     female |  -2.701102   2.543352    -1.06   0.289                -.048645
      _cons |   3.333881   9.121187     0.37   0.715                       .
------------------------------------------------------------------------------

  Estimation sample regress                Number of obs =        403

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------------
          w_tu |     52.72612      27.36312           0          100
         x_esa |     3.739193       .700839    1.350476            5
         x_hub |     1.877478      .7811317           1            5
       esaXpsi |     .0013833      .7904359   -2.289033     3.688336
       hubXpsi |     .0016962      .7707143   -5.994814     4.337595
    esaXassess |    -.0028755      .6159899   -2.663944     2.414548
    hubXassess |     .0315667      .6181838   -2.143903     5.344912
       esaXdis |     .0249635      .6075609   -3.729805     2.540175
       hubXdis |     .0244159      .6368357   -1.622016     5.929554
       edu_yrs |     2.487891      2.298103          .01           10
       age_yrs |     47.00372      16.25858          18           99
        female |     .5880893      .4927909           0            1
  ------------------------------------------------------------------------
```

Perceiving Market Uncertainty Favorably

```
      Source |       SS           df       MS      Number of obs   =       439
-------------+----------------------------------   F(11, 427)      =     11.37
       Model |  64236.7569        11  5839.70518   Prob > F        =    0.0000
    Residual |  219250.088       427  513.466248   R-squared       =    0.2266
-------------+----------------------------------   Adj R-squared   =    0.2067
       Total |  283486.845       438   647.23024   Root MSE        =     22.66

------------------------------------------------------------------------------
        w_mu |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
       x_esa |   14.01021   1.630455     8.59   0.000                .3810989
       x_hub |   3.214137   1.527897     2.10   0.036                .0969751

    esaXpsi |   3.927313   1.621829     2.42   0.016                .1197671
    hubXpsi |  -.2425416   1.792874    -0.14   0.892               -.0071222

  esaXassess |   5.665435   2.161208     2.62   0.009                .1330218
  hubXassess |  -2.076917   2.388765    -0.87   0.385               -.0499155
```

```
    esaXdis |    2.33373   2.001258     1.17   0.244                .0538489
    hubXdis |  -.5744625   2.090529    -0.27   0.784               -.0143284

    edu_yrs |  -1.368762   .4958155    -2.76   0.006               -.1212015
    age_yrs |  -.2077894   .0703957    -2.95   0.003               -.1323187
     female |  -.1170861    2.27255    -0.05   0.959               -.0022602
      _cons |   12.14856   8.165803     1.49   0.138                       .
------------------------------------------------------------------------------

  Estimation sample regress               Number of obs =        439

  ------------------------------------------------------------------------
    Variable |         Mean      Std. Dev.         Min           Max
  -------------+----------------------------------------------------------
        w_mu |     57.51879      25.44072           0           100
       x_esa |     3.748704      .6920259    1.350476             5
       x_hub |     1.897408      .7675829           1             5
     esaXpsi |      .003325      .7758388   -2.289033     3.688336
     hubXpsi |      .000398      .7470613   -5.994814     4.337595
  esaXassess |      .000318      .5973362   -2.663944     2.414548
  hubXassess |     .0135671      .6114285   -2.143903     5.344912
     esaXdis |      .016523      .5870242   -3.729805     2.540175
     hubXdis |    -.0003906      .6345495   -1.622016     5.929554
     edu_yrs |     2.435216      2.252732          .01           10
     age_yrs |     47.50342      16.20046          18           99
      female |     .5968109      .4910978           0            1
  ------------------------------------------------------------------------
```

Perceiving Technical Risk Favorably

```
      Source |       SS           df       MS      Number of obs   =       462
-------------+----------------------------------   F(11, 450)      =      7.21
       Model |  36306.8625        11  3300.62386   Prob > F        =    0.0000
    Residual |  206006.054       450  457.791231   R-squared       =    0.1498
-------------+----------------------------------   Adj R-squared   =    0.1291
       Total |  242312.916       461  525.624547   Root MSE        =    21.396

------------------------------------------------------------------------------
        w_tr |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
       x_esa |   9.462862   1.472241     6.43   0.000                 .2894574
       x_hub |   2.581667   1.422745     1.81   0.070                 .0845851

     esaXpsi |   3.896138   1.475709     2.64   0.009                 .1345649
     hubXpsi |  -.1881809   1.698162    -0.11   0.912                -.0060482

  esaXassess |   2.338961    1.94501     1.20   0.230                 .0636368
  hubXassess |   .1363059   2.207567     0.06   0.951                 .0035906

     esaXdis |   2.737573   1.841602     1.49   0.138                 .0693887
     hubXdis |  -1.898661   1.948172    -0.97   0.330                -.0502481

     edu_yrs |  -.0708825   .4571586    -0.16   0.877                -.0069552
     age_yrs |  -.1854843   .0634542    -2.92   0.004                -.1332867
      female |  -1.359901   2.110757    -0.64   0.520                -.0291464
       _cons |   33.94772   7.331455     4.63   0.000                       .
------------------------------------------------------------------------------

  Estimation sample regress               Number of obs =        462

  ------------------------------------------------------------------------
    Variable |         Mean      Std. Dev.         Min           Max
  -------------+----------------------------------------------------------
        w_tr |     64.11607       22.9265           0           100
       x_esa |     3.716097      .7012938    1.321587             5
       x_hub |     1.851732       .751158           1             5
     esaXpsi |     .0053105      .7918358   -2.289033     3.688336
```

```
      hubXpsi |    -.0135999       .736865    -5.994814     4.337595
    esaXassess |    -.0287875      .6237683     -3.50703     2.414548
    hubXassess |     .0161476      .6039311    -2.143903     5.344912
       esaXdis |     .0201683      .5811131    -3.729805     2.540175
       hubXdis |     .0062574      .6067498    -1.622016     5.929554
       edu_yrs |     2.441385      2.249613          .01           10
       age_yrs |     47.42208       16.4747           18           99
        female |     .5952381       .491378            0            1
  ------------------------------------------------------------------------------
```

Perceiving Market Risk Favorably

```
      Source |       SS           df       MS      Number of obs   =       480
-------------+----------------------------------   F(11, 468)      =      7.16
       Model |  35256.3644        11  3205.12404   Prob > F        =    0.0000
    Residual |  209389.329       468  447.413096   R-squared       =    0.1441
-------------+----------------------------------   Adj R-squared   =    0.1240
       Total |  244645.693       479  510.742575   Root MSE        =    21.152

------------------------------------------------------------------------------
       w_mr |      Coef.   Std. Err.      t    P>|t|                     Beta
------------+-----------------------------------------------------------------
       x_esa |   9.931567   1.432875     6.93   0.000                .3073783
       x_hub |    1.87369   1.371731     1.37   0.173                .0627077

    esaXpsi |   3.256422   1.419775     2.29   0.022                .1146981
    hubXpsi |  -.4297028   1.658983    -0.26   0.796               -.0137889

  esaXassess |   .6561895   1.873949     0.35   0.726                .0182483
  hubXassess |  -.1248585   2.118623    -0.06   0.953               -.0033925

    esaXdis |   2.561399   1.831024     1.40   0.163                .0649193
    hubXdis |  -1.827151   1.920763    -0.95   0.342               -.0495186

    edu_yrs |  -.4653919   .4518893    -1.03   0.304               -.0455885
    age_yrs |  -.1670351   .0613662    -2.72   0.007               -.1216776
     female |  -1.866927   2.036498    -0.92   0.360               -.0404402
      _cons |   33.03119   7.144416     4.62   0.000                       .

------------------------------------------------------------------------------

  Estimation sample regress               Number of obs =        480

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min           Max
  -------------+----------------------------------------------------------
          w_mr |     63.23646      22.59961           0           100
         x_esa |     3.713911      .6994497    1.350476             5
         x_hub |     1.865337      .7563519           1             5
       esaXpsi |     .0120038      .7960061    -2.289033     3.688336
       hubXpsi |     .0016955      .7252071    -5.994814     4.337595
    esaXassess |    -.0198386       .628483    -3.996097     2.414548
    hubXassess |     .0110292      .6140479    -2.143903     5.344912
       esaXdis |     .0080566      .5727932    -3.729805     2.540175
       hubXdis |    -.0071529       .612484    -1.622016     5.929554
       edu_yrs |     2.442167      2.213793          .01           10
       age_yrs |     47.70208       16.4628           18           99
        female |     .6041667      .4895391            0            1
  ------------------------------------------------------------------------
```

Regression Results for Testing Moderator Hypotheses (# of Past Entrepreneurial Failures)

Percent Time Technical Uncertainty Perceived as Technical Risk

Zero versus One Past Failure (Self-Identified Entrepreneurs Only)

```
      Source |       SS           df       MS      Number of obs   =       220
-------------+----------------------------------   F(7, 212)       =      2.11
       Model |  .848214441         7  .121173492   Prob > F        =    0.0438
    Residual |  12.1733765       212  .057421587   R-squared       =    0.0651
-------------+----------------------------------   Adj R-squared   =    0.0343
       Total |  13.0215909       219  .059459319   Root MSE        =    .23963

------------------------------------------------------------------------------
        w_tt |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
       x_esa |   .0857599    .027267     3.15   0.002                .2181509
       x_hub |  -.0033407   .0216544    -0.15   0.878               -.0106585

 esaXfails01 |  -.1262436   .0695849    -1.81   0.071               -.1248431
 hubXfails01 |   .0321197   .0536509     0.60   0.550                .0411945

     edu_yrs |   .0019492   .0070758     0.28   0.783                .0188613
     age_yrs |   .0008707   .0011769     0.74   0.460                .0516329
      female |   .0127205   .0334817     0.38   0.704                .0261417
       _cons |   .5058325   .1400589     3.61   0.000                       .
------------------------------------------------------------------------------

  Estimation sample regress               Number of obs =        220

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------------
          w_tt |     .8886364      .2438428           0            1
         x_esa |     3.925893      .6202727    1.802778            5
         x_hub |     1.879437      .7779771           1            5
  esaXfails01 |     .0004495      .2411378   -1.577855     .8165776
  hubXfails01 |     .0025895      .3127362   -.6564614     1.885357
      edu_yrs |     3.007818      2.359561         .01           10
      age_yrs |     46.17955      14.46065          19           99
       female |     .4954545      .5011195           0            1
  ------------------------------------------------------------------------
```

Zero versus One Past Failure (All Respondents)

```
      Source |       SS           df       MS      Number of obs   =       563
-------------+----------------------------------   F(7, 555)       =      5.56
       Model |  3.29952888         7  .471361268   Prob > F        =    0.0000
    Residual |  47.0581532       555  .084789465   R-squared       =    0.0655
-------------+----------------------------------   Adj R-squared   =    0.0537
       Total |  50.3576821       562  .089604416   Root MSE        =    .29119

------------------------------------------------------------------------------
        w_tt |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
       x_esa |   .0780429   .0172739     4.52   0.000                .1890154
       x_hub |   .0108119   .0169266     0.64   0.523                .0272303

 esaXfailsO1 |  -.1147329   .0787504    -1.46   0.146               -.0621564
 hubXfailsO1 |   .0120891   .0616408     0.20   0.845                .0083627

     edu_yrs |    .013705   .0056934     2.41   0.016                .100813
     age_yrs |  -.0008214   .0007741    -1.06   0.289               -.0450759
      female |  -.0347616   .0259247    -1.34   0.181               -.0562095
```

```
       _cons |   .5544883   .0867719     6.39   0.000                      .
------------------------------------------------------------------------------

  Estimation sample regress                 Number of obs =        563

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------------
          w_tt |     .8290409        .29934           0            1
         x_esa |      3.65071       .724984     1.197143            5
         x_hub |      1.84405      .7539055           1            5
   esaXfailsO1 |     .0013218      .1621669    -1.814939     .9315866
   hubXfailsO1 |     .0007424      .2070703    -.7663004     2.129992
       edu_yrs |     2.265666      2.201922          .01           10
       age_yrs |     47.97602      16.42585           18           99
        female |     .6269982      .4840326           0            1
  ------------------------------------------------------------------------
```

Many versus One Past Failure (Self-Identified Entrepreneurs Only)

```
      Source |       SS           df       MS      Number of obs   =        75
-------------+----------------------------------   F(7, 67)        =      0.47
       Model |  .165288961         7  .023612709   Prob > F        =    0.8519
    Residual |  3.35637771        67   .05009519   R-squared       =    0.0469
-------------+----------------------------------   Adj R-squared   =   -0.0526
       Total |  3.52166667        74   .04759009   Root MSE        =    .22382

------------------------------------------------------------------------------
        w_tt |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
       x_esa |   .0127367   .0499682     0.25   0.800                .0322571
       x_hub |   .0482174   .0357328     1.35   0.182                .1727957

 esaXfails21 |  -.0884068   .1088121    -0.81   0.419               -.0998542
 hubXfails21 |  -.0405057   .0700783    -0.58   0.565               -.0710448

     edu_yrs |   .0007671   .0122973     0.06   0.950                .0075467
     age_yrs |   .0010464   .0018173     0.58   0.567                .0748083
      female |   .0428284   .0531519     0.81   0.423                .0986032
       _cons |   .6789833   .2447407     2.77   0.007                       .
------------------------------------------------------------------------------

  Estimation sample regress                 Number of obs =         75

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------------
          w_tt |     .8933333      .2181515           0            1
         x_esa |     3.869874      .5524927     1.873333            5
         x_hub |     1.909524       .781785           1     4.142857
   esaXfails21 |     .0050308      .2463988    -.7042815     .7911157
   hubXfails21 |     .0158675      .3826256    -.8195975     1.011275
       edu_yrs |     3.027067      2.146201          .01            9
       age_yrs |     49.47333      15.59645           20           81
        female |     .4666667      .5022472           0            1
  ------------------------------------------------------------------------
```

Percent Time Market Uncertainty Perceived as Market Risk

Zero versus One Past Failure (Self-Identified Entrepreneurs Only)

```
      Source |       SS           df       MS      Number of obs   =       220
-------------+----------------------------------   F(7, 212)       =      2.77
       Model |  .824229221         7  .117747032   Prob > F        =    0.0089
    Residual |  9.01071396       212  .042503368   R-squared       =    0.0838
```

```
-------------+----------------------------------   Adj R-squared   =    0.0536
       Total |  9.83494318       219  .044908416   Root MSE        =    .20616

------------------------------------------------------------------------------
       w_mt |      Coef.   Std. Err.      t    P>|t|                     Beta
------------+-----------------------------------------------------------------
      x_esa |   .0893485   .0234591     3.81   0.000                 .2615206
      x_hub |  -.0045218   .0186303    -0.24   0.808                -.0166004

esaXfails01 |  -.1124947   .0598672    -1.88   0.062                -.1280069
hubXfails01 |   .0086371   .0461584     0.19   0.852                 .0127462

    edu_yrs |  -.0004142   .0060877    -0.07   0.946                -.0046118
    age_yrs |   .0010658   .0010126     1.05   0.294                 .0727279
     female |   .0060444   .0288059     0.21   0.834                 .0142931
      _cons |   .5283778   .1204994     4.38   0.000                        .
------------------------------------------------------------------------------

  Estimation sample regress                 Number of obs =        220

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------------
         w_mt |     .9215909      .2119161           0            1
       x_esa |     3.925893      .6202727    1.802778            5
       x_hub |     1.879437      .7779771           1            5
  esaXfails01 |     .0004495      .2411378   -1.577855     .8165776
  hubXfails01 |     .0025895      .3127362   -.6564614     1.885357
      edu_yrs |     3.007818      2.359561         .01           10
      age_yrs |     46.17955      14.46065          19           99
       female |     .4954545      .5011195           0            1
  ------------------------------------------------------------------------
```

Zero versus One Past Failure (All Respondents)

```
      Source |       SS           df       MS      Number of obs   =       563
-------------+----------------------------------   F(7, 555)       =      5.62
       Model |  2.66425508         7  .380607868   Prob > F        =    0.0000
    Residual |  37.6179385       555  .067780069   R-squared       =    0.0661
-------------+----------------------------------   Adj R-squared   =    0.0544
       Total |  40.2821936       562  .071676501   Root MSE        =    .26035

------------------------------------------------------------------------------
       w_mt |      Coef.   Std. Err.      t    P>|t|                     Beta
------------+-----------------------------------------------------------------
      x_esa |   .0740684   .0154444     4.80   0.000                 .2005732
      x_hub |   .0151691   .0151338     1.00   0.317                 .0427158

esaXfailsO1 |  -.0945797   .0704097    -1.34   0.180                -.0572891
hubXfailsO1 |  -.0128469   .0551123    -0.23   0.816                -.0099364

    edu_yrs |   .0112139   .0050904     2.20   0.028                  .09223
    age_yrs |  -.0001977   .0006921    -0.29   0.775                -.0121287
     female |  -.0270094    .023179    -1.17   0.244                -.0488316
      _cons |   .5726651   .0775817     7.38   0.000                        .
------------------------------------------------------------------------------

  Estimation sample regress                 Number of obs =        563

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------------
         w_mt |     .8698934      .2677247           0            1
       x_esa |      3.65071       .724984    1.197143            5
       x_hub |      1.84405      .7539055           1            5
  esaXfailsO1 |     .0013218      .1621669   -1.814939     .9315866
  hubXfailsO1 |     .0007424      .2070703   -.7663004     2.129992
      edu_yrs |     2.265666      2.201922         .01           10
```

```
      age_yrs |     47.97602      16.42585           18           99
       female |     .6269982      .4840326            0            1
  ------------------------------------------------------------------
```

Many versus One Past Failure (Self-Identified Entrepreneurs Only)

```
      Source |       SS           df       MS      Number of obs   =        75
-------------+----------------------------------   F(7, 67)        =      0.92
       Model |  .263052279         7  .037578897   Prob > F        =    0.4935
    Residual |  2.72361439        67  .040650961   R-squared       =    0.0881
-------------+----------------------------------   Adj R-squared   =   -0.0072
       Total |  2.98666667        74   .04036036   Root MSE        =    .20162

------------------------------------------------------------------------------
       w_mt |      Coef.   Std. Err.      t    P>|t|                     Beta
------------+-----------------------------------------------------------------
      x_esa |  -.0079178   .0450123    -0.18   0.861                -.0217748
      x_hub |   .0577031   .0321888     1.79   0.078                 .224548

esaXfails21 |   .0194814     .09802     0.20   0.843                .0238936
hubXfails21 |  -.1150679   .0631278    -1.82   0.073                -.2191547

    edu_yrs |  -.0008845   .0110776    -0.08   0.937                -.0094494
    age_yrs |   .0013273   .0016371     0.81   0.420                 .1030418
     female |   .0129991   .0478802     0.27   0.787                 .0324978
      _cons |   .7564626    .220467     3.43   0.001                        .
------------------------------------------------------------------------------

  Estimation sample regress               Number of obs =         75

  ------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------
         w_mt |     .9033333      .2008989           0            1
        x_esa |     3.869874      .5524927    1.873333            5
        x_hub |     1.909524       .781785           1     4.142857
   esaXfails21 |     .0050308      .2463988   -.7042815     .7911157
   hubXfails21 |     .0158675      .3826256   -.8195975     1.011275
      edu_yrs |     3.027067      2.146201         .01            9
      age_yrs |     49.47333      15.59645          20           81
       female |     .4666667      .5022472           0            1
  ------------------------------------------------------------------
```

Perceiving Technical Uncertainty Favorably

Zero versus One Past Failure (Self-Identified Entrepreneurs Only)

```
      Source |       SS           df       MS      Number of obs   =       170
-------------+----------------------------------   F(7, 162)       =      7.21
       Model |  28840.3162         7  4120.04517   Prob > F        =    0.0000
    Residual |  92575.1295       162  571.451417   R-squared       =    0.2375
-------------+----------------------------------   Adj R-squared   =    0.2046
       Total |  121415.446       169   718.43459   Root MSE        =    23.905

------------------------------------------------------------------------------
       w_tu |      Coef.   Std. Err.      t    P>|t|                     Beta
------------+-----------------------------------------------------------------
      x_esa |    16.0083   3.299349     4.85   0.000                .3602527
      x_hub |   3.926932   2.408552     1.63   0.105                .1184299

esaXfails01 |  -12.74022   7.704668    -1.65   0.100               -.1186981
hubXfails01 |  -9.551773   5.860556    -1.63   0.105               -.1161629

    edu_yrs |  -2.799403   .8161481    -3.43   0.001               -.2485775
    age_yrs |  -.3211144   .1344383    -2.39   0.018               -.1745408
```

```
      female |  -2.101813   3.868248    -0.54   0.588               -.0393126
       _cons |   10.53712   16.76423     0.63   0.531                       .
------------------------------------------------------------------------------

  Estimation sample regress               Number of obs =        170

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------------
         w_tu |     57.04338      26.80363           0          100
        x_esa |     3.971145       .603192    1.873333            5
        x_hub |     1.878852      .8083538           1            5
   esaXfails01 |    -.0164124      .2497242   -1.577855     .8165776
   hubXfails01 |     .0036832      .3259696   -.6564614     1.885357
      edu_yrs |     3.108706      2.380071         .01           10
      age_yrs |     46.36471      14.56903          21           99
       female |     .4882353      .5013383           0            1
  ------------------------------------------------------------------------
```

Zero versus One Past Failure (All Respondents)

```
      Source |       SS           df       MS      Number of obs   =       383
-------------+----------------------------------   F(7, 375)       =     14.32
       Model |  59755.8509         7  8536.55012   Prob > F        =    0.0000
    Residual |  223552.295       375  596.139452   R-squared       =    0.2109
-------------+----------------------------------   Adj R-squared   =    0.1962
       Total |  283308.145       382   741.64436   Root MSE        =    24.416

------------------------------------------------------------------------------
       w_tu |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
      x_esa |   14.33095   1.812418     7.91   0.000                 .3723915
      x_hub |    5.18465   1.700302     3.05   0.002                 .1460835

esaXfailsO1 |  -10.10804   7.201504    -1.40   0.161                -.0671758
hubXfailsO1 |  -9.428887   5.713892    -1.65   0.100                -.0789965

    edu_yrs |  -1.533019   .5576585    -2.75   0.006                -.1288401
    age_yrs |  -.1992192   .0795739    -2.50   0.013                -.1195648
     female |  -3.341923   2.596685    -1.29   0.199                -.0604326
      _cons |     4.3497   9.237656     0.47   0.638                       .
------------------------------------------------------------------------------

  Estimation sample regress               Number of obs =        383

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------------
         w_tu |     52.22911      27.23315           0          100
        x_esa |     3.725283      .7076568    1.350476            5
        x_hub |     1.853177      .7673253           1            5
   esaXfailsO1 |     -.006052      .1809855   -1.814939     .9315866
   hubXfailsO1 |     .0012629       .228163   -.7663004     2.129992
      edu_yrs |     2.451671      2.288766         .01           10
      age_yrs |      47.3564      16.34443          18           99
       female |     .5900783      .4924623           0            1
  ------------------------------------------------------------------------
```

Many versus One Past Failure (Self-Identified Entrepreneurs Only)

```
      Source |       SS           df       MS      Number of obs   =        57
-------------+----------------------------------   F(7, 49)        =      5.45
       Model |  17432.9351         7   2490.4193   Prob > F        =    0.0001
    Residual |  22392.7507        49  456.994913   R-squared       =    0.4377
-------------+----------------------------------   Adj R-squared   =    0.3574
       Total |  39825.6859        56  711.172962   Root MSE        =    21.377
```

```
------------------------------------------------------------------------------
       w_tu |      Coef.   Std. Err.      t    P>|t|                     Beta
------------+-----------------------------------------------------------------
      x_esa |   11.70881   5.336993     2.19   0.033                .2527903
      x_hub |   1.166654   3.850154     0.30   0.763                .0357652

esaXfails21 |  -26.06985   12.38417    -2.11   0.040               -.2338674
hubXfails21 |  -18.04672   7.552442    -2.39   0.021               -.2651225

    edu_yrs |  -3.098319   1.315213    -2.36   0.023               -.2564777
    age_yrs |  -.5006063   .1960264    -2.55   0.014               -.3009742
     female |  -10.69056   5.953644    -1.80   0.079               -.2021898
      _cons |   47.39662   26.48303     1.79   0.080                       .
------------------------------------------------------------------------------

  Estimation sample regress               Number of obs =         57

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------------
         w_tu |     56.44737      26.66783           0          100
        x_esa |      3.85928      .5757518    1.873333            5
        x_hub |     1.978697      .8175334           1     4.142857
   esaXfails21 |    -.0136046      .2392317   -.7042815     .6117363
   hubXfails21 |    -.0162836      .3917743   -.8195975     1.011275
      edu_yrs |     2.919649      2.207553         .01            9
      age_yrs |     49.15789      16.03321          24           81
       female |     .5087719      .5043669           0            1
  ------------------------------------------------------------------------
```

Perceiving Market Uncertainty Favorably

Zero versus One Past Failure (Self-Identified Entrepreneurs Only)

```
      Source |       SS           df       MS      Number of obs   =       184
-------------+----------------------------------   F(7, 176)       =      6.40
       Model |  23996.9754         7  3428.13935   Prob > F        =    0.0000
    Residual |  94338.4532       176  536.013938   R-squared       =    0.2028
-------------+----------------------------------   Adj R-squared   =    0.1711
       Total |  118335.429       183  646.641686   Root MSE        =    23.152

------------------------------------------------------------------------------
       w_mu |      Coef.   Std. Err.      t    P>|t|                     Beta
------------+-----------------------------------------------------------------
      x_esa |   13.94399   3.091733     4.51   0.000                .3266251
      x_hub |   4.748279   2.339517     2.03   0.044                .1470517

esaXfails01 |   -14.0535   7.515725    -1.87   0.063               -.1330029
hubXfails01 |  -7.865582   5.822354    -1.35   0.178               -.0958596

    edu_yrs |  -2.445584   .7678914    -3.18   0.002               -.2262315
    age_yrs |  -.2711888   .1283745    -2.11   0.036               -.1529574
     female |  -.6586946   3.625113    -0.18   0.856               -.0129838
      _cons |   17.62746   15.90306     1.11   0.269                       .
------------------------------------------------------------------------------

  Estimation sample regress               Number of obs =        184

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------------
         w_mu |     61.73845      25.42915           0          100
        x_esa |     3.982569      .5956542    1.873333            5
        x_hub |     1.869824      .7875274           1            5
   esaXfails01 |    -.0107717      .2406625   -1.577855     .8165776
```

```
  hubXfails01 |     .0042617      .3099108    -.6564614     1.885357
      edu_yrs |     3.070272      2.352353          .01           10
      age_yrs |     46.41576      14.34269           21           99
       female |     .4891304      .5012458            0            1
  ------------------------------------------------------------------
```

Zero versus One Past Failure (All Respondents)

```
      Source |       SS           df       MS      Number of obs   =       418
-------------+----------------------------------   F(7, 410)       =     14.98
       Model |  54805.2305         7  7829.31864   Prob > F        =    0.0000
    Residual |  214346.809       410  522.797095   R-squared       =    0.2036
-------------+----------------------------------   Adj R-squared   =    0.1900
       Total |  269152.039       417  645.448536   Root MSE        =    22.865

------------------------------------------------------------------------------
        w_mu |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
       x_esa |   14.42025   1.639531     8.80   0.000                .3960753
       x_hub |   2.713554   1.543416     1.76   0.079                .0807831

 esaXfailsO1 |  -13.27389   6.844586    -1.94   0.053               -.0901981
 hubXfailsO1 |  -4.856836   5.495281    -0.88   0.377               -.0411334

     edu_yrs |  -1.540456   .5101419    -3.02   0.003               -.1359807
     age_yrs |  -.2204245   .0711419    -3.10   0.002               -.1413797
      female |  -.4659762    2.32814    -0.20   0.841               -.0089853
       _cons |   12.68879   8.278481     1.53   0.126                       .
------------------------------------------------------------------------------

  Estimation sample regress               Number of obs =        418

  ------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------
          w_mu |     57.22518      25.40568           0          100
         x_esa |     3.738988      .6978078    1.350476            5
         x_hub |     1.873456      .7563328           1            5
   esaXfailsO1 |    -.0036998      .1726355   -1.814939     .9315866
   hubXfailsO1 |    -.0010384      .2151652   -.7663004     2.129992
       edu_yrs |     2.402943      2.242637          .01           10
       age_yrs |     47.79904      16.29514           18           99
        female |     .6028708      .4898895            0            1
  ------------------------------------------------------------------
```

Many versus One Past Failure (Self-Identified Entrepreneurs Only)

```
      Source |       SS           df       MS      Number of obs   =        57
-------------+----------------------------------   F(7, 49)        =      3.94
       Model |  11091.7047         7  1584.52924   Prob > F        =    0.0017
    Residual |  19694.2838        49  401.924159   R-squared       =    0.3603
-------------+----------------------------------   Adj R-squared   =    0.2689
       Total |  30785.9885        56  549.749794   Root MSE        =    20.048

------------------------------------------------------------------------------
        w_mu |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
       x_esa |   9.570663   4.847072     1.97   0.054                .2386218
       x_hub |  -1.495844   3.936663    -0.38   0.706               -.0511477

 esaXfails21 |  -31.84915   10.94791    -2.91   0.005               -.3548498
 hubXfails21 |  -8.390397   7.441646    -1.13   0.265               -.1363047

     edu_yrs |  -.9869775   1.263009    -0.78   0.438               -.0930455
     age_yrs |   -.410071   .2053358    -2.00   0.051               -.2677735
      female |  -8.864248   5.736658    -1.55   0.129               -.1906803
```

```
       _cons |   54.21784   24.68837     2.20   0.033                      .
------------------------------------------------------------------------------

  Estimation sample regress                Number of obs =         57

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------------
          w_mu |     60.79605      23.44674           0          100
         x_esa |     3.863619      .5845891    1.873333            5
         x_hub |     1.989975      .8017199           1     4.142857
   esaXfails21 |     .0049661      .2612337    -.7042815     .7911157
   hubXfails21 |    -.0263866         .3809    -.8195975     1.011275
       edu_yrs |     2.921228      2.210398          .01            9
       age_yrs |     49.37719      15.31056          24           81
        female |     .4912281      .5043669           0            1
  ------------------------------------------------------------------------
```

Perceiving Technical Risk Favorably

Zero versus One Past Failure (Self-Identified Entrepreneurs Only)

```
      Source |       SS           df       MS      Number of obs   =       188
-------------+----------------------------------   F(7, 180)       =      4.70
       Model |  13294.8091         7  1899.25845   Prob > F        =    0.0001
    Residual |  72674.5409       180   403.74745   R-squared       =    0.1546
-------------+----------------------------------   Adj R-squared   =    0.1218
       Total |  85969.3501       187  459.729145   Root MSE        =    20.093

------------------------------------------------------------------------------
        w_tr |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
       x_esa |   8.790116   2.626888     3.35   0.001                 .2420126
       x_hub |   3.127179   2.043282     1.53   0.128                 .1110769

 esaXfails01 |  -13.76166   6.375163    -2.16   0.032                -.1529482
 hubXfails01 |    -5.9671   5.409335    -1.10   0.271                -.0786245

     edu_yrs |  -.5783295   .6382295    -0.91   0.366                -.0642879
     age_yrs |  -.2752824   .1053291    -2.61   0.010                -.1887772
      female |  -3.593686   3.127376    -1.15   0.252                -.0840219
       _cons |   43.25195   13.38464     3.23   0.001                        .

------------------------------------------------------------------------------

  Estimation sample regress                Number of obs =        188

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------------
          w_tr |     67.60771       21.4413           0          100
         x_esa |     3.956277      .5903293    1.873333            5
         x_hub |     1.851824      .7615916           1            5
   esaXfails01 |    -.0123695      .2383003   -1.577855     .7529911
   hubXfails01 |    -.0062464      .2825176   -.6564614     .9610595
       edu_yrs |     3.040638      2.383444          .01           10
       age_yrs |     46.79787      14.70354          19           99
        female |     .4946809      .5013067           0            1
  ------------------------------------------------------------------------
```

Zero versus One Past Failure (All Respondents)

```
      Source |       SS           df       MS      Number of obs   =       439
-------------+----------------------------------   F(7, 431)       =      9.26
       Model |  30118.6858         7  4302.66939   Prob > F        =    0.0000
```

```
    Residual |  200253.341       431   464.62492   R-squared       =    0.1307
-------------+----------------------------------   Adj R-squared   =    0.1166
       Total |  230372.026       438   525.96353   Root MSE        =    21.555

------------------------------------------------------------------------------
       w_tr |      Coef.   Std. Err.      t    P>|t|                     Beta
------------+-----------------------------------------------------------------
      x_esa |   9.758091   1.480417     6.59   0.000                 .3012536
      x_hub |    1.70493   1.449147     1.18   0.240                 .0548076

 esaXfailsO1 |  -12.94575    6.28704    -2.06   0.040                -.0954708
 hubXfailsO1 |  -2.808907   5.568903    -0.50   0.614                -.0234301

     edu_yrs |  -.1752091   .4675475    -0.37   0.708                -.0171392
     age_yrs |  -.2042156   .0642252    -3.18   0.002                -.1473779
      female |  -1.454613   2.154453    -0.68   0.500                  -.03109
       _cons |   35.71603   7.393505     4.83   0.000                        .
------------------------------------------------------------------------------

  Estimation sample regress               Number of obs =        439

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------------
         w_tr |     64.04556      22.93389           0          100
        x_esa |     3.704068      .7080194    1.321587            5
        x_hub |     1.832574      .7372454           1            5
   esaXfailsO1 |    -.0044468      .1691302   -1.814939       .85865
   hubXfailsO1 |     -.003922      .1912996   -.7663004     1.076795
      edu_yrs |     2.401572      2.243429         .01           10
      age_yrs |     47.56036      16.55089          18           99
       female |     .6013667      .4901756           0            1
  ------------------------------------------------------------------------
```

Many versus One Past Failure (Self-Identified Entrepreneurs Only)

```
      Source |       SS           df       MS      Number of obs   =        63
-------------+----------------------------------   F(7, 55)        =      4.34
       Model |  9177.97021         7   1311.1386   Prob > F        =    0.0007
    Residual |  16624.4628        55   302.26296   R-squared       =    0.3557
-------------+----------------------------------   Adj R-squared   =    0.2737
       Total |   25802.433        62  416.168275   Root MSE        =    17.386

------------------------------------------------------------------------------
       w_tr |      Coef.   Std. Err.      t    P>|t|                     Beta
------------+-----------------------------------------------------------------
      x_esa |   3.434069    4.14739     0.83   0.411                 .0942629
      x_hub |   -1.58463   3.331411    -0.48   0.636                -.0582916

 esaXfails21 |  -27.01779   9.269181    -2.91   0.005                -.3318972
 hubXfails21 |  -8.510719    6.39989    -1.33   0.189                -.1535518

     edu_yrs |  -.6319395   1.044321    -0.61   0.548                -.0679849
     age_yrs |  -.4109545   .1644504    -2.50   0.015                -.3093894
      female |  -12.86146    4.79387    -2.68   0.010                -.3157931
       _cons |   81.67648   20.96134     3.90   0.000                        .

------------------------------------------------------------------------------

  Estimation sample regress               Number of obs =         63

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------------
         w_tr |     63.19048       20.4002           0          100
        x_esa |     3.843025       .559972    1.873333            5
        x_hub |     1.897959      .7504348           1     3.571429
   esaXfails21 |      .004312      .2506041    -.7042815     .7911157
   hubXfails21 |    -.0148963      .3680637    -.8195975     .6267511
```

```
    edu_yrs |     2.944921      2.194683          .01            9
    age_yrs |     51.36508      15.35841          24           81
     female |     .4444444      .5008953           0            1
------------------------------------------------------------------------------
```

Perceiving Market Risk Favorably

Zero versus One Past Failure (Self-Identified Entrepreneurs Only)

```
      Source |       SS           df       MS      Number of obs   =       190
-------------+----------------------------------   F(7, 182)       =      4.91
       Model |  12899.5932         7  1842.79903   Prob > F        =    0.0000
    Residual |  68326.8549       182  375.422279   R-squared       =    0.1588
-------------+----------------------------------   Adj R-squared   =    0.1265
       Total |  81226.4481       189  429.769567   Root MSE        =    19.376

------------------------------------------------------------------------------
       w_mr |      Coef.   Std. Err.      t    P>|t|                     Beta
------------+-----------------------------------------------------------------
      x_esa |   8.290762   2.477327     3.35   0.001                .2403091
      x_hub |   1.355638   1.879883     0.72   0.472                .0519503

esaXfails01 |  -10.30301   6.039999    -1.71   0.090               -.1226627
hubXfails01 |   -7.99713    4.57762    -1.75   0.082               -.1248701

    edu_yrs |  -1.637191   .6171359    -2.65   0.009               -.1869201
    age_yrs |  -.2753655   .1023564    -2.69   0.008               -.1931195
     female |  -3.509757   2.936634    -1.20   0.234               -.0848741
      _cons |   51.35725   12.75321     4.03   0.000                       .
------------------------------------------------------------------------------

Estimation sample regress               Number of obs =        190

------------------------------------------------------------------------------
    Variable |         Mean      Std. Dev.         Min          Max
-------------+----------------------------------------------------------------
        w_mr |     67.21118      20.73088           2          100
       x_esa |     3.970457      .6008882    1.873333            5
       x_hub |      1.89198      .7944426           1            5
 esaXfails01 |    -.0069942      .2468119   -1.577855     .8165776
 hubXfails01 |     .0088691      .3236996   -.6564614     1.885357
     edu_yrs |     3.051211      2.366871         .01           10
     age_yrs |     46.77368      14.53899          19           99
      female |           .5       .501321           0            1
------------------------------------------------------------------------------
```

Zero versus One Past Failure (All Respondents)

```
      Source |       SS           df       MS      Number of obs   =       456
-------------+----------------------------------   F(7, 448)       =      9.28
       Model |  29315.3107         7  4187.90153   Prob > F        =    0.0000
    Residual |  202091.652       448  451.097438   R-squared       =    0.1267
-------------+----------------------------------   Adj R-squared   =    0.1130
       Total |  231406.963       455  508.586732   Root MSE        =    21.239

------------------------------------------------------------------------------
       w_mr |      Coef.   Std. Err.      t    P>|t|                     Beta
------------+-----------------------------------------------------------------
      x_esa |   9.914504   1.434232     6.91   0.000                .3106156
      x_hub |   1.040087   1.383097     0.75   0.452                .0345335

esaXfailsO1 |   -10.8635   6.094729    -1.78   0.075               -.0832597
hubXfailsO1 |  -5.224589   4.778952    -1.09   0.275               -.0510608

    edu_yrs |  -.4176229   .4571477    -0.91   0.361               -.0410327
```

```
    age_yrs |  -.1766757   .0620583    -2.85   0.005               -.1297152
     female |  -1.718383   2.076385    -0.83   0.408               -.0371739
      _cons |   34.98882   7.195627     4.86   0.000                       .
------------------------------------------------------------------------------

  Estimation sample regress               Number of obs =        456

  ------------------------------------------------------------------------
    Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------------
         w_mr |     63.09019      22.55187           0          100
       x_esa |      3.70163      .7065368     1.350476            5
       x_hub |     1.852611      .7487788           1            5
  esaXfailsO1 |    -.0008732      .1728412    -1.814939     .9315866
  hubXfailsO1 |     .0040781      .2204033    -.7663004     2.129992
     edu_yrs |     2.410987      2.215789          .01           10
     age_yrs |     47.85746      16.55757           18           99
      female |     .6118421      .4878661            0            1
  ------------------------------------------------------------------------
```

Many versus One Past Failure (Self-Identified Entrepreneurs Only)

```
      Source |       SS           df       MS      Number of obs   =        67
-------------+----------------------------------   F(7, 59)        =      6.96
       Model |  12806.7511         7  1829.53587   Prob > F        =    0.0000
    Residual |  15518.9159        59  263.032473   R-squared       =    0.4521
-------------+----------------------------------   Adj R-squared   =    0.3871
       Total |   28325.667        66  429.176772   Root MSE        =    16.218

------------------------------------------------------------------------------
       w_mr |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
       x_esa |   6.944585   3.818853     1.82   0.074                .1864035
       x_hub |  -2.630612   2.790748    -0.94   0.350               -.1011059

 esaXfails21 |  -29.82905   8.564623    -3.48   0.001               -.3538348
 hubXfails21 |   -10.3984    5.34708    -1.94   0.057               -.1957117

     edu_yrs |  -1.458836   .9603278    -1.52   0.134               -.1501751
     age_yrs |  -.4325223   .1440328    -3.00   0.004               -.3241216
      female |  -12.83725   4.154007    -3.09   0.003               -.3118555
       _cons |   76.32765   18.75782     4.07   0.000                       .

------------------------------------------------------------------------------

  Estimation sample regress               Number of obs =         67

  ------------------------------------------------------------------------
    Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------------
         w_mr |     65.21828      20.71658           0          100
       x_esa |     3.864294      .5560654     1.873333            5
       x_hub |     1.947761      .7962286           1     4.142857
  esaXfails21 |     .0118048      .2457419    -.7042815     .7911157
  hubXfails21 |     .0221705      .3899136    -.8195975     1.011275
     edu_yrs |     2.934776      2.132601          .01            9
     age_yrs |     50.46269       15.5245           24           81
      female |     .4776119      .5032684            0            1
  ------------------------------------------------------------------------
```

Regression Results for Testing Moderator Hypotheses (Locomotion Orientation)

Percent Time Technical Uncertainty Perceived as Technical Risk

```
      Source |       SS           df       MS      Number of obs   =       590
```

```
-------------+----------------------------------   F(5, 584)       =     10.58
       Model |  162.509507         5  32.5019014   Prob > F        =    0.0000
    Residual |  1794.46424       584  3.07271274   R-squared       =    0.0830
-------------+----------------------------------   Adj R-squared   =    0.0752
       Total |  1956.97375       589  3.32253607   Root MSE        =    1.7529

------------------------------------------------------------------------------
       y_l_1 |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
        w_tt |   .7697064   .2474329     3.11   0.002                 .1248796

   w_ttXloco |  -.3670018    .332913    -1.10   0.271                -.0438926

     edu_yrs |  -.0643067   .0332662    -1.93   0.054                -.0781485
     age_yrs |  -.0258758   .0044299    -5.84   0.000                -.2324901
      female |  -.3003811   .1512178    -1.99   0.047                -.0800421
       _cons |   5.315783   .3395328    15.66   0.000                        .
------------------------------------------------------------------------------

  Estimation sample regress               Number of obs =        590

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min           Max
  -------------+----------------------------------------------------------
         y_l_1 |     4.385452      1.822783           0             8
          w_tt |     .8322034      .2957341           0             1
     w_ttXloco |     .0000887      .2180006   -1.068799      1.525263
       edu_yrs |     2.312712      2.215129         .01            10
       age_yrs |     47.75847      16.37741          18            99
        female |      .620339      .4857143           0             1
  ------------------------------------------------------------------------
```

Percent Time Market Uncertainty Perceived as Market Risk

```
      Source |       SS           df       MS      Number of obs   =       590
-------------+----------------------------------   F(5, 584)       =     11.94
       Model |  181.465683         5  36.2931366   Prob > F        =    0.0000
    Residual |  1775.50806       584  3.04025353   R-squared       =    0.0927
-------------+----------------------------------   Adj R-squared   =    0.0850
       Total |  1956.97375       589  3.32253607   Root MSE        =    1.7436

------------------------------------------------------------------------------
       y_l_1 |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
        w_mt |   1.135265   .2740308     4.14   0.000                 .1649963

   w_mtXloco |   .1588114   .3745758     0.42   0.672                  .01674

     edu_yrs |  -.0689349   .0329984    -2.09   0.037                -.0837729
     age_yrs |   -.026262   .0044024    -5.97   0.000                -.2359603
      female |  -.2746554   .1502143    -1.83   0.068                 -.073187
       _cons |   4.979967   .3580632    13.91   0.000                        .
------------------------------------------------------------------------------

  Estimation sample regress               Number of obs =        590

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min           Max
  -------------+----------------------------------------------------------
         y_l_1 |     4.385452      1.822783           0             8
          w_mt |     .8716102      .2649181           0             1
     w_mtXloco |     .0001106       .192136   -.8291909      1.571686
       edu_yrs |     2.312712      2.215129         .01            10
       age_yrs |     47.75847      16.37741          18            99
        female |      .620339      .4857143           0             1
  ------------------------------------------------------------------------
```

Perceiving Technical Uncertainty Favorably

```
      Source |       SS           df       MS      Number of obs   =       351
-------------+----------------------------------   F(5, 345)       =     90.93
       Model |  673.755863         5  134.751173   Prob > F        =    0.0000
    Residual |  511.257833       345  1.48190676   R-squared       =    0.5686
-------------+----------------------------------   Adj R-squared   =    0.5623
       Total |   1185.0137       350  3.38575342   Root MSE        =    1.2173

------------------------------------------------------------------------------
       y_l_1 |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
        w_tu |   .0477521   .0024259    19.68   0.000                 .7182603

   w_tuXloco |  -.0021166   .0034693    -0.61   0.542                -.0218289

     edu_yrs |  -.0017673   .0288647    -0.06   0.951                -.0021911
     age_yrs |  -.0130177   .0041368    -3.15   0.002                -.1145499
      female |  -.1206244    .134596    -0.90   0.371                -.0324189
       _cons |   2.690645   .2981025     9.03   0.000                        .
------------------------------------------------------------------------------

  Estimation sample regress               Number of obs =        351

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------------
         y_l_1 |     4.572412      1.840042           0            8
          w_tu |     53.89886      27.67687           0          100
     w_tuXloco |    -.0342223      18.97694    -57.38748     107.2446
       edu_yrs |     2.495556      2.281291          .01           10
       age_yrs |     47.46724      16.19148          18           99
        female |     .5783476      .4945285           0            1
  ------------------------------------------------------------------------
```

Perceiving Market Uncertainty Favorably

```
      Source |       SS           df       MS      Number of obs   =       351
-------------+----------------------------------   F(5, 345)       =    101.87
       Model |  706.485008         5  141.297002   Prob > F        =    0.0000
    Residual |  478.528687       345  1.38703967   R-squared       =    0.5962
-------------+----------------------------------   Adj R-squared   =    0.5903
       Total |   1185.0137       350  3.38575342   Root MSE        =    1.1777

------------------------------------------------------------------------------
       y_l_1 |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
        w_mu |   .0522363   .0024964    20.92   0.000                 .7358349

   w_muXloco |  -.0018304   .0034589    -0.53   0.597                -.0183111

     edu_yrs |  -.0120451   .0278818    -0.43   0.666                -.0149335
     age_yrs |  -.0126739       .004    -3.17   0.002                -.1115246
      female |  -.1943563    .129847    -1.50   0.135                -.0522351
       _cons |   2.292212   .2973357     7.71   0.000                        .
------------------------------------------------------------------------------

  Estimation sample regress               Number of obs =        351

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------------
         y_l_1 |     4.572412      1.840042           0            8
          w_mu |     57.89494      25.92002           0          100
     w_muXloco |    -.0233834      18.40763    -57.18496     114.9383
       edu_yrs |     2.495556      2.281291          .01           10
```

```
      age_yrs |     47.46724      16.19148           18           99
       female |     .5783476      .4945285            0            1
  ------------------------------------------------------------------
```

Perceiving Technical Risk Favorably

```
      Source |       SS           df       MS      Number of obs   =       351
-------------+----------------------------------   F(5, 345)       =     80.82
       Model |  639.250275         5  127.850055   Prob > F        =    0.0000
    Residual |   545.76342       345  1.58192296   R-squared       =    0.5394
-------------+----------------------------------   Adj R-squared   =    0.5328
       Total |   1185.0137       350  3.38575342   Root MSE        =    1.2577

------------------------------------------------------------------------------
       y_l_1 |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
        w_tr |   .0541509   .0029351    18.45   0.000                 .6923376

   w_trXloco |  -.0024686   .0037388    -0.66   0.510                -.0245192

     edu_yrs |  -.0777553   .0297274    -2.62   0.009                -.0964013
     age_yrs |  -.0148192   .0042622    -3.48   0.001                -.1304014
      female |  -.1202761   .1399415    -0.86   0.391                -.0323253
       _cons |   2.076938   .3352412     6.20   0.000                        .
------------------------------------------------------------------------------

  Estimation sample regress               Number of obs =        351

  ------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------
         y_l_1 |     4.572412      1.840042           0            8
          w_tr |     63.93875      23.52555           0          100
     w_trXloco |    -.0650344      18.27622   -48.42421     136.0173
       edu_yrs |     2.495556      2.281291         .01           10
       age_yrs |     47.46724      16.19148          18           99
        female |     .5783476      .4945285           0            1
  ------------------------------------------------------------------
```

Perceiving Market Risk Favorably

```
      Source |       SS           df       MS      Number of obs   =       351
-------------+----------------------------------   F(5, 345)       =    101.23
       Model |  704.688918         5  140.937784   Prob > F        =    0.0000
    Residual |  480.324777       345  1.39224573   R-squared       =    0.5947
-------------+----------------------------------   Adj R-squared   =    0.5888
       Total |   1185.0137       350  3.38575342   Root MSE        =    1.1799

------------------------------------------------------------------------------
       y_l_1 |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
        w_mr |   .0571337   .0027423    20.83   0.000                 .7292372

   w_mrXloco |  -.0027633   .0036045    -0.77   0.444                -.0266968

     edu_yrs |  -.0583303   .0278552    -2.09   0.037                -.0723182
     age_yrs |  -.0151227   .0039874    -3.79   0.000                -.1330723
      female |  -.1578788   .1309739    -1.21   0.229                -.0424314
       _cons |   1.866331   .3129699     5.96   0.000                        .
------------------------------------------------------------------------------

  Estimation sample regress               Number of obs =        351

  ------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------
```

```
        y_l_1 |     4.572412      1.840042            0            8
          w_mr |     64.07407      23.48573            0          100
     w_mrXloco |     .0000681      17.77711   -47.63763     135.3908
       edu_yrs |     2.495556      2.281291          .01           10
       age_yrs |     47.46724      16.19148          18           99
        female |     .5783476      .4945285           0            1
  ------------------------------------------------------------------
```

Structural Equations Model (SEM) Output for Model 1

```
Structural equation model                       Number of obs     =        475
Estimation method  = ml
Log likelihood     = -35589.862

 ( 1)  [_nar_04]NAR = 1
 ( 2)  [_opt_02]OPT = 1
 ( 3)  [_aut_05]AUT = 1
 ( 4)  [_ese_03]ESE = 1
 ( 5)  [_pse_01]PSE = 1
 ( 6)  [_y_l1_2a]Y_L_1 = 1
 ( 7)  [w_tt2]W_TT = 1
 ( 8)  [_hub_02]HUB = 1
 ( 9)  [OPT]ESA = 1
------------------------------------------------------------------------------
                             |                 OIM
                             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
Structural                   |
  NAR                        |
                         ESA |   .9280004   .0752289    12.34   0.000     .7805544    1.075446
  ---------------------------+------------------------------------------------------------------
  OPT                        |
                         ESA |          1  (constrained)
  ---------------------------+------------------------------------------------------------------
  AUT                        |
                         ESA |   .8465796   .0607296    13.94   0.000     .7275517    .9656074
  ---------------------------+------------------------------------------------------------------
  ESE                        |
                         ESA |   .9232128   .0978287     9.44   0.000     .7314721    1.114954
  ---------------------------+------------------------------------------------------------------
  PSE                        |
                         ESA |   .7258601   .0596942    12.16   0.000     .6088615    .8428587
  ---------------------------+------------------------------------------------------------------
  Y_L_1                      |
                        W_TT |    .374688   .2968914     1.26   0.207    -.2072084    .9565844
                     edu_yrs |  -.1081015   .0344401    -3.14   0.002    -.1756028   -.0406002
                     age_yrs |  -.0173044   .0047096    -3.67   0.000     -.026535   -.0080739
                      female |  -.2072754   .1502481    -1.38   0.168    -.5017563    .0872055
                         HUB |     .44373    .126071     3.52   0.000     .1966354    .6908247
                         ESA |   .6084002   .1172994     5.19   0.000     .3784975    .8383029
  ---------------------------+------------------------------------------------------------------
  W_TT                       |
                     edu_yrs |   .0100038   .0064354     1.55   0.120    -.0026094     .022617
                     age_yrs |  -.0006359   .0008869    -0.72   0.473    -.0023741    .0011024
                      female |  -.0416328   .0290899    -1.43   0.152     -.098648    .0153824
                         HUB |   .0131212   .0231128     0.57   0.570    -.0321791    .0584215
                         ESA |   .0862209   .0223365     3.86   0.000     .0424422    .1299997
------------------------------------------------------------------------------
LR test of model vs. saturated: chi2(1477) =   2295.19, Prob > chi2 = 0.0000
  Estimation sample sem                    Number of obs =        475

  ------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------
       _hub_02 |     1.717895      .9325319           1            5
       _hub_07 |     1.987368      1.065299           1            5
       _hub_01 |     1.665263      .9068153           1            5
       _hub_06 |     1.757895      .9647346           1            5
```

```
      _hub_03 |     1.898947      1.009605            1            5
      _hub_05 |     2.035789      1.025407            1            5
      _hub_04 |     1.917895      .9806115            1            5
      _nar_04 |     3.492632      1.095372            1            5
      _nar_09 |     3.547368      1.034922            1            5
      _nar_03 |     3.833684      .9545152            1            5
      _nar_08 |     3.181053      1.021323            1            5
      _nar_05 |     3.444211      1.120646            1            5
      _nar_10 |     3.065263      1.124128            1            5
      _nar_02 |     3.564211      1.099282            1            5
      _nar_07 |     3.366316      1.081354            1            5
      _nar_01 |     3.621053      1.028896            1            5
      _nar_06 |     3.465263      1.077363            1            5
      _opt_02 |     3.728421      1.106145            1            5
      _opt_01 |     3.789474      1.019791            1            5
      _opt_03 |     3.530526      1.055733            1            5
      _aut_05 |     4.006316      .9311545            1            5
      _aut_04 |     3.785263       1.01268            1            5
      _aut_01 |         3.68      1.050778            1            5
      _aut_06 |     3.844211      1.047875            1            5
      _aut_03 |     3.707368      1.033535            1            5
      _aut_02 |     3.854737      .9579523            1            5
      _aut_07 |     4.027368      .9815215            1            5
      _ese_03 |     3.595789      1.053817            1            5
      _ese_02 |     3.498947      1.189573            1            5
      _ese_04 |     3.343158      1.231672            1            5
      _ese_01 |     3.587368      1.080245            1            5
      _ese_06 |     3.532632      1.035493            1            5
      _ese_05 |     3.482105      1.121894            1            5
      _pse_01 |     4.084211      .8275728            1            5
      _pse_06 |     3.890526      .9326558            1            5
      _pse_05 |     3.947368       .902042            1            5
      _pse_02 |     3.949474      .8602661            1            5
      _pse_07 |     3.804211      .9103154            1            5
      _pse_04 |     3.848421      .9690205            1            5
      _pse_03 |     3.987368      .8443461            1            5
      _pse_08 |     3.903158      .9204031            1            5
    _y_ll1_2a |     5.298947      2.521448            0            8
    _y_ll1_2b |     4.770526      2.470923            0            8
    _y_ll1_6a |     5.730526      2.279753            0            8
    _y_ll1_6b |     5.164211      2.282381            0            8
    _y_ln1_2a |         3.96      2.480404            0            8
    _y_ln1_2b |     3.747368      2.549793            0            8
    _y_ln1_6a |         4.36      2.399648            0            8
    _y_ln1_6b |     4.018947      2.353214            0            8
    _y_lg1_2a |     3.103158      2.585233            0            8
    _y_lg1_2b |     3.042105      2.624599            0            8
    _y_lg1_6a |     3.347368      2.537351            0            8
    _y_lg1_6b |     3.282105      2.474425            0            8
        w_tt2 |     .8178947      .3406308            0            1
        w_tt6 |     .8536842      .3066804            0            1
      edu_yrs |     2.318737      2.181994          .01           10
      age_yrs |     48.05789      16.32671           18           99
       female |     .6252632      .4845652            0            1
  ------------------------------------------------------------------------------

Direct effects
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
-------------+----------------------------------------------------------------
Structural   |
  NAR        |
         ESA |   .9280004   .0752289    12.34   0.000                   .80051
  -----------+----------------------------------------------------------------
  OPT        |
         ESA |           1  (constrained)                            .8231208
  -----------+----------------------------------------------------------------
  AUT        |
         ESA |   .8465796   .0607296    13.94   0.000                  .911873
  -----------+----------------------------------------------------------------
```

```
  ESE         |
         ESA |   .9232128   .0978287     9.44   0.000                .8431812
  -----------+--------------------------------------------------------------
  PSE         |
         ESA |   .7258601   .0596942    12.16   0.000                 .967413
  -----------+--------------------------------------------------------------
  Y_L_1       |
        W_TT |    .374688   .2968914     1.26   0.207                .0632197
     edu_yrs |  -.1081015   .0344401    -3.14   0.002               -.1423374
     age_yrs |  -.0173044   .0047096    -3.67   0.000               -.1704865
      female |  -.2072754   .1502481    -1.38   0.168               -.0606085
         HUB |     .44373    .126071     3.52   0.000                .1750509
         ESA |   .6084002   .1172994     5.19   0.000                 .278561
  -----------+--------------------------------------------------------------
  W_TT        |
     edu_yrs |   .0100038   .0064354     1.55   0.120                .0780676
     age_yrs |  -.0006359   .0008869    -0.72   0.473               -.0371284
      female |  -.0416328   .0290899    -1.43   0.152               -.0721504
         HUB |   .0131212   .0231128     0.57   0.570                .0306786
         ESA |   .0862209   .0223365     3.86   0.000                .2339703
------------------------------------------------------------------------------

Indirect effects
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
-------------+----------------------------------------------------------------
Structural   |
  NAR        |
         ESA |          0  (no path)                                         0
  -----------+----------------------------------------------------------------
  OPT        |
         ESA |          0  (no path)                                         0
  -----------+----------------------------------------------------------------
  AUT        |
         ESA |          0  (no path)                                         0
  -----------+----------------------------------------------------------------
  ESE        |
         ESA |          0  (no path)                                         0
  -----------+----------------------------------------------------------------
  PSE        |
         ESA |          0  (no path)                                         0
  -----------+----------------------------------------------------------------
  Y_L_1      |
        W_TT |          0  (no path)                                         0
     edu_yrs |   .0037483   .0038304     0.98   0.328                .0049354
     age_yrs |  -.0002382   .0003833    -0.62   0.534               -.0023472
      female |  -.0155993   .0165087    -0.94   0.345               -.0045613
         HUB |   .0049163   .0094238     0.52   0.602                .0019395
         ESA |   .0323059    .026716     1.21   0.227                .0147915
  -----------+----------------------------------------------------------------
  W_TT       |
     edu_yrs |          0  (no path)                                         0
     age_yrs |          0  (no path)                                         0
      female |          0  (no path)                                         0
         HUB |          0  (no path)                                         0
         ESA |          0  (no path)                                         0
------------------------------------------------------------------------------

Total effects
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
-------------+----------------------------------------------------------------
Structural   |
  NAR        |
         ESA |   .9280004   .0752289    12.34   0.000                 .80051
  -----------+----------------------------------------------------------------
  OPT        |
         ESA |          1  (constrained)                             .8231208
```

```
-----------+------------------------------------------------------------------
AUT        |
       ESA |   .8465796   .0607296    13.94   0.000                  .911873
-----------+------------------------------------------------------------------
ESE        |
       ESA |   .9232128   .0978287     9.44   0.000                 .8431812
-----------+------------------------------------------------------------------
PSE        |
       ESA |   .7258601   .0596942    12.16   0.000                  .967413
-----------+------------------------------------------------------------------
Y_L_1      |
      W_TT |    .374688   .2968914     1.26   0.207                 .0632197
   edu_yrs |  -.1043532   .0343587    -3.04   0.002                -.1374019
   age_yrs |  -.0175427   .0047203    -3.72   0.000                -.1728337
    female |  -.2228747   .1501204    -1.48   0.138                -.0651698
       HUB |   .4486464   .1262486     3.55   0.000                 .1769904
       ESA |   .6407062   .1153068     5.56   0.000                 .2933525
-----------+------------------------------------------------------------------
W_TT       |
   edu_yrs |   .0100038   .0064354     1.55   0.120                 .0780676
   age_yrs |  -.0006359   .0008869    -0.72   0.473                -.0371284
    female |  -.0416328   .0290899    -1.43   0.152                -.0721504
       HUB |   .0131212   .0231128     0.57   0.570                 .0306786
       ESA |   .0862209   .0223365     3.86   0.000                 .2339703
------------------------------------------------------------------------------
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
      chi2_ms(1477)  |   2295.193   model vs. saturated
           p > chi2  |      0.000
      chi2_bs(1650)  |  20471.182   baseline vs. saturated
           p > chi2  |      0.000
---------------------+--------------------------------------------------------
Population error     |
              RMSEA  |      0.034   Root mean squared error of approximation
 90% CI, lower bound |      0.031
         upper bound |      0.037
              pclose |      1.000   Probability RMSEA <= 0.05
---------------------+--------------------------------------------------------
Information criteria |
                 AIC |  71745.725   Akaike's information criterion
                 BIC |  72923.943   Bayesian information criterion
---------------------+--------------------------------------------------------
Baseline comparison  |
                 CFI |      0.957   Comparative fit index
                 TLI |      0.951   Tucker-Lewis index
---------------------+--------------------------------------------------------
Size of residuals    |
                SRMR |      0.062   Standardized root mean squared residual
                  CD |      0.997   Coefficient of determination
------------------------------------------------------------------------------
```

Structural Equations Model (SEM) Output for Model 2

```
Structural equation model                       Number of obs     =        475
Estimation method  = ml
Log likelihood     =   -35437.9

 ( 1)  [_nar_04]NAR = 1
 ( 2)  [_opt_02]OPT = 1
 ( 3)  [_aut_05]AUT = 1
 ( 4)  [_ese_03]ESE = 1
 ( 5)  [_pse_01]PSE = 1
 ( 6)  [_y_ll1_2a]Y_L_1 = 1
 ( 7)  [w_mt2]W_MT = 1
 ( 8)  [_hub_02]HUB = 1
 ( 9)  [OPT]ESA = 1
```

	OIM				
	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]
Structural					
NAR					
ESA	.9501088	.0776448	12.24	0.000	.7979278 1.10229
OPT					
ESA	1	(constrained)			
AUT					
ESA	.8659821	.0627792	13.79	0.000	.7429372 .989027
ESE					
ESA	.961096	.1031686	9.32	0.000	.7588893 1.163303
PSE					
ESA	.7378684	.0612924	12.04	0.000	.6177375 .8579993
Y_L_1					
W_MT	.5277228	.363844	1.45	0.147	-.1853983 1.240844
edu_yrs	-.0961704	.0334156	-2.88	0.004	-.1616637 -.030677
age_yrs	-.0196944	.0046456	-4.24	0.000	-.0287996 -.0105892
female	-.1206286	.1454982	-0.83	0.407	-.4057998 .1645426
HUB	.3930852	.1225151	3.21	0.001	.15296 .6332104
ESA	.7026659	.1198991	5.86	0.000	.4676681 .9376638
W_MT					
edu_yrs	.0088271	.0046629	1.89	0.058	-.000312 .0179661
age_yrs	-.0007278	.0006472	-1.12	0.261	-.0019962 .0005407
female	-.0257909	.0214399	-1.20	0.229	-.0678124 .0162306
HUB	-.0031521	.0184763	-0.17	0.865	-.0393649 .0330607
ESA	.0589132	.018949	3.11	0.002	.0217739 .0960524

LR test of model vs. saturated: chi2(1476) = 2386.35, Prob > chi2 = 0.0000

Estimation sample sem Number of obs = 475

Variable	Mean	Std. Dev.	Min	Max
_hub_02	1.717895	.9325319	1	5
_hub_07	1.987368	1.065299	1	5
_hub_01	1.665263	.9068153	1	5
_hub_06	1.757895	.9647346	1	5
_hub_03	1.898947	1.009605	1	5
_hub_05	2.035789	1.025407	1	5
_hub_04	1.917895	.9806115	1	5
_nar_04	3.492632	1.095372	1	5
_nar_09	3.547368	1.034922	1	5
_nar_03	3.833684	.9545152	1	5
_nar_08	3.181053	1.021323	1	5
_nar_05	3.444211	1.120646	1	5
_nar_10	3.065263	1.124128	1	5
_nar_02	3.564211	1.099282	1	5
_nar_07	3.366316	1.081354	1	5
_nar_01	3.621053	1.028896	1	5
_nar_06	3.465263	1.077363	1	5
_opt_02	3.728421	1.106145	1	5
_opt_01	3.789474	1.019791	1	5
_opt_03	3.530526	1.055733	1	5
_aut_05	4.006316	.9311545	1	5
_aut_04	3.785263	1.01268	1	5
_aut_01	3.68	1.050778	1	5
_aut_06	3.844211	1.047875	1	5
_aut_03	3.707368	1.033535	1	5
_aut_02	3.854737	.9579523	1	5
_aut_07	4.027368	.9815215	1	5
_ese_03	3.595789	1.053817	1	5
_ese_02	3.498947	1.189573	1	5

```
      _ese_04 |     3.343158      1.231672            1            5
      _ese_01 |     3.587368      1.080245            1            5
      _ese_06 |     3.532632      1.035493            1            5
      _ese_05 |     3.482105      1.121894            1            5
      _pse_01 |     4.084211      .8275728            1            5
      _pse_06 |     3.890526      .9326558            1            5
      _pse_05 |     3.947368       .902042            1            5
      _pse_02 |     3.949474      .8602661            1            5
      _pse_07 |     3.804211      .9103154            1            5
      _pse_04 |     3.848421      .9690205            1            5
      _pse_03 |     3.987368      .8443461            1            5
      _pse_08 |     3.903158      .9204031            1            5
    _y_ll1_2a |     5.298947      2.521448            0            8
    _y_ll1_2b |     4.770526      2.470923            0            8
    _y_ll1_4a |     5.837895      2.175098            0            8
    _y_ll1_4b |     5.326316      2.270904            0            8
    _y_ln1_2a |         3.96      2.480404            0            8
    _y_ln1_2b |     3.747368      2.549793            0            8
    _y_ln1_4a |     4.309474      2.367817            0            8
    _y_ln1_4b |     4.166316      2.364408            0            8
    _y_lg1_2a |     3.103158      2.585233            0            8
    _y_lg1_2b |     3.042105      2.624599            0            8
    _y_lg1_4a |     3.341053      2.470394            0            8
    _y_lg1_4b |     3.328421      2.541954            0            8
        w_mt2 |     .8705263      .2878971            0            1
        w_mt4 |     .8894737      .2695807            0            1
      edu_yrs |     2.318737      2.181994          .01           10
      age_yrs |     48.05789      16.32671           18           99
       female |     .6252632      .4845652            0            1
-------------------------------------------------------------------------------
```

Direct effects

```
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|                Std. Coef.
-------------+----------------------------------------------------------------
Y_L_1        |
       W_MT  |   .5277228    .363844     1.45   0.147                .0664698
    edu_yrs  |  -.0961704   .0334156    -2.88   0.004               -.1259433
    age_yrs  |  -.0196944   .0046456    -4.24   0.000               -.1929839
     female  |  -.1206286   .1454982    -0.83   0.407               -.0350819
        HUB  |   .3930852   .1225151     3.21   0.001                .1542322
        ESA  |   .7026659   .1198991     5.86   0.000                .3131604
-------------+----------------------------------------------------------------
W_MT         |
    edu_yrs  |   .0088271   .0046629     1.89   0.058                .0917768
    age_yrs  |  -.0007278   .0006472    -1.12   0.261                -.056618
     female  |  -.0257909   .0214399    -1.20   0.229               -.0595498
        HUB  |  -.0031521   .0184763    -0.17   0.865               -.0098191
        ESA  |   .0589132    .018949     3.11   0.002                .2084547
------------------------------------------------------------------------------
```

Indirect effects

```
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|                Std. Coef.
-------------+----------------------------------------------------------------
Structural   |
  NAR        |
        ESA  |          0  (no path)                                         0
-------------+----------------------------------------------------------------
  OPT        |
        ESA  |          0  (no path)                                         0
-------------+----------------------------------------------------------------
  AUT        |
        ESA  |          0  (no path)                                         0
-------------+----------------------------------------------------------------
  ESE        |
        ESA  |          0  (no path)                                         0
-------------+----------------------------------------------------------------
  PSE        |
```

```
       ESA |          0  (no path)                                          0
-----------+----------------------------------------------------------------
Y_L_1      |
      W_MT |          0  (no path)                                          0
   edu_yrs |   .0046583   .0040777     1.14   0.253                .0061004
   age_yrs |  -.0003841   .0004283    -0.90   0.370               -.0037634
    female |  -.0136104   .0149154    -0.91   0.362               -.0039583
       HUB |  -.0016634   .0097803    -0.17   0.865               -.0006527
       ESA |   .0310898   .0240141     1.29   0.195                .0138559
-----------+----------------------------------------------------------------
W_MT       |
   edu_yrs |          0  (no path)                                          0
   age_yrs |          0  (no path)                                          0
    female |          0  (no path)                                          0
       HUB |          0  (no path)                                          0
       ESA |          0  (no path)                                          0
------------------------------------------------------------------------------

Total effects
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
-------------+----------------------------------------------------------------
Structural   |
  NAR        |
       ESA |   .9501088   .0776448    12.24   0.000                .8017964
-----------+----------------------------------------------------------------
  OPT        |
       ESA |          1  (constrained)                              .8088697
-----------+----------------------------------------------------------------
  AUT        |
       ESA |   .8659821   .0627792    13.79   0.000                .9136523
-----------+----------------------------------------------------------------
  ESE        |
       ESA |    .961096   .1031686     9.32   0.000                 .858655
-----------+----------------------------------------------------------------
  PSE        |
       ESA |   .7378684   .0612924    12.04   0.000                 .963591
-----------+----------------------------------------------------------------
  Y_L_1      |
      W_MT |   .5277228    .363844     1.45   0.147                .0664698
   edu_yrs |  -.0915121   .0332788    -2.75   0.006               -.1198429
   age_yrs |  -.0200784   .0046598    -4.31   0.000               -.1967473
    female |  -.1342391   .1456345    -0.92   0.357               -.0390401
       HUB |   .3914218    .122691     3.19   0.001                .1535795
       ESA |   .7337557   .1189419     6.17   0.000                .3270164
-----------+----------------------------------------------------------------
  W_MT       |
   edu_yrs |   .0088271   .0046629     1.89   0.058                .0917768
   age_yrs |  -.0007278   .0006472    -1.12   0.261                -.056618
    female |  -.0257909   .0214399    -1.20   0.229               -.0595498
       HUB |  -.0031521   .0184763    -0.17   0.865               -.0098191
       ESA |   .0589132    .018949     3.11   0.002                .2084547
------------------------------------------------------------------------------
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
       chi2_ms(1476) |   2386.353   model vs. saturated
            p > chi2 |      0.000
       chi2_bs(1650) |  20526.552   baseline vs. saturated
            p > chi2 |      0.000
---------------------+--------------------------------------------------------
Population error     |
              RMSEA |      0.036   Root mean squared error of approximation
 90% CI, lower bound |      0.033
         upper bound |      0.039
              pclose |      1.000   Probability RMSEA <= 0.05
---------------------+--------------------------------------------------------
Information criteria |
```

```
                AIC |  71443.799   Akaike's information criterion
                BIC |  72626.181   Bayesian information criterion
--------------------+-------------------------------------------------
Baseline comparison |
                CFI |      0.952   Comparative fit index
                TLI |      0.946   Tucker-Lewis index
--------------------+-------------------------------------------------
Size of residuals   |
               SRMR |      0.062   Standardized root mean squared residual
                 CD |      0.998   Coefficient of determination
-------------------------------------------------------------------------
```

Structural Equations Model (SEM) Output for Model 3

```
Structural equation model                       Number of obs     =        331
Estimation method  = ml
Log likelihood     = -27127.924

 ( 1)  [_nar_04]NAR = 1
 ( 2)  [_opt_02]OPT = 1
 ( 3)  [_aut_05]AUT = 1
 ( 4)  [_ese_03]ESE = 1
 ( 5)  [_pse_01]PSE = 1
 ( 6)  [_y_ll1_2a]Y_L_1 = 1
 ( 7)  [w_tu_2]W_TU = 1
 ( 8)  [_hub_02]HUB = 1
 ( 9)  [OPT]ESA = 1
------------------------------------------------------------------------------------------
                            |                 OIM
                            |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
----------------------------+-------------------------------------------------------------
Structural                  |
  NAR                       |
                        ESA |   .9552454   .0854032    11.19   0.000     .7878583    1.122633
  --------------------------+-------------------------------------------------------------
  OPT                       |
                        ESA |          1  (constrained)
  --------------------------+-------------------------------------------------------------
  AUT                       |
                        ESA |   .7969567   .0629718    12.66   0.000     .6735342    .9203792
  --------------------------+-------------------------------------------------------------
  ESE                       |
                        ESA |   .9641783   .0886742    10.87   0.000       .79038    1.137977
  --------------------------+-------------------------------------------------------------
  PSE                       |
                        ESA |   .6903987   .0643715    10.73   0.000     .5642328    .8165646
  --------------------------+-------------------------------------------------------------
  Y_L_1                     |
                       W_TU |   .0493868   .0042455    11.63   0.000     .0410657    .0577079
                    edu_yrs |  -.0411724    .027948    -1.47   0.141    -.0959494    .0136047
                    age_yrs |  -.0043274    .003971    -1.09   0.276    -.0121104    .0034557
                     female |   .0421795   .1246384     0.34   0.735    -.2021072    .2864662
                        HUB |   .1309709   .1055245     1.24   0.215    -.0758532    .3377951
                        ESA |   .0348701   .0948603     0.37   0.713    -.1510527    .2207928
  --------------------------+-------------------------------------------------------------
  W_TU                      |
                    edu_yrs |  -1.755641   .6455875    -2.72   0.007    -3.020969   -.4903128
                    age_yrs |   -.239448   .0916298    -2.61   0.009    -.4190391    -.059857
                     female |   -5.01626   2.922571    -1.72   0.086    -10.74439    .7118734
                        HUB |   7.240519    2.46328     2.94   0.003     2.412579    12.06846
                        ESA |   14.67745   2.242947     6.54   0.000     10.28135    19.07354
----------------------------+-------------------------------------------------------------
LR test of model vs. saturated: chi2(1503) =   2464.64, Prob > chi2 = 0.0000
  Estimation sample sem                     Number of obs =        331

  ------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------
```

```
       _hub_02 |     1.725076      .9566068            1            5
       _hub_07 |            2      1.089899            1            5
       _hub_01 |      1.65861      .9119127            1            5
       _hub_06 |     1.782477      .9913847            1            5
       _hub_03 |     1.906344      .9879527            1            5
       _hub_05 |     2.042296      1.034859            1            5
       _hub_04 |     1.873112      .9764976            1            5
       _nar_04 |     3.543807      1.101122            1            5
       _nar_09 |     3.531722      1.079305            1            5
       _nar_03 |     3.851964      .9719493            1            5
       _nar_08 |     3.271903      .9684863            1            5
       _nar_05 |     3.498489      1.145147            1            5
       _nar_10 |     3.129909      1.130049            1            5
       _nar_02 |     3.570997      1.099699            1            5
       _nar_07 |     3.392749      1.118634            1            5
       _nar_01 |     3.646526      1.043949            1            5
       _nar_06 |     3.480363      1.090763            1            5
       _opt_02 |     3.809668      1.082938            1            5
       _opt_01 |     3.854985      .9645839            1            5
       _opt_03 |     3.592145      1.058787            1            5
       _aut_05 |     4.069486      .8866037            1            5
       _aut_04 |     3.879154      .9710447            1            5
       _aut_01 |     3.794562      1.009095            1            5
       _aut_06 |     3.909366      1.025849            1            5
       _aut_03 |      3.76435      .9810621            1            5
       _aut_02 |     3.912387      .9381788            1            5
       _aut_07 |     4.057402      .9209833            1            5
       _ese_03 |     3.694864      1.064839            1            5
       _ese_02 |     3.592145      1.180575            1            5
       _ese_04 |     3.438066      1.217897            1            5
       _ese_01 |     3.664653      1.038321            1            5
       _ese_06 |      3.63142      1.037236            1            5
       _ese_05 |     3.543807       1.12022            1            5
       _pse_01 |     4.129909      .8116834            1            5
       _pse_06 |     3.975831      .8665617            1            5
       _pse_05 |            4      .8456663            1            5
       _pse_02 |     3.984894      .8437371            1            5
       _pse_07 |     3.867069      .8980637            1            5
       _pse_04 |     3.924471      .9097315            1            5
       _pse_03 |     4.042296      .8264709            1            5
       _pse_08 |      3.97281      .8854981            1            5
     _y_ll1_2a |     5.356495      2.437046            0            8
     _y_ll1_2b |     4.912387      2.392196            0            8
     _y_ll1_6a |     5.824773      2.241372            0            8
     _y_ll1_6b |     5.338369      2.167321            0            8
     _y_ln1_2a |     4.084592      2.472657            0            8
     _y_ln1_2b |     3.909366      2.534179            0            8
     _y_ln1_6a |     4.501511      2.354074            0            8
     _y_ln1_6b |     4.205438      2.302851            0            8
     _y_lg1_2a |       3.1571      2.538092            0            8
     _y_lg1_2b |     3.202417      2.606192            0            8
     _y_lg1_6a |     3.459215      2.523946            0            8
     _y_lg1_6b |     3.441088      2.451716            0            8
        w_tu_2 |     49.43656      29.53541            0          100
        w_tu_6 |     54.49245       27.8058            0          100
       edu_yrs |     2.474532      2.242915          .01           10
       age_yrs |     47.43656      16.20748           18           99
        female |     .5951662       .491603            0            1
  ------------------------------------------------------------------------------
Direct effects
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|                Std. Coef.
-------------+----------------------------------------------------------------
Structural   |
  NAR        |
         ESA |   .9552454   .0854032    11.19   0.000                 .7856278
  -----------+----------------------------------------------------------------
  OPT        |
         ESA |          1  (constrained)                              .8242713
```

```
  -----------+------------------------------------------------------------------
  AUT        |
         ESA |   .7969567   .0629718    12.66   0.000                .8860763
  -----------+------------------------------------------------------------------
  ESE        |
         ESA |   .9641783   .0886742    10.87   0.000                .8394373
  -----------+------------------------------------------------------------------
  PSE        |
         ESA |   .6903987   .0643715    10.73   0.000                .9689212
  -----------+------------------------------------------------------------------
  Y_L_1      |
         W_TU |   .0493868   .0042455    11.63   0.000                .8096926
     edu_yrs |  -.0411724    .027948    -1.47   0.141               -.0548302
     age_yrs |  -.0043274    .003971    -1.09   0.276               -.0416428
      female |   .0421795   .1246384     0.34   0.735                .0123117
         HUB |   .1309709   .1055245     1.24   0.215                .050154
         ESA |   .0348701   .0948603     0.37   0.713                .0155987
  -----------+------------------------------------------------------------------
  W_TU       |
     edu_yrs |  -1.755641   .6455875    -2.72   0.007               -.1426067
     age_yrs |   -.239448   .0916298    -2.61   0.009               -.1405458
      female |   -5.01626   2.922571    -1.72   0.086               -.0893071
         HUB |   7.240519    2.46328     2.94   0.003                .1691185
         ESA |   14.67745   2.242947     6.54   0.000                .4004777
-------------------------------------------------------------------------------

Indirect effects
-------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|              Std. Coef.
-------------+-----------------------------------------------------------------
Structural   |
  NAR        |
         ESA |          0  (no path)                                        0
  -----------+-----------------------------------------------------------------
  OPT        |
         ESA |          0  (no path)                                        0
  -----------+-----------------------------------------------------------------
  AUT        |
         ESA |          0  (no path)                                        0
  -----------+-----------------------------------------------------------------
  ESE        |
         ESA |          0  (no path)                                        0
  -----------+-----------------------------------------------------------------
  PSE        |
         ESA |          0  (no path)                                        0
  -----------+-----------------------------------------------------------------
  Y_L_1      |
         W_TU |          0  (no path)                                        0
     edu_yrs |  -.0867055   .0325998    -2.66   0.008               -.1154676
     age_yrs |  -.0118256   .0046271    -2.56   0.011               -.1137989
      female |   -.247737   .1457183    -1.70   0.089               -.0723113
         HUB |    .357586   .1248639     2.86   0.004                .136934
         ESA |   .7248722   .1257113     5.77   0.000                .3242639
  -----------+-----------------------------------------------------------------
  W_TU       |
     edu_yrs |          0  (no path)                                        0
     age_yrs |          0  (no path)                                        0
      female |          0  (no path)                                        0
         HUB |          0  (no path)                                        0
         ESA |          0  (no path)                                        0
-------------------------------------------------------------------------------

Total effects
-------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|              Std. Coef.
-------------+-----------------------------------------------------------------
Structural   |
  NAR        |
```

```
       ESA |   .9552454   .0854032    11.19   0.000                .7856278
-----------+------------------------------------------------------------------
OPT        |
       ESA |          1  (constrained)                              .8242713
-----------+------------------------------------------------------------------
AUT        |
       ESA |   .7969567   .0629718    12.66   0.000                .8860763
-----------+------------------------------------------------------------------
ESE        |
       ESA |   .9641783   .0886742    10.87   0.000                .8394373
-----------+------------------------------------------------------------------
PSE        |
       ESA |   .6903987   .0643715    10.73   0.000                .9689212
-----------+------------------------------------------------------------------
Y_L_1      |
       W_TU |   .0493868   .0042455    11.63   0.000                .8096926
    edu_yrs |  -.1278779   .0402894    -3.17   0.002               -.1702978
    age_yrs |  -.0161529   .0057159    -2.83   0.005               -.1554417
     female |  -.2055575   .1791097    -1.15   0.251               -.0599996
        HUB |    .488557   .1541051     3.17   0.002                .1870881
        ESA |   .7597422   .1406237     5.40   0.000                .3398626
-----------+------------------------------------------------------------------
W_TU       |
    edu_yrs |  -1.755641   .6455875    -2.72   0.007               -.1426067
    age_yrs |   -.239448   .0916298    -2.61   0.009               -.1405458
     female |   -5.01626   2.922571    -1.72   0.086               -.0893071
        HUB |   7.240519    2.46328     2.94   0.003                .1691185
        ESA |   14.67745   2.242947     6.54   0.000                .4004777
------------------------------------------------------------------------------
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
       chi2_ms(1503) |   2464.641   model vs. saturated
            p > chi2 |      0.000
       chi2_bs(1650) |  15900.437   baseline vs. saturated
            p > chi2 |      0.000
---------------------+--------------------------------------------------------
Population error     |
              RMSEA |      0.044   Root mean squared error of approximation
 90% CI, lower bound |      0.041
         upper bound |      0.047
              pclose |      0.999   Probability RMSEA <= 0.05
---------------------+--------------------------------------------------------
Information criteria |
                AIC |  54769.848   Akaike's information criterion
                BIC |  55746.992   Bayesian information criterion
---------------------+--------------------------------------------------------
Baseline comparison  |
                CFI |      0.933   Comparative fit index
                TLI |      0.926   Tucker-Lewis index
---------------------+--------------------------------------------------------
Size of residuals    |
               SRMR |      0.069   Standardized root mean squared residual
                 CD |      0.997   Coefficient of determination
------------------------------------------------------------------------------
```

Structural Equations Model (SEM) Output for Model 4

```
Structural equation model                       Number of obs     =        358
Estimation method  = ml
Log likelihood     = -29379.906

 ( 1)  [_nar_04]NAR = 1
 ( 2)  [_opt_02]OPT = 1
 ( 3)  [_aut_05]AUT = 1
 ( 4)  [_ese_03]ESE = 1
 ( 5)  [_pse_01]PSE = 1
```

```
 ( 6)  [_y_ll1_2a]Y_L_1 = 1
 ( 7)  [w_mu_2]W_MU = 1
 ( 8)  [_hub_02]HUB = 1
 ( 9)  [OPT]ESA = 1
------------------------------------------------------------------------------
                             |                 OIM
                             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
Structural                   |
  NAR                        |
                         ESA |   .9401987   .0804052    11.69   0.000     .7826074     1.09779
  -------------------------- +------------------------------------------------------------------
  OPT                        |
                         ESA |          1  (constrained)
  -------------------------- +------------------------------------------------------------------
  AUT                        |
                         ESA |   .8541691   .0644971    13.24   0.000     .7277571    .9805811
  -------------------------- +------------------------------------------------------------------
  ESE                        |
                         ESA |   .9987315   .0921095    10.84   0.000     .8182002    1.179263
  -------------------------- +------------------------------------------------------------------
  PSE                        |
                         ESA |   .7163014    .065379    10.96   0.000     .5881609     .844442
  -------------------------- +------------------------------------------------------------------
  Y_L_1                      |
                        W_MU |   .0559376   .0044089    12.69   0.000     .0472964    .0645788
                     edu_yrs |  -.0329746   .0275506    -1.20   0.231    -.0869728    .0210235
                     age_yrs |  -.0054777   .0038745    -1.41   0.157    -.0130715    .0021161
                      female |   .0181509   .1217751     0.15   0.882     -.220524    .2568258
                         HUB |   .2949124   .1047866     2.81   0.005     .0895345    .5002904
                         ESA |   .0761822   .0986668     0.77   0.440    -.1172012    .2695656
  -------------------------- +------------------------------------------------------------------
  W_MU                       |
                     edu_yrs |  -1.644347   .6206235    -2.65   0.008    -2.860747   -.4279477
                     age_yrs |  -.2482606   .0869317    -2.86   0.004    -.4186436   -.0778777
                      female |  -2.213244   2.764859    -0.80   0.423    -7.632268     3.20578
                         HUB |   3.970157   2.327555     1.71   0.088    -.5917677    8.532082
                         ESA |   14.63811   2.149305     6.81   0.000     10.42555    18.85067
-----------------------------+------------------------------------------------------------------
LR test of model vs. saturated: chi2(1493) =   2513.73, Prob > chi2 = 0.0000
  Estimation sample sem                    Number of obs =        358

  ------------------------------------------------------------------------
      Variable |          Mean      Std. Dev.         Min           Max
  -------------+----------------------------------------------------------
       _hub_02 |      1.743017      .9561207           1             5
       _hub_07 |      2.002793      1.078173           1             5
       _hub_01 |      1.675978      .8988218           1             5
       _hub_06 |      1.796089      .9616083           1             5
       _hub_03 |      1.941341      1.009435           1             5
       _hub_05 |      2.058659      1.012206           1             5
       _hub_04 |      1.899441      .9935082           1             5
       _nar_04 |      3.586592      1.080533           1             5
       _nar_09 |      3.594972      1.048236           1             5
       _nar_03 |      3.843575      .9544826           1             5
       _nar_08 |      3.251397       1.00332           1             5
       _nar_05 |      3.527933      1.119249           1             5
       _nar_10 |      3.136872      1.130545           1             5
       _nar_02 |      3.625698      1.079272           1             5
       _nar_07 |      3.438547      1.092562           1             5
       _nar_01 |      3.650838      1.044332           1             5
       _nar_06 |      3.502793      1.071005           1             5
       _opt_02 |      3.815642      1.079257           1             5
       _opt_01 |      3.871508      .9846005           1             5
       _opt_03 |      3.622905      1.031835           1             5
       _aut_05 |      4.067039       .911168           1             5
       _aut_04 |      3.868715      .9684514           1             5
       _aut_01 |      3.798883       1.00631           1             5
       _aut_06 |      3.918994      1.035302           1             5
       _aut_03 |       3.77933      .9752785           1             5
```

```
      _aut_02 |     3.910615      .9484466           1            5
      _aut_07 |     4.081006      .9358273           1            5
      _ese_03 |     3.706704      1.048146           1            5
      _ese_02 |     3.628492      1.159046           1            5
      _ese_04 |          3.5      1.189944           1            5
      _ese_01 |     3.692737      1.023808           1            5
      _ese_06 |     3.650838      1.019907           1            5
      _ese_05 |     3.567039       1.11256           1            5
      _pse_01 |     4.150838      .8093549           1            5
      _pse_06 |     3.969274      .8866612           1            5
      _pse_05 |     4.005587      .8631725           1            5
      _pse_02 |     4.011173      .8232533           1            5
      _pse_07 |     3.854749      .9081747           1            5
      _pse_04 |     3.963687      .8990003           1            5
      _pse_03 |     4.055866      .8315937           1            5
      _pse_08 |     3.977654      .8821625           1            5
    _y_ll1_2a |     5.393855      2.484386           0            8
    _y_ll1_2b |     4.963687      2.436032           0            8
    _y_ll1_4a |     5.949721      2.107141           0            8
    _y_ll1_4b |     5.502793      2.201029           0            8
    _y_ln1_2a |     4.117318      2.461509           0            8
    _y_ln1_2b |     3.941341      2.550206           0            8
    _y_ln1_4a |     4.511173      2.302997           0            8
    _y_ln1_4b |     4.354749      2.349055           0            8
    _y_lg1_2a |      3.22067      2.556678           0            8
    _y_lg1_2b |     3.187151      2.626338           0            8
    _y_lg1_4a |     3.477654      2.443376           0            8
    _y_lg1_4b |     3.444134      2.543946           0            8
       w_mu_2 |     53.60684      28.66332           0          100
       w_mu_4 |     61.32751      25.62835           0          100
      edu_yrs |     2.459553      2.206517         .01           10
      age_yrs |     47.57263      16.09296          18           99
       female |      .603352      .4898864           0            1
  ------------------------------------------------------------------------------
Direct effects
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|                Std. Coef.
-------------+----------------------------------------------------------------
Structural   |
  NAR        |
         ESA |   .9401987   .0804052    11.69   0.000                 .7935878
  -----------+----------------------------------------------------------------
  OPT        |
         ESA |          1  (constrained)                              .8021023
  -----------+----------------------------------------------------------------
  AUT        |
         ESA |   .8541691   .0644971    13.24   0.000                 .9100547
  -----------+----------------------------------------------------------------
  ESE        |
         ESA |   .9987315   .0921095    10.84   0.000                 .8644519
  -----------+----------------------------------------------------------------
  PSE        |
         ESA |   .7163014    .065379    10.96   0.000                 .9618469
  -----------+----------------------------------------------------------------
  Y_L_1      |
        W_MU |   .0559376   .0044089    12.69   0.000                  .814271
     edu_yrs |  -.0329746   .0275506    -1.20   0.231                -.0401103
     age_yrs |  -.0054777   .0038745    -1.41   0.157                -.0485962
      female |   .0181509   .1217751     0.15   0.882                 .0049019
         HUB |   .2949124   .1047866     2.81   0.005                 .1047587
         ESA |   .0761822   .0986668     0.77   0.440                 .0309808
  -----------+----------------------------------------------------------------
  W_MU       |
     edu_yrs |  -1.644347   .6206235    -2.65   0.008                -.1374057
     age_yrs |  -.2482606   .0869317    -2.86   0.004                -.1513031
      female |  -2.213244   2.764859    -0.80   0.423                -.0410609
         HUB |   3.970157   2.327555     1.71   0.088                 .0968812
         ESA |   14.63811   2.149305     6.81   0.000                 .4089401
------------------------------------------------------------------------------
```

Indirect effects

	OIM				
	Coef.	Std. Err.	z	P>|z|	Std. Coef.
Structural					
NAR					
ESA	0	(no path)			0
OPT					
ESA	0	(no path)			0
AUT					
ESA	0	(no path)			0
ESE					
ESA	0	(no path)			0
PSE					
ESA	0	(no path)			0
Y_L_1					
W_MU	0	(no path)			0
edu_yrs	-.0919809	.0351705	-2.62	0.009	-.1118855
age_yrs	-.0138871	.0049834	-2.79	0.005	-.1232017
female	-.1238036	.1546983	-0.80	0.424	-.0334347
HUB	.2220811	.1306882	1.70	0.089	.0788876
ESA	.8188208	.1380852	5.93	0.000	.3329881
W_MU					
edu_yrs	0	(no path)			0
age_yrs	0	(no path)			0
female	0	(no path)			0
HUB	0	(no path)			0
ESA	0	(no path)			0

Total effects

	OIM				
	Coef.	Std. Err.	z	P>|z|	Std. Coef.
Structural					
NAR					
ESA	.9401987	.0804052	11.69	0.000	.7935878
OPT					
ESA	1	(constrained)			.8021023
AUT					
ESA	.8541691	.0644971	13.24	0.000	.9100547
ESE					
ESA	.9987315	.0921095	10.84	0.000	.8644519
PSE					
ESA	.7163014	.065379	10.96	0.000	.9618469
Y_L_1					
W_MU	.0559376	.0044089	12.69	0.000	.814271
edu_yrs	-.1249555	.0410032	-3.05	0.002	-.1519958
age_yrs	-.0193648	.005791	-3.34	0.001	-.1717979
female	-.1056527	.1812	-0.58	0.560	-.0285328
HUB	.5169935	.1583796	3.26	0.001	.1836462
ESA	.895003	.1441574	6.21	0.000	.3639689
W_MU					
edu_yrs	-1.644347	.6206235	-2.65	0.008	-.1374057
age_yrs	-.2482606	.0869317	-2.86	0.004	-.1513031

```
      female |  -2.213244   2.764859    -0.80   0.423               -.0410609
         HUB |   3.970157   2.327555     1.71   0.088                .0968812
         ESA |   14.63811   2.149305     6.81   0.000                .4089401
------------------------------------------------------------------------------
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
       chi2_ms(1493) |   2513.728   model vs. saturated
            p > chi2 |      0.000
       chi2_bs(1650) |  16747.010   baseline vs. saturated
            p > chi2 |      0.000
---------------------+--------------------------------------------------------
Population error     |
              RMSEA |      0.044   Root mean squared error of approximation
 90% CI, lower bound |      0.041
         upper bound |      0.047
              pclose |      1.000   Probability RMSEA <= 0.05
---------------------+--------------------------------------------------------
Information criteria |
                 AIC |  59293.812   Akaike's information criterion
                 BIC |  60329.914   Bayesian information criterion
---------------------+--------------------------------------------------------
Baseline comparison  |
                 CFI |      0.932   Comparative fit index
                 TLI |      0.925   Tucker-Lewis index
---------------------+--------------------------------------------------------
Size of residuals    |
                SRMR |      0.065   Standardized root mean squared residual
                  CD |      0.997   Coefficient of determination
------------------------------------------------------------------------------
```

Structural Equations Model (SEM) Output for Model 5

```
Structural equation model                       Number of obs     =        412
Estimation method  = ml
Log likelihood     = -27999.503

 ( 1)  [_nar_04]NAR = 1
 ( 2)  [_opt_02]OPT = 1
 ( 3)  [_aut_05]AUT = 1
 ( 4)  [_ese_03]ESE = 1
 ( 5)  [_pse_01]PSE = 1
 ( 6)  [_y_ll1_8a]Y_L_1 = 1
 ( 7)  [_hub_02]HUB = 1
 ( 8)  [OPT]ESA = 1
------------------------------------------------------------------------------
                             |                 OIM
                             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
Structural                   |
  w_tr_8                     |
                   edu_yrs |   .3181984   .5126487     0.62   0.535    -.6865746    1.322971
                   age_yrs |  -.1498453   .0724584    -2.07   0.039    -.2918613   -.0078294
                    female |  -4.848847   2.333432    -2.08   0.038    -9.422289   -.2754042
                       HUB |  -.2697924   1.939172    -0.14   0.889    -4.070499    3.530914
                       ESA |   9.815603    1.71778     5.71   0.000     6.448816    13.18239
                     _cons |   75.33807   4.247815    17.74   0.000     67.01251    83.66363
  ---------------------------+------------------------------------------------------------------
  NAR                        |
                       ESA |   .9612569   .0768133    12.51   0.000     .8107056    1.111808
  ---------------------------+------------------------------------------------------------------
  OPT                        |
                       ESA |          1  (constrained)
  ---------------------------+------------------------------------------------------------------
  AUT                        |
                       ESA |   .8737668   .0612222    14.27   0.000     .7537734    .9937602
  ---------------------------+------------------------------------------------------------------
```

```
  ESE                     |
                      ESA |   .9392721   .0777473    12.08   0.000     .7868902    1.091654
  ------------------------+------------------------------------------------------------------
  PSE                     |
                      ESA |   .7268566   .0592138    12.28   0.000     .6107997    .8429135
  ------------------------+------------------------------------------------------------------
  Y_L_1                   |
                    w_tr_8 |   .0437302   .0033758    12.95   0.000     .0371137    .0503467
                  edu_yrs |  -.0298688   .0245022    -1.22   0.223    -.0778922    .0181546
                  age_yrs |   -.010827   .0035657    -3.04   0.002    -.0178157   -.0038383
                   female |   .0678043   .1133672     0.60   0.550    -.1543913         .29
                      HUB |   .0970418   .0968381     1.00   0.316    -.0927573    .2868409
                      ESA |   .2097729   .0827689     2.53   0.011     .0475489    .3719968
------------------------------------------------------------------------------------------
LR test of model vs. saturated: chi2(1173) =   1969.11, Prob > chi2 = 0.0000
  Estimation sample sem                     Number of obs =        412

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min           Max
  -------------+----------------------------------------------------------
       _hub_02 |     1.708738      .9294434           1             5
       _hub_07 |     1.949029      1.029882           1             5
       _hub_01 |     1.657767      .8943526           1             5
       _hub_06 |     1.752427      .9472043           1             5
       _hub_03 |     1.873786      .9734141           1             5
       _hub_05 |     2.024272      1.015401           1             5
       _hub_04 |     1.900485      .9752658           1             5
       _nar_04 |     3.541262      1.076512           1             5
       _nar_09 |     3.546117      1.046514           1             5
       _nar_03 |     3.834951      .9599989           1             5
       _nar_08 |     3.218447      .9991965           1             5
       _nar_05 |     3.468447      1.127612           1             5
       _nar_10 |     3.084951      1.118335           1             5
       _nar_02 |     3.592233      1.086855           1             5
       _nar_07 |     3.415049      1.076204           1             5
       _nar_01 |     3.623786       1.02129           1             5
       _nar_06 |     3.463592      1.072158           1             5
       _opt_02 |     3.788835      1.074623           1             5
       _opt_01 |     3.830097      .9915786           1             5
       _opt_03 |     3.563107      1.038621           1             5
       _aut_05 |     4.041262      .9072545           1             5
       _aut_04 |     3.832524      .9858416           1             5
       _aut_01 |     3.737864      1.017713           1             5
       _aut_06 |     3.890777      1.030065           1             5
       _aut_03 |     3.745146      1.001508           1             5
       _aut_02 |     3.876214       .944554           1             5
       _aut_07 |     4.058252      .9546938           1             5
       _ese_03 |     3.643204      1.058566           1             5
       _ese_02 |     3.565534      1.164385           1             5
       _ese_04 |     3.398058      1.222974           1             5
       _ese_01 |     3.662621      1.025353           1             5
       _ese_06 |     3.609223      1.003746           1             5
       _ese_05 |     3.533981      1.096915           1             5
       _pse_01 |      4.13835      .7970659           1             5
       _pse_06 |     3.973301      .8525135           1             5
       _pse_05 |     3.980583      .8626399           1             5
       _pse_02 |     3.987864      .8355532           1             5
       _pse_07 |      3.82767      .9025034           1             5
       _pse_04 |      3.90534      .9166057           1             5
       _pse_03 |     4.046117      .7894126           1             5
       _pse_08 |     3.951456       .900161           1             5
     _y_ll1_8a |     6.264563      1.986673           0             8
     _y_ll1_8b |      5.88835      2.072215           0             8
     _y_ln1_8a |     5.021845      2.097852           0             8
     _y_ln1_8b |     4.866505      2.217854           0             8
     _y_lg1_8a |     3.946602      2.398715           0             8
     _y_lg1_8b |     3.798544      2.443662           0             8
        w_tr_8 |     65.95146      24.02419           0           100
      edu_yrs |     2.439951      2.214246         .01            10
      age_yrs |     47.87379      16.32628          18            99
```

```
       female |     .6165049      .4868284            0            1
  ------------------------------------------------------------------
```

Direct effects

	OIM				
	Coef.	Std. Err.	z	P>|z|	Std. Coef.
Structural					
Y_L_1					
w_tr_8	.0437302	.0033758	12.95	0.000	.6627055
edu_yrs	-.0298688	.0245022	-1.22	0.223	-.041719
age_yrs	-.010827	.0035657	-3.04	0.002	-.1115028
female	.0678043	.1133672	0.60	0.550	.0208221
HUB	.0970418	.0968381	1.00	0.316	.0396462
ESA	.2097729	.0827689	2.53	0.011	.0963894
w_tr_8					
edu_yrs	.3181984	.5126487	0.62	0.535	.0293275
age_yrs	-.1498453	.0724584	-2.07	0.039	-.1018314
female	-4.848847	2.333432	-2.08	0.038	-.0982575
HUB	-.2697924	1.939172	-0.14	0.889	-.0072733
ESA	9.815603	1.71778	5.71	0.000	.2976169
NAR					
ESA	.9612569	.0768133	12.51	0.000	.799912
OPT					
ESA	1	(constrained)			.8234045
AUT					
ESA	.8737668	.0612222	14.27	0.000	.9030273
ESE					
ESA	.9392721	.0777473	12.08	0.000	.811557
PSE					
ESA	.7268566	.0592138	12.28	0.000	.9680232

Indirect effects

	OIM				
	Coef.	Std. Err.	z	P>|z|	Std. Coef.
Structural					
Y_L_1					
w_tr_8	0	(no path)			0
edu_yrs	.0139149	.022445	0.62	0.535	.0194355
age_yrs	-.0065528	.0032099	-2.04	0.041	-.0674842
female	-.212041	.1033556	-2.05	0.040	-.0651158
HUB	-.0117981	.0848103	-0.14	0.889	-.0048201
ESA	.4292382	.0819107	5.24	0.000	.1972324
w_tr_8					
edu_yrs	0	(no path)			0
age_yrs	0	(no path)			0
female	0	(no path)			0
HUB	0	(no path)			0
ESA	0	(no path)			0
NAR					
ESA	0	(no path)			0
OPT					
ESA	0	(no path)			0
AUT					
ESA	0	(no path)			0
ESE					

```
        ESA |          0  (no path)                                          0
  ----------+-------------------------------------------------------------------
  PSE       |
        ESA |          0  (no path)                                          0
------------------------------------------------------------------------------

Total effects
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
-------------+----------------------------------------------------------------
Structural   |
  Y_L_1      |
      w_tr_8 |   .0437302   .0033758    12.95   0.000                .6627055
     edu_yrs |  -.0159539    .033274    -0.48   0.632               -.0222835
     age_yrs |  -.0173798   .0048206    -3.61   0.000               -.1789871
      female |  -.1442366   .1528932    -0.94   0.345               -.0442937
         HUB |   .0852437   .1290026     0.66   0.509                .0348261
         ESA |    .639011   .1155254     5.53   0.000                .2936218
-------------+----------------------------------------------------------------
  w_tr_8     |
     edu_yrs |   .3181984   .5126487     0.62   0.535                .0293275
     age_yrs |  -.1498453   .0724584    -2.07   0.039               -.1018314
      female |  -4.848847   2.333432    -2.08   0.038               -.0982575
         HUB |  -.2697924   1.939172    -0.14   0.889               -.0072733
         ESA |   9.815603    1.71778     5.71   0.000                .2976169
  -----------+----------------------------------------------------------------
  NAR        |
         ESA |   .9612569   .0768133    12.51   0.000                 .799912
  -----------+----------------------------------------------------------------
  OPT        |
         ESA |          1  (constrained)                               .8234045
  -----------+----------------------------------------------------------------
  AUT        |
         ESA |   .8737668   .0612222    14.27   0.000                .9030273
  -----------+----------------------------------------------------------------
  ESE        |
         ESA |   .9392721   .0777473    12.08   0.000                 .811557
  -----------+----------------------------------------------------------------
  PSE        |
         ESA |   .7268566   .0592138    12.28   0.000                .9680232
------------------------------------------------------------------------------
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
       chi2_ms(1173) |   1969.107   model vs. saturated
            p > chi2 |      0.000
       chi2_bs(1272) |  14027.921   baseline vs. saturated
            p > chi2 |      0.000
---------------------+--------------------------------------------------------
Population error     |
              RMSEA |      0.041   Root mean squared error of approximation
 90% CI, lower bound |      0.037
         upper bound |      0.044
              pclose |      1.000   Probability RMSEA <= 0.05
---------------------+--------------------------------------------------------
Information criteria |
                AIC |  56389.005   Akaike's information criterion
                BIC |  57173.105   Bayesian information criterion
---------------------+--------------------------------------------------------
Baseline comparison  |
                CFI |      0.938   Comparative fit index
                TLI |      0.932   Tucker-Lewis index
---------------------+--------------------------------------------------------
Size of residuals    |
               SRMR |      0.064   Standardized root mean squared residual
                 CD |      0.996   Coefficient of determination
------------------------------------------------------------------------------
```

Structural Equations Model (SEM) Output for Model 6

```
Structural equation model                       Number of obs     =        426
Estimation method  = ml
Log likelihood     = -29034.564

 ( 1)  [_nar_04]NAR = 1
 ( 2)  [_opt_02]OPT = 1
 ( 3)  [_aut_05]AUT = 1
 ( 4)  [_ese_03]ESE = 1
 ( 5)  [_pse_01]PSE = 1
 ( 6)  [_y_ll1_8a]Y_L_1 = 1
 ( 7)  [_hub_02]HUB = 1
 ( 8)  [OPT]ESA = 1
------------------------------------------------------------------------------
                             |                 OIM
                             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
Structural                   |
  w_mr_8                     |
                   edu_yrs |   .3309667   .5089865     0.65   0.516    -.6666285    1.328562
                   age_yrs |  -.1876923   .0700363    -2.68   0.007     -.324961   -.0504236
                    female |  -2.129856   2.292341    -0.93   0.353    -6.622761     2.36305
                       HUB |  -.3871929   2.009997    -0.19   0.847    -4.326714    3.552328
                       ESA |   9.842483   1.672491     5.88   0.000      6.56446    13.12051
                     _cons |    76.0463   4.117685    18.47   0.000     67.97578    84.11681
  -------------------------+------------------------------------------------------------------
  NAR                        |
                       ESA |    .954934   .0748069    12.77   0.000     .8083152    1.101553
  -------------------------+------------------------------------------------------------------
  OPT                        |
                       ESA |          1  (constrained)
  -------------------------+------------------------------------------------------------------
  AUT                        |
                       ESA |   .8557007   .0597323    14.33   0.000     .7386275    .9727739
  -------------------------+------------------------------------------------------------------
  ESE                        |
                       ESA |   .9025293   .0741673    12.17   0.000      .757164    1.047895
  -------------------------+------------------------------------------------------------------
  PSE                        |
                       ESA |   .7069673   .0578704    12.22   0.000     .5935434    .8203912
  -------------------------+------------------------------------------------------------------
  Y_L_1                      |
                    w_mr_8 |   .0480286    .003365    14.27   0.000     .0414334    .0546239
                   edu_yrs |  -.0181764    .023791    -0.76   0.445     -.064806    .0284531
                   age_yrs |  -.0067399   .0033584    -2.01   0.045    -.0133222   -.0001575
                    female |  -.1297589   .1076717    -1.21   0.228    -.3407916    .0812738
                       HUB |  -.0082586   .0991352    -0.08   0.934    -.2025599    .1860427
                       ESA |    .106534   .0781598     1.36   0.173    -.0466564    .2597243
-----------------------------+------------------------------------------------------------------
LR test of model vs. saturated: chi2(1170) =   1991.76, Prob > chi2 = 0.0000
  Estimation sample sem                     Number of obs =        426

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min           Max
  -------------+----------------------------------------------------------
       _hub_02 |      1.71831      .9282459           1             5
       _hub_07 |     1.974178      1.047929           1             5
       _hub_01 |     1.664319      .8904693           1             5
       _hub_06 |     1.762911      .9592325           1             5
       _hub_03 |     1.901408      .9891876           1             5
       _hub_05 |     2.030516      1.011235           1             5
       _hub_04 |     1.896714      .9548088           1             5
       _nar_04 |     3.532864      1.082524           1             5
       _nar_09 |     3.553991      1.037257           1             5
       _nar_03 |     3.830986      .9552714           1             5
       _nar_08 |     3.211268      1.007018           1             5
       _nar_05 |     3.462441      1.116612           1             5
       _nar_10 |     3.061033      1.110816           1             5
```

```
      _nar_02 |     3.593897      1.076753           1            5
      _nar_07 |     3.413146      1.072969           1            5
      _nar_01 |     3.626761      1.017095           1            5
      _nar_06 |     3.462441      1.067045           1            5
      _opt_02 |       3.7723      1.070363           1            5
      _opt_01 |     3.821596      .9946224           1            5
      _opt_03 |     3.558685      1.032453           1            5
      _aut_05 |     4.037559      .9067058           1            5
      _aut_04 |     3.816901      .9842505           1            5
      _aut_01 |     3.730047      1.019752           1            5
      _aut_06 |     3.887324      1.025087           1            5
      _aut_03 |     3.741784       1.00305           1            5
      _aut_02 |     3.873239      .9420315           1            5
      _aut_07 |      4.06338      .9496609           1            5
      _ese_03 |     3.640845      1.042677           1            5
      _ese_02 |     3.546948      1.163727           1            5
      _ese_04 |     3.389671      1.212983           1            5
      _ese_01 |     3.638498       1.03165           1            5
      _ese_06 |     3.593897      .9973425           1            5
      _ese_05 |     3.528169      1.091315           1            5
      _pse_01 |     4.119718      .8042452           1            5
      _pse_06 |     3.950704      .8703816           1            5
      _pse_05 |     3.978873      .8661067           1            5
      _pse_02 |     3.978873      .8328687           1            5
      _pse_07 |     3.828638      .8976972           1            5
      _pse_04 |     3.892019      .9293044           1            5
      _pse_03 |     4.039906      .7886274           1            5
      _pse_08 |     3.941315      .8964412           1            5
    _y_ll1_8a |     6.213615      2.045115           0            8
    _y_ll1_8b |     5.816901      2.118667           0            8
    _y_ln1_8a |     4.950704      2.141997           0            8
    _y_ln1_8b |     4.786385      2.236363           0            8
    _y_lg1_8a |     3.877934      2.408638           0            8
    _y_lg1_8b |     3.732394      2.440585           0            8
        w_mr_8 |     66.49061      23.99963           0          100
      edu_yrs |     2.395117      2.194692         .01           10
      age_yrs |      48.0493      16.41946          18           99
       female |     .6244131      .4848435           0            1
  ------------------------------------------------------------------------------

Direct effects
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|                Std. Coef.
-------------+----------------------------------------------------------------
Structural   |
  Y_L_1      |
      w_mr_8 |   .0480286    .003365    14.27   0.000                 .7340751
    edu_yrs  |  -.0181764    .023791    -0.76   0.445                -.0254049
    age_yrs  |  -.0067399   .0033584    -2.01   0.045                -.0704767
     female  |  -.1297589   .1076717    -1.21   0.228                -.0400659
        HUB  |  -.0082586   .0991352    -0.08   0.934                -.0031971
        ESA  |    .106534   .0781598     1.36   0.173                 .0498645
-------------+----------------------------------------------------------------
  w_mr_8     |
    edu_yrs  |   .3309667   .5089865     0.65   0.516                 .0302659
    age_yrs  |  -.1876923   .0700363    -2.68   0.007                -.1284106
     female  |  -2.129856   2.292341    -0.93   0.353                -.0430276
        HUB  |  -.3871929   2.009997    -0.19   0.847                -.0098071
        ESA  |   9.842483   1.672491     5.88   0.000                 .3014172
  -----------+----------------------------------------------------------------
  NAR        |
        ESA  |    .954934   .0748069    12.77   0.000                 .7960406
  -----------+----------------------------------------------------------------
  OPT        |
        ESA  |          1  (constrained)                              .837253
  -----------+----------------------------------------------------------------
  AUT        |
        ESA  |   .8557007   .0597323    14.33   0.000                 .9039529
  -----------+----------------------------------------------------------------
  ESE        |
```

```
        ESA |   .9025293   .0741673    12.17   0.000                .8061325
  ----------+-----------------------------------------------------------------
  PSE       |
        ESA |   .7069673   .0578704    12.22   0.000                .9684254
------------------------------------------------------------------------------

Indirect effects
------------------------------------------------------------------------------
            |                 OIM
            |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
------------+-----------------------------------------------------------------
Structural  |
  Y_L_1     |
     w_mr_8 |          0  (no path)                                         0
    edu_yrs |   .0158959   .0244718     0.65   0.516                .0222174
    age_yrs |  -.0090146   .0034226    -2.63   0.008                -.094263
     female |  -.1022941   .1103308    -0.93   0.354               -.0315855
        HUB |  -.0185963   .0965458    -0.19   0.847               -.0071992
        ESA |   .4727211   .0867927     5.45   0.000                .2212628
------------+-----------------------------------------------------------------
  w_mr_8    |
    edu_yrs |          0  (no path)                                         0
    age_yrs |          0  (no path)                                         0
     female |          0  (no path)                                         0
        HUB |          0  (no path)                                         0
        ESA |          0  (no path)                                         0
  ----------+-----------------------------------------------------------------
  NAR       |
        ESA |          0  (no path)                                         0
  ----------+-----------------------------------------------------------------
  OPT       |
        ESA |          0  (no path)                                         0
  ----------+-----------------------------------------------------------------
  AUT       |
        ESA |          0  (no path)                                         0
  ----------+-----------------------------------------------------------------
  ESE       |
        ESA |          0  (no path)                                         0
  ----------+-----------------------------------------------------------------
  PSE       |
        ESA |          0  (no path)                                         0
------------------------------------------------------------------------------

Total effects
------------------------------------------------------------------------------
            |                 OIM
            |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
------------+-----------------------------------------------------------------
Structural  |
  Y_L_1     |
     w_mr_8 |   .0480286    .003365    14.27   0.000                .7340751
    edu_yrs |  -.0022806   .0341619    -0.07   0.947               -.0031875
    age_yrs |  -.0157545     .00479    -3.29   0.001               -.1647397
     female |   -.232053   .1545138    -1.50   0.133               -.0716513
        HUB |   -.026855   .1385723    -0.19   0.846               -.0103963
        ESA |    .579255   .1136897     5.10   0.000                .2711274
------------+-----------------------------------------------------------------
  w_mr_8    |
    edu_yrs |   .3309667   .5089865     0.65   0.516                .0302659
    age_yrs |  -.1876923   .0700363    -2.68   0.007               -.1284106
     female |  -2.129856   2.292341    -0.93   0.353               -.0430276
        HUB |  -.3871929   2.009997    -0.19   0.847               -.0098071
        ESA |   9.842483   1.672491     5.88   0.000                .3014172
  ----------+-----------------------------------------------------------------
  NAR       |
        ESA |    .954934   .0748069    12.77   0.000                .7960406
  ----------+-----------------------------------------------------------------
  OPT       |
        ESA |          1  (constrained)                                .837253
  ----------+-----------------------------------------------------------------
```

```
  AUT        |
         ESA |   .8557007   .0597323    14.33   0.000                .9039529
  -----------+------------------------------------------------------------------
  ESE        |
         ESA |   .9025293   .0741673    12.17   0.000                .8061325
  -----------+------------------------------------------------------------------
  PSE        |
         ESA |   .7069673   .0578704    12.22   0.000                .9684254
------------------------------------------------------------------------------
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
       chi2_ms(1170) |   1991.756   model vs. saturated
            p > chi2 |      0.000
       chi2_bs(1272) |  14328.338   baseline vs. saturated
            p > chi2 |      0.000
---------------------+--------------------------------------------------------
Population error     |
                RMSEA |      0.041   Root mean squared error of approximation
 90% CI, lower bound |      0.038
         upper bound |      0.044
              pclose |      1.000   Probability RMSEA <= 0.05
---------------------+--------------------------------------------------------
Information criteria |
                 AIC |  58465.128   Akaike's information criterion
                 BIC |  59267.907   Bayesian information criterion
---------------------+--------------------------------------------------------
Baseline comparison  |
                 CFI |      0.937   Comparative fit index
                 TLI |      0.932   Tucker-Lewis index
---------------------+--------------------------------------------------------
Size of residuals    |
                SRMR |      0.065   Standardized root mean squared residual
                  CD |      0.996   Coefficient of determination
------------------------------------------------------------------------------
```

Structural Equations Model (SEM) Output for Model 2A

```
Structural equation model                       Number of obs     =        461
Estimation method  = ml
Log likelihood     = -38756.813

 ( 1)  [_dis_04]DIS = 1
 ( 2)  [_nar_04]NAR = 1
 ( 3)  [_opt_02]OPT = 1
 ( 4)  [_aut_05]AUT = 1
 ( 5)  [_ese_03]ESE = 1
 ( 6)  [_pse_01]PSE = 1
 ( 7)  [_y_ll1_2a]Y_L_1 = 1
 ( 8)  [w_mt2]W_MT = 1
 ( 9)  [_hub_02]HUB = 1
 (10)  [OPT]ESA = 1
------------------------------------------------------------------------------
                             |                 OIM
                             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
Structural                   |
  DIS                        |
                   edu_yrs |  -.0494203   .0143476    -3.44   0.001    -.0775412   -.0212995
                   age_yrs |  -.0037819   .0019311    -1.96   0.050    -.0075668    2.98e-06
                    female |  -.0519292   .0618366    -0.84   0.401    -.1731267    .0692684
                       HUB |   .5710225   .0757609     7.54   0.000     .422534    .7195111
                       ESA |   .3726443   .0560923     6.64   0.000     .2627054    .4825832
  ---------------------------+------------------------------------------------------------------
  NAR                        |
                       ESA |   .9515606   .0785537    12.11   0.000     .7975982    1.105523
  ---------------------------+------------------------------------------------------------------
```

```
  OPT                     |
                      ESA |          1  (constrained)
  ------------------------+---------------------------------------------------------------------
  AUT                     |
                      ESA |   .8826589   .0636686    13.86   0.000     .7578708    1.007447
  ------------------------+---------------------------------------------------------------------
  ESE                     |
                      ESA |   1.016215   .1059732     9.59   0.000     .8085115    1.223919
  ------------------------+---------------------------------------------------------------------
  PSE                     |
                      ESA |   .7489675    .062544    11.98   0.000     .6263835    .8715514
  ------------------------+---------------------------------------------------------------------
  Y_L_1                   |
                      DIS |   .4883228   .1782991     2.74   0.006     .1388629    .8377826
                     W_MT |   .4725182   .3640369     1.30   0.194     -.240981    1.186017
                  edu_yrs |  -.0694773   .0339178    -2.05   0.041     -.135955   -.0029995
                  age_yrs |  -.0163912   .0046483    -3.53   0.000    -.0255017   -.0072808
                   female |  -.0902553   .1454734    -0.62   0.535    -.3753779    .1948673
                      HUB |   .1342735   .1620094     0.83   0.407    -.1832591    .4518061
                      ESA |   .5288911   .1292623     4.09   0.000     .2755418    .7822405
  ------------------------+---------------------------------------------------------------------
  W_MT                    |
                  edu_yrs |   .0080432   .0046703     1.72   0.085    -.0011105    .0171969
                  age_yrs |  -.0006645   .0006579    -1.01   0.313     -.001954     .000625
                   female |  -.0248439   .0216594    -1.15   0.251    -.0672955    .0176077
                      HUB |  -.0044258   .0190133    -0.23   0.816    -.0416913    .0328396
                      ESA |   .0624246   .0192519     3.24   0.001     .0246915    .1001577
------------------------------------------------------------------------------------------------
LR test of model vs. saturated: chi2(1888) =   3054.87, Prob > chi2 = 0.0000
  Estimation sample sem                     Number of obs =        461

  ------------------------------------------------------------------
      Variable |          Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------
       _hub_02 |      1.718004      .9293997           1            5
       _hub_07 |      1.984816      1.072273           1            5
       _hub_01 |      1.655098      .8873024           1            5
       _hub_06 |      1.761388      .9732875           1            5
       _hub_03 |      1.895879      1.009738           1            5
       _hub_05 |      2.036876      1.030379           1            5
       _hub_04 |       1.91757      .9856224           1            5
       _dis_04 |      2.603037      1.261776           1            5
       _dis_03 |      2.557484      1.138006           1            5
       _dis_08 |      2.490239      1.122116           1            5
       _dis_05 |      2.956616      1.066417           1            5
       _dis_02 |      2.960954      1.027129           1            5
       _dis_01 |      2.689805       1.16156           1            5
       _dis_06 |      2.928416      1.039061           1            5
       _nar_04 |        3.4859      1.086637           1            5
       _nar_09 |      3.544469       1.02823           1            5
       _nar_03 |      3.843818      .9357105           1            5
       _nar_08 |      3.184382      1.012238           1            5
       _nar_05 |       3.45987      1.113658           1            5
       _nar_10 |      3.069414      1.130389           1            5
       _nar_02 |      3.555315      1.099248           1            5
       _nar_07 |      3.373102      1.079278           1            5
       _nar_01 |       3.62039      1.024237           1            5
       _nar_06 |       3.45987       1.07593           1            5
       _opt_02 |      3.724512      1.107301           1            5
       _opt_01 |      3.778742      1.025153           1            5
       _opt_03 |      3.527115      1.058004           1            5
       _aut_05 |      4.008677      .9230918           1            5
       _aut_04 |      3.791757      1.000009           1            5
       _aut_01 |      3.687636      1.043634           1            5
       _aut_06 |      3.848156      1.039827           1            5
       _aut_03 |      3.720174      1.016069           1            5
       _aut_02 |      3.859002      .9530673           1            5
       _aut_07 |      4.034707      .9662171           1            5
       _ese_03 |      3.607375      1.042504           1            5
       _ese_02 |      3.503254      1.186193           1            5
```

```
      _ese_04 |     3.344902      1.228432            1            5
      _ese_01 |     3.596529      1.070305            1            5
      _ese_06 |      3.54013      1.022048            1            5
      _ese_05 |     3.483731      1.123976            1            5
      _pse_01 |     4.086768      .8347471            1            5
      _pse_06 |      3.89154      .9331771            1            5
      _pse_05 |     3.950108      .8966756            1            5
      _pse_02 |     3.954447      .8521627            1            5
      _pse_07 |     3.796095      .9050978            1            5
      _pse_04 |     3.856833      .9697052            1            5
      _pse_03 |     3.993492      .8379329            1            5
      _pse_08 |     3.913232      .9142938            1            5
    _y_ll1_2a |     5.310195      2.532674            0            8
    _y_ll1_2b |     4.776573      2.466289            0            8
    _y_ll1_4a |     5.845987      2.167981            0            8
    _y_ll1_4b |     5.327549      2.258097            0            8
    _y_ln1_2a |     3.952278      2.475511            0            8
    _y_ln1_2b |     3.737527       2.54748            0            8
    _y_ln1_4a |     4.318872      2.372911            0            8
    _y_ln1_4b |     4.171367      2.368939            0            8
    _y_lg1_2a |      3.08243      2.571105            0            8
    _y_lg1_2b |     3.041215      2.624391            0            8
    _y_lg1_4a |      3.32538      2.457992            0            8
    _y_lg1_4b |     3.314534      2.528702            0            8
        w_mt2 |     .8698482      .2881383            0            1
        w_mt4 |     .8904555      .2687249            0            1
      edu_yrs |     2.323818       2.19582          .01           10
      age_yrs |     48.28959      16.32104           18           99
       female |     .6160521      .4868738            0            1
  ------------------------------------------------------------------------------
Direct effects
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
-------------+----------------------------------------------------------------
Structural   |
  DIS        |
     edu_yrs |  -.0494203   .0143476    -3.44   0.001               -.1549333
     age_yrs |  -.0037819   .0019311    -1.96   0.050                -.088125
      female |  -.0519292   .0618366    -0.84   0.401               -.0360969
         HUB |   .5710225   .0757609     7.54   0.000                .5186037
         ESA |   .3726443   .0560923     6.64   0.000                .3910004
  -----------+----------------------------------------------------------------
  NAR        |
         ESA |   .9515606   .0785537    12.11   0.000                .8048241
  -----------+----------------------------------------------------------------
  OPT        |
         ESA |          1  (constrained)                             .7971875
  -----------+----------------------------------------------------------------
  AUT        |
         ESA |   .8826589   .0636686    13.86   0.000                 .918568
  -----------+----------------------------------------------------------------
  ESE        |
         ESA |   1.016215   .1059732     9.59   0.000                .9109952
  -----------+----------------------------------------------------------------
  PSE        |
         ESA |   .7489675    .062544    11.98   0.000                .9560287
  -----------+----------------------------------------------------------------
  Y_L_1      |
         DIS |   .4883228   .1782991     2.74   0.006                .2053669
        W_MT |   .4725182   .3640369     1.30   0.194                .0595677
     edu_yrs |  -.0694773   .0339178    -2.05   0.041               -.0916021
     age_yrs |  -.0163912   .0046483    -3.53   0.000               -.1606295
      female |  -.0902553   .1454734    -0.62   0.535               -.0263849
         HUB |   .1342735   .1620094     0.83   0.407                .0512857
         ESA |   .5288911   .1292623     4.09   0.000                .2333847
  -----------+----------------------------------------------------------------
  W_MT       |
     edu_yrs |   .0080432   .0046703     1.72   0.085                .0841201
     age_yrs |  -.0006645   .0006579    -1.01   0.313               -.0516532
```

```
      female |  -.0248439   .0216594    -1.15   0.251               -.0576116
         HUB |  -.0044258   .0190133    -0.23   0.816               -.0134093
         ESA |   .0624246   .0192519     3.24   0.001                .2185092
-------------------------------------------------------------------------------

Indirect effects
-------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
-------------+-----------------------------------------------------------------
Structural   |
  DIS        |
     edu_yrs |          0  (no path)                                         0
     age_yrs |          0  (no path)                                         0
      female |          0  (no path)                                         0
         HUB |          0  (no path)                                         0
         ESA |          0  (no path)                                         0
  -----------+-----------------------------------------------------------------
  NAR        |
         ESA |          0  (no path)                                         0
  -----------+-----------------------------------------------------------------
  OPT        |
         ESA |          0  (no path)                                         0
  -----------+-----------------------------------------------------------------
  AUT        |
         ESA |          0  (no path)                                         0
  -----------+-----------------------------------------------------------------
  ESE        |
         ESA |          0  (no path)                                         0
  -----------+-----------------------------------------------------------------
  PSE        |
         ESA |          0  (no path)                                         0
  -----------+-----------------------------------------------------------------
  Y_L_1      |
         DIS |          0  (no path)                                         0
       W_MT  |          0  (no path)                                         0
     edu_yrs |  -.0203325   .0114818    -1.77   0.077               -.0268073
     age_yrs |  -.0021608   .0012175    -1.77   0.076               -.0211748
      female |  -.0370974   .0344916    -1.08   0.282               -.0108449
         HUB |    .276752   .1042482     2.65   0.008                .1057053
         ESA |   .2114675   .0743077     2.85   0.004                .0933146
  -----------+-----------------------------------------------------------------
  W_MT       |
     edu_yrs |          0  (no path)                                         0
     age_yrs |          0  (no path)                                         0
      female |          0  (no path)                                         0
         HUB |          0  (no path)                                         0
         ESA |          0  (no path)                                         0
-------------------------------------------------------------------------------

Total effects
-------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
-------------+-----------------------------------------------------------------
Structural   |
  DIS        |
     edu_yrs |  -.0494203   .0143476    -3.44   0.001               -.1549333
     age_yrs |  -.0037819   .0019311    -1.96   0.050                -.088125
      female |  -.0519292   .0618366    -0.84   0.401               -.0360969
         HUB |   .5710225   .0757609     7.54   0.000                .5186037
         ESA |   .3726443   .0560923     6.64   0.000                .3910004
  -----------+-----------------------------------------------------------------
  NAR        |
         ESA |   .9515606   .0785537    12.11   0.000                .8048241
  -----------+-----------------------------------------------------------------
  OPT        |
         ESA |          1  (constrained)                              .7971875
  -----------+-----------------------------------------------------------------
  AUT        |
```

```
       ESA |   .8826589   .0636686    13.86   0.000                .918568
-----------+------------------------------------------------------------------
ESE        |
       ESA |   1.016215   .1059732     9.59   0.000                .9109952
-----------+------------------------------------------------------------------
PSE        |
       ESA |   .7489675    .062544    11.98   0.000                .9560287
-----------+------------------------------------------------------------------
Y_L_1      |
       DIS |   .4883228   .1782991     2.74   0.006                .2053669
      W_MT |   .4725182   .3640369     1.30   0.194                .0595677
   edu_yrs |  -.0898098   .0333823    -2.69   0.007               -.1184094
   age_yrs |   -.018552   .0046994    -3.95   0.000               -.1818043
    female |  -.1273527    .146826    -0.87   0.386               -.0372298
       HUB |   .4110255   .1287671     3.19   0.001                .1569909
       ESA |   .7403586    .118454     6.25   0.000                .3266993
-----------+------------------------------------------------------------------
W_MT       |
   edu_yrs |   .0080432   .0046703     1.72   0.085                .0841201
   age_yrs |  -.0006645   .0006579    -1.01   0.313               -.0516532
    female |  -.0248439   .0216594    -1.15   0.251               -.0576116
       HUB |  -.0044258   .0190133    -0.23   0.816               -.0134093
       ESA |   .0624246   .0192519     3.24   0.001                .2185092
------------------------------------------------------------------------------
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
       chi2_ms(1888) |   3054.870   model vs. saturated
            p > chi2 |      0.000
       chi2_bs(2077) |  21603.425   baseline vs. saturated
            p > chi2 |      0.000
---------------------+--------------------------------------------------------
Population error     |
               RMSEA |      0.037   Root mean squared error of approximation
 90% CI, lower bound |      0.034
         upper bound |      0.039
              pclose |      1.000   Probability RMSEA <= 0.05
---------------------+--------------------------------------------------------
Information criteria |
                 AIC |  78139.625   Akaike's information criterion
                 BIC |  79433.379   Bayesian information criterion
---------------------+--------------------------------------------------------
Baseline comparison  |
                 CFI |      0.940   Comparative fit index
                 TLI |      0.934   Tucker-Lewis index
---------------------+--------------------------------------------------------
Size of residuals    |
                SRMR |      0.068   Standardized root mean squared residual
                  CD |      1.001   Coefficient of determination
------------------------------------------------------------------------------
```

Structural Equations Model (SEM) Output for Model 4A

```
Structural equation model                       Number of obs     =        348
Estimation method  = ml
Log likelihood     = -31911.342

 ( 1)  [_dis_04]DIS = 1
 ( 2)  [_nar_04]NAR = 1
 ( 3)  [_opt_02]OPT = 1
 ( 4)  [_aut_05]AUT = 1
 ( 5)  [_ese_03]ESE = 1
 ( 6)  [_pse_01]PSE = 1
 ( 7)  [_y_ll1_2a]Y_L_1 = 1
 ( 8)  [w_mu_2]W_MU = 1
 ( 9)  [_hub_02]HUB = 1
 (10)  [OPT]ESA = 1
```

	OIM				
	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Structural						
DIS						
edu_yrs	-.0579782	.0168075	-3.45	0.001	-.0909203	-.0250361
age_yrs	-.0028152	.0022852	-1.23	0.218	-.007294	.0016637
female	-.0396351	.0719225	-0.55	0.582	-.1806005	.1013304
HUB	.641226	.0977404	6.56	0.000	.4496584	.8327937
ESA	.4083313	.0677762	6.02	0.000	.2754923	.5411702
NAR						
ESA	.9586487	.0834674	11.49	0.000	.7950556	1.122242
OPT						
ESA	1	(constrained)				
AUT						
ESA	.8226738	.061258	13.43	0.000	.7026104	.9427372
ESE						
ESA	1.011433	.08724	11.59	0.000	.8404458	1.18242
PSE						
ESA	.6834445	.0599367	11.40	0.000	.5659707	.8009182
Y_L_1						
DIS	.1132047	.1466227	0.77	0.440	-.1741706	.40058
W_MU	.0571058	.0044771	12.76	0.000	.0483308	.0658808
edu_yrs	-.0292151	.0295476	-0.99	0.323	-.0871274	.0286971
age_yrs	-.0049926	.0040392	-1.24	0.216	-.0129092	.002924
female	.0651322	.1260763	0.52	0.605	-.1819727	.3122372
HUB	.2335203	.1522058	1.53	0.125	-.0647975	.5318381
ESA	.0504146	.1245376	0.40	0.686	-.1936746	.2945038
W_MU						
edu_yrs	-1.60861	.6207269	-2.59	0.010	-2.825212	-.3920074
age_yrs	-.2114137	.087642	-2.41	0.016	-.3831889	-.0396386
female	-2.174864	2.771886	-0.78	0.433	-7.60766	3.257933
HUB	4.505701	2.498864	1.80	0.071	-.3919831	9.403385
ESA	15.52909	2.256888	6.88	0.000	11.10568	19.95251

LR test of model vs. saturated: chi2(1907) = 3149.19, Prob > chi2 = 0.0000

Estimation sample sem Number of obs = 348

Variable	Mean	Std. Dev.	Min	Max
_hub_02	1.747126	.956921	1	5
_hub_07	2	1.08434	1	5
_hub_01	1.672414	.8896704	1	5
_hub_06	1.801724	.9712272	1	5
_hub_03	1.939655	1.009655	1	5
_hub_05	2.068966	1.019047	1	5
_hub_04	1.902299	.9995361	1	5
_dis_04	2.655172	1.311247	1	5
_dis_03	2.563218	1.180545	1	5
_dis_08	2.54023	1.139337	1	5
_dis_05	3.04023	1.075583	1	5
_dis_02	2.977011	1.059901	1	5
_dis_01	2.704023	1.193781	1	5
_dis_06	2.979885	1.047653	1	5
_nar_04	3.586207	1.066133	1	5
_nar_09	3.594828	1.037997	1	5
_nar_03	3.853448	.9383379	1	5
_nar_08	3.252874	.9924022	1	5
_nar_05	3.54023	1.108569	1	5
_nar_10	3.137931	1.137999	1	5
_nar_02	3.62069	1.076245	1	5

```
       _nar_07 |     3.442529      1.086796            1            5
       _nar_01 |     3.658046      1.038603            1            5
       _nar_06 |     3.502874      1.066921            1            5
       _opt_02 |     3.810345      1.086308            1            5
       _opt_01 |     3.856322      .9881373            1            5
       _opt_03 |     3.612069      1.039049            1            5
       _aut_05 |     4.054598      .9172736            1            5
       _aut_04 |     3.862069      .9653646            1            5
       _aut_01 |     3.798851      1.004198            1            5
       _aut_06 |     3.922414      1.025475            1            5
       _aut_03 |     3.781609      .9713509            1            5
       _aut_02 |      3.91092      .9424942            1            5
       _aut_07 |     4.077586      .9250051            1            5
       _ese_03 |     3.718391      1.035956            1            5
       _ese_02 |     3.637931      1.146828            1            5
       _ese_04 |     3.514368      1.179713            1            5
       _ese_01 |     3.701149      1.005632            1            5
       _ese_06 |      3.66092      .9956512            1            5
       _ese_05 |     3.571839      1.109565            1            5
       _pse_01 |     4.155172      .8134686            1            5
       _pse_06 |     3.968391      .8831635            1            5
       _pse_05 |     4.011494      .8521105            1            5
       _pse_02 |     4.017241      .8104088            1            5
       _pse_07 |     3.850575      .9018551            1            5
       _pse_04 |     3.974138      .8995151            1            5
       _pse_03 |     4.063218      .8187451            1            5
       _pse_08 |     3.988506       .868856            1            5
     _y_ll1_2a |     5.393678      2.501335            0            8
     _y_ll1_2b |     4.971264      2.436344            0            8
     _y_ll1_4a |     5.956897      2.109641            0            8
     _y_ll1_4b |     5.494253      2.199678            0            8
     _y_ln1_2a |     4.117816      2.461326            0            8
     _y_ln1_2b |     3.933908      2.551758            0            8
     _y_ln1_4a |     4.520115      2.305775            0            8
     _y_ln1_4b |     4.359195      2.352325            0            8
     _y_lg1_2a |     3.204023      2.548953            0            8
     _y_lg1_2b |     3.206897      2.633799            0            8
     _y_lg1_4a |     3.474138      2.439331            0            8
     _y_lg1_4b |     3.451149      2.544231            0            8
        w_mu_2 |     53.41523      28.72799            0          100
        w_mu_4 |     61.18894      25.62079            0          100
      edu_yrs |     2.452356      2.220365          .01           10
      age_yrs |     47.72126      16.11285           18           99
       female |     .5948276      .4916323            0            1
  ------------------------------------------------------------------------------
Direct effects
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|                Std. Coef.
-------------+----------------------------------------------------------------
Structural   |
  DIS        |
     edu_yrs |  -.0579782   .0168075    -3.45   0.001               -.1742004
     age_yrs |  -.0028152   .0022852    -1.23   0.218               -.0613812
      female |  -.0396351   .0719225    -0.55   0.582               -.0263682
         HUB |    .641226   .0977404     6.56   0.000                .533151
         ESA |   .4083313   .0677762     6.02   0.000                .4063342
  -----------+----------------------------------------------------------------
  NAR        |
         ESA |   .9586487   .0834674    11.49   0.000                .8050646
  -----------+----------------------------------------------------------------
  OPT        |
         ESA |          1  (constrained)                              .7902708
  -----------+----------------------------------------------------------------
  AUT        |
         ESA |   .8226738    .061258    13.43   0.000                .8415437
  -----------+----------------------------------------------------------------
  ESE        |
         ESA |   1.011433     .08724    11.59   0.000                .8864111
  -----------+----------------------------------------------------------------
```

```
  PSE         |
         ESA |   .6834445   .0599367    11.40   0.000                .9047849
  -----------+------------------------------------------------------------------
  Y_L_1       |
         DIS |   .1132047   .1466227     0.77   0.440                .0454557
         W_MU |   .0571058   .0044771    12.76   0.000                .8159356
     edu_yrs |  -.0292151   .0295476    -0.99   0.323               -.0352465
     age_yrs |  -.0049926   .0040392    -1.24   0.216               -.0437103
      female |   .0651322   .1260763     0.52   0.605                .0173988
         HUB |   .2335203   .1522058     1.53   0.125                .0779628
         ESA |   .0504146   .1245376     0.40   0.686                .0201442
  -----------+------------------------------------------------------------------
  W_MU        |
     edu_yrs |   -1.60861   .6207269    -2.59   0.010               -.1358261
     age_yrs |  -.2114137    .087642    -2.41   0.016               -.1295429
      female |  -2.174864   2.771886    -0.78   0.433               -.0406612
         HUB |   4.505701   2.498864     1.80   0.071                .1052809
         ESA |   15.52909   2.256888     6.88   0.000                .4342752
------------------------------------------------------------------------------

Indirect effects
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
-------------+----------------------------------------------------------------
Structural   |
  DIS        |
     edu_yrs |          0  (no path)                                         0
     age_yrs |          0  (no path)                                         0
      female |          0  (no path)                                         0
         HUB |          0  (no path)                                         0
         ESA |          0  (no path)                                         0
  -----------+------------------------------------------------------------------
  NAR        |
         ESA |          0  (no path)                                         0
  -----------+------------------------------------------------------------------
  OPT        |
         ESA |          0  (no path)                                         0
  -----------+------------------------------------------------------------------
  AUT        |
         ESA |          0  (no path)                                         0
  -----------+------------------------------------------------------------------
  ESE        |
         ESA |          0  (no path)                                         0
  -----------+------------------------------------------------------------------
  PSE        |
         ESA |          0  (no path)                                         0
  -----------+------------------------------------------------------------------
  Y_L_1      |
         DIS |          0  (no path)                                         0
         W_MU |          0  (no path)                                         0
     edu_yrs |  -.0984243   .0368699    -2.67   0.008               -.1187438
     age_yrs |  -.0123916   .0051321    -2.41   0.016               -.1084888
      female |  -.1286842   .1589263    -0.81   0.418               -.0343755
         HUB |   .3298914   .1707444     1.93   0.053                .1101372
         ESA |   .9330263   .1610528     5.79   0.000                .3728108
  -----------+------------------------------------------------------------------
  W_MU       |
     edu_yrs |          0  (no path)                                         0
     age_yrs |          0  (no path)                                         0
      female |          0  (no path)                                         0
         HUB |          0  (no path)                                         0
         ESA |          0  (no path)                                         0
------------------------------------------------------------------------------

Total effects
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
-------------+----------------------------------------------------------------
```

```
Structural   |
  DIS        |
     edu_yrs |  -.0579782   .0168075    -3.45   0.001               -.1742004
     age_yrs |  -.0028152   .0022852    -1.23   0.218               -.0613812
      female |  -.0396351   .0719225    -0.55   0.582               -.0263682
         HUB |    .641226   .0977404     6.56   0.000                .533151
         ESA |   .4083313   .0677762     6.02   0.000                .4063342
  -----------+------------------------------------------------------------------
  NAR        |
         ESA |   .9586487   .0834674    11.49   0.000                .8050646
  -----------+------------------------------------------------------------------
  OPT        |
         ESA |          1  (constrained)                             .7902708
  -----------+------------------------------------------------------------------
  AUT        |
         ESA |   .8226738    .061258    13.43   0.000                .8415437
  -----------+------------------------------------------------------------------
  ESE        |
         ESA |   1.011433     .08724    11.59   0.000                .8864111
  -----------+------------------------------------------------------------------
  PSE        |
         ESA |   .6834445   .0599367    11.40   0.000                .9047849
  -----------+------------------------------------------------------------------
  Y_L_1      |
         DIS |   .1132047   .1466227     0.77   0.440                .0454557
       W_MU  |   .0571058   .0044771    12.76   0.000                .8159356
     edu_yrs |  -.1276395   .0419962    -3.04   0.002               -.1539903
     age_yrs |  -.0173842   .0059642    -2.91   0.004               -.1521991
      female |   -.063552   .1860742    -0.34   0.733               -.0169767
         HUB |   .5634117   .1737735     3.24   0.001                   .1881
         ESA |   .9834409   .1557713     6.31   0.000                .3929551
  -----------+------------------------------------------------------------------
  W_MU       |
     edu_yrs |   -1.60861   .6207269    -2.59   0.010               -.1358261
     age_yrs |  -.2114137    .087642    -2.41   0.016               -.1295429
      female |  -2.174864   2.771886    -0.78   0.433               -.0406612
         HUB |   4.505701   2.498864     1.80   0.071                .1052809
         ESA |   15.52909   2.256888     6.88   0.000                .4342752
------------------------------------------------------------------------------
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
       chi2_ms(1907) |   3149.192   model vs. saturated
            p > chi2 |      0.000
       chi2_bs(2077) |  17698.565   baseline vs. saturated
            p > chi2 |      0.000
---------------------+--------------------------------------------------------
Population error     |
              RMSEA |      0.043   Root mean squared error of approximation
 90% CI, lower bound |      0.041
         upper bound |      0.046
               pclose |      1.000   Probability RMSEA <= 0.05
---------------------+--------------------------------------------------------
Information criteria |
                 AIC |  64410.684   Akaike's information criterion
                 BIC |  65543.231   Bayesian information criterion
---------------------+--------------------------------------------------------
Baseline comparison  |
                 CFI |      0.920   Comparative fit index
                 TLI |      0.913   Tucker-Lewis index
---------------------+--------------------------------------------------------
Size of residuals    |
                SRMR |      0.074   Standardized root mean squared residual
                  CD |      0.992   Coefficient of determination
------------------------------------------------------------------------------
```

Structural Equations Model (SEM) Output for Model 1B

```
Structural equation model                       Number of obs     =        461
Estimation method  = ml
Log likelihood     = -38909.352

 ( 1)  [_dis_04]DIS = 1
 ( 2)  [_nar_04]NAR = 1
 ( 3)  [_opt_02]OPT = 1
 ( 4)  [_aut_05]AUT = 1
 ( 5)  [_ese_03]ESE = 1
 ( 6)  [_pse_01]PSE = 1
 ( 7)  [_y_ll1_2a]Y_L_1 = 1
 ( 8)  [w_tt2]W_TT = 1
 ( 9)  [_hub_02]HUB = 1
 (10)  [OPT]ESA = 1
------------------------------------------------------------------------------
                             |                 OIM
                             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
Structural                   |
  DIS                        |
                   edu_yrs |  -.0494125    .014361    -3.44   0.001    -.0775596   -.0212654
                   age_yrs |  -.0038642   .0019341    -2.00   0.046     -.007655   -.0000733
                    female |  -.0536003   .0618871    -0.87   0.386    -.1748968    .0676963
                       HUB |   .5707375   .0757368     7.54   0.000     .4222961    .7191789
                       ESA |   .3643171   .0552495     6.59   0.000     .2560301    .4726041
  -------------------------+------------------------------------------------------------------
  NAR                      |
                       ESA |   .9336036    .076426    12.22   0.000     .7838114    1.083396
  -------------------------+------------------------------------------------------------------
  OPT                      |
                       ESA |          1  (constrained)
  -------------------------+------------------------------------------------------------------
  AUT                      |
                       ESA |   .8675723   .0619744    14.00   0.000     .7461048    .9890399
  -------------------------+------------------------------------------------------------------
  ESE                      |
                       ESA |   .9821489   .1020008     9.63   0.000     .7822311    1.182067
  -------------------------+------------------------------------------------------------------
  PSE                      |
                       ESA |   .7401344   .0612986    12.07   0.000     .6199914    .8602773
  -------------------------+------------------------------------------------------------------
  Y_L_1                    |
                       DIS |   .6421132   .1895632     3.39   0.001     .2705761     1.01365
                      W_TT |   .3276071   .2993068     1.09   0.274    -.2590234    .9142375
                   edu_yrs |  -.0737209   .0350765    -2.10   0.036    -.1424695   -.0049723
                   age_yrs |  -.0132011   .0047318    -2.79   0.005    -.0224752   -.0039269
                    female |  -.1632703   .1505587    -1.08   0.278    -.4583599    .1318193
                       HUB |    .096229    .166454     0.58   0.563    -.2300148    .4224728
                       ESA |   .4000953   .1282386     3.12   0.002     .1487522    .6514384
  -------------------------+------------------------------------------------------------------
  W_TT                     |
                       DIS |  -.0146942   .0342003    -0.43   0.667    -.0817257    .0523372
                   edu_yrs |   .0084139   .0066938     1.26   0.209    -.0047057    .0215336
                   age_yrs |  -.0005537    .000904    -0.61   0.540    -.0023256    .0012182
                    female |   -.044115   .0293941    -1.50   0.133    -.1017263    .0134964
                       HUB |   .0209089    .031877     0.66   0.512    -.0415688    .0833867
                       ESA |   .0969147   .0258768     3.75   0.000      .046197    .1476323
-----------------------------+------------------------------------------------------------------
LR test of model vs. saturated: chi2(1888) =   2969.37, Prob > chi2 = 0.0000
  Estimation sample sem                     Number of obs =        461

  ------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------
       _hub_02 |     1.718004      .9293997           1            5
       _hub_07 |     1.984816      1.072273           1            5
       _hub_01 |     1.655098      .8873024           1            5
```

```
       _hub_06 |     1.761388      .9732875           1            5
       _hub_03 |     1.895879      1.009738           1            5
       _hub_05 |     2.036876      1.030379           1            5
       _hub_04 |      1.91757      .9856224           1            5
       _dis_04 |     2.603037      1.261776           1            5
       _dis_03 |     2.557484      1.138006           1            5
       _dis_08 |     2.490239      1.122116           1            5
       _dis_05 |     2.956616      1.066417           1            5
       _dis_02 |     2.960954      1.027129           1            5
       _dis_01 |     2.689805       1.16156           1            5
       _dis_06 |     2.928416      1.039061           1            5
       _nar_04 |       3.4859      1.086637           1            5
       _nar_09 |     3.544469       1.02823           1            5
       _nar_03 |     3.843818      .9357105           1            5
       _nar_08 |     3.184382      1.012238           1            5
       _nar_05 |      3.45987      1.113658           1            5
       _nar_10 |     3.069414      1.130389           1            5
       _nar_02 |     3.555315      1.099248           1            5
       _nar_07 |     3.373102      1.079278           1            5
       _nar_01 |      3.62039      1.024237           1            5
       _nar_06 |      3.45987       1.07593           1            5
       _opt_02 |     3.724512      1.107301           1            5
       _opt_01 |     3.778742      1.025153           1            5
       _opt_03 |     3.527115      1.058004           1            5
       _aut_05 |     4.008677      .9230918           1            5
       _aut_04 |     3.791757      1.000009           1            5
       _aut_01 |     3.687636      1.043634           1            5
       _aut_06 |     3.848156      1.039827           1            5
       _aut_03 |     3.720174      1.016069           1            5
       _aut_02 |     3.859002      .9530673           1            5
       _aut_07 |     4.034707      .9662171           1            5
       _ese_03 |     3.607375      1.042504           1            5
       _ese_02 |     3.503254      1.186193           1            5
       _ese_04 |     3.344902      1.228432           1            5
       _ese_01 |     3.596529      1.070305           1            5
       _ese_06 |      3.54013      1.022048           1            5
       _ese_05 |     3.483731      1.123976           1            5
       _pse_01 |     4.086768      .8347471           1            5
       _pse_06 |      3.89154      .9331771           1            5
       _pse_05 |     3.950108      .8966756           1            5
       _pse_02 |     3.954447      .8521627           1            5
       _pse_07 |     3.796095      .9050978           1            5
       _pse_04 |     3.856833      .9697052           1            5
       _pse_03 |     3.993492      .8379329           1            5
       _pse_08 |     3.913232      .9142938           1            5
     _y_ll1_2a |     5.310195      2.532674           0            8
     _y_ll1_2b |     4.776573      2.466289           0            8
     _y_ll1_6a |     5.754881      2.277156           0            8
     _y_ll1_6b |     5.156182      2.274984           0            8
     _y_ln1_2a |     3.952278      2.475511           0            8
     _y_ln1_2b |     3.737527       2.54748           0            8
     _y_ln1_6a |     4.364425      2.400533           0            8
     _y_ln1_6b |     4.013015      2.359035           0            8
     _y_lg1_2a |      3.08243      2.571105           0            8
     _y_lg1_2b |     3.041215      2.624391           0            8
     _y_lg1_6a |     3.347072      2.537745           0            8
     _y_lg1_6b |     3.279826      2.477245           0            8
         w_tt2 |     .8167028      .3418663           0            1
         w_tt6 |     .8524946      .3074072           0            1
       edu_yrs |     2.323818       2.19582         .01           10
       age_yrs |     48.28959      16.32104          18           99
        female |     .6160521      .4868738           0            1
  ------------------------------------------------------------------------------
Direct effects
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
-------------+----------------------------------------------------------------
Structural   |
  DIS        |
```

```
    edu_yrs |  -.0494125    .014361    -3.44   0.001               -.1550695
    age_yrs |  -.0038642   .0019341    -2.00   0.046               -.0901357
     female |  -.0536003   .0618871    -0.87   0.386               -.0372972
        HUB |   .5707375   .0757368     7.54   0.000                .5193981
        ESA |   .3643171   .0552495     6.59   0.000                .3894689
  ----------+-----------------------------------------------------------------
  NAR       |
        ESA |   .9336036    .076426    12.22   0.000                .8040472
  ----------+-----------------------------------------------------------------
  OPT       |
        ESA |          1  (constrained)                             .8075607
  ----------+-----------------------------------------------------------------
  AUT       |
        ESA |   .8675723   .0619744    14.00   0.000                .9178509
  ----------+-----------------------------------------------------------------
  ESE       |
        ESA |   .9821489   .1020008     9.63   0.000                .8967402
  ----------+-----------------------------------------------------------------
  PSE       |
        ESA |   .7401344   .0612986    12.07   0.000                .9591998
  ----------+-----------------------------------------------------------------
  Y_L_1     |
        DIS |   .6421132   .1895632     3.39   0.001                .2698565
       W_TT |   .3276071   .2993068     1.09   0.274                .0550636
    edu_yrs |  -.0737209   .0350765    -2.10   0.036               -.0972303
    age_yrs |  -.0132011   .0047318    -2.79   0.005               -.1294109
     female |  -.1632703   .1505587    -1.08   0.278               -.0477461
        HUB |    .096229    .166454     0.58   0.563                .0368037
        ESA |   .4000953   .1282386     3.12   0.002                .1797538
  ----------+-----------------------------------------------------------------
  W_TT      |
        DIS |  -.0146942   .0342003    -0.43   0.667               -.0367416
    edu_yrs |   .0084139   .0066938     1.26   0.209                .0660237
    age_yrs |  -.0005537    .000904    -0.61   0.540               -.0322957
     female |   -.044115   .0293941    -1.50   0.133               -.0767548
        HUB |   .0209089    .031877     0.66   0.512                .0475779
        ESA |   .0969147   .0258768     3.75   0.000                .2590555
------------------------------------------------------------------------------

Indirect effects
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
-------------+----------------------------------------------------------------
Structural   |
  DIS        |
    edu_yrs |          0  (no path)                                         0
    age_yrs |          0  (no path)                                         0
     female |          0  (no path)                                         0
        HUB |          0  (no path)                                         0
        ESA |          0  (no path)                                         0
  ----------+-----------------------------------------------------------------
  NAR       |
        ESA |          0  (no path)                                         0
  ----------+-----------------------------------------------------------------
  OPT       |
        ESA |          0  (no path)                                         0
  ----------+-----------------------------------------------------------------
  AUT       |
        ESA |          0  (no path)                                         0
  ----------+-----------------------------------------------------------------
  ESE       |
        ESA |          0  (no path)                                         0
  ----------+-----------------------------------------------------------------
  PSE       |
        ESA |          0  (no path)                                         0
  ----------+-----------------------------------------------------------------
  Y_L_1     |
        DIS |  -.0048139   .0123373    -0.39   0.696               -.0020231
      W_TT |          0  (no path)                                         0
```

```
     edu_yrs |  -.0287341   .0129651    -2.22   0.027               -.0378973
     age_yrs |   -.002644   .0014622    -1.81   0.071               -.0259197
      female |  -.0486118   .0439869    -1.11   0.269               -.0142158
         HUB |   .3705805    .112124     3.31   0.001                .1417319
         ESA |   .2639289   .0810194     3.26   0.001                .1185773
  -----------+--------------------------------------------------------------
  W_TT       |
         DIS |          0  (no path)                                        0
     edu_yrs |   .0007261   .0017008     0.43   0.669                .0056975
     age_yrs |   .0000568    .000135     0.42   0.674                .0033117
      female |   .0007876   .0020441     0.39   0.700                .0013704
         HUB |  -.0083866    .019524    -0.43   0.668               -.0190835
         ESA |  -.0053534   .0124808    -0.43   0.668               -.0143097
------------------------------------------------------------------------------

Total effects
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
-------------+----------------------------------------------------------------
Structural   |
  DIS        |
     edu_yrs |  -.0494125    .014361    -3.44   0.001               -.1550695
     age_yrs |  -.0038642   .0019341    -2.00   0.046               -.0901357
      female |  -.0536003   .0618871    -0.87   0.386               -.0372972
         HUB |   .5707375   .0757368     7.54   0.000                .5193981
         ESA |   .3643171   .0552495     6.59   0.000                .3894689
  -----------+--------------------------------------------------------------
  NAR        |
         ESA |   .9336036    .076426    12.22   0.000                .8040472
  -----------+--------------------------------------------------------------
  OPT        |
         ESA |          1  (constrained)                               .8075607
  -----------+--------------------------------------------------------------
  AUT        |
         ESA |   .8675723   .0619744    14.00   0.000                .9178509
  -----------+--------------------------------------------------------------
  ESE        |
         ESA |   .9821489   .1020008     9.63   0.000                .8967402
  -----------+--------------------------------------------------------------
  PSE        |
         ESA |   .7401344   .0612986    12.07   0.000                .9591998
  -----------+--------------------------------------------------------------
  Y_L_1      |
         DIS |   .6372993   .1894101     3.36   0.001                .2678334
        W_TT |   .3276071   .2993068     1.09   0.274                .0550636
     edu_yrs |   -.102455   .0348025    -2.94   0.003               -.1351276
     age_yrs |  -.0158451   .0048028    -3.30   0.001               -.1553306
      female |  -.2118821   .1523546    -1.39   0.164               -.0619619
         HUB |   .4668095   .1331457     3.51   0.000                .1785356
         ESA |   .6640243   .1165443     5.70   0.000                .2983311
  -----------+--------------------------------------------------------------
  W_TT       |
         DIS |  -.0146942   .0342003    -0.43   0.667               -.0367416
     edu_yrs |     .00914   .0064719     1.41   0.158                .0717211
     age_yrs |  -.0004969    .000898    -0.55   0.580                -.028984
      female |  -.0433273   .0293109    -1.48   0.139               -.0753844
         HUB |   .0125224    .024133     0.52   0.604                .0284944
         ESA |   .0915613    .023067     3.97   0.000                .2447459
------------------------------------------------------------------------------
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
       chi2_ms(1888) |   2969.368   model vs. saturated
            p > chi2 |      0.000
       chi2_bs(2077) |  21563.943   baseline vs. saturated
            p > chi2 |      0.000
---------------------+--------------------------------------------------------
Population error     |
```

```
               RMSEA |      0.035   Root mean squared error of approximation
 90% CI, lower bound |      0.033
         upper bound |      0.038
              pclose |      1.000   Probability RMSEA <= 0.05
---------------------+-----------------------------------------------------
Information criteria |
                 AIC |  78444.705   Akaike's information criterion
                 BIC |  79738.458   Bayesian information criterion
---------------------+-----------------------------------------------------
Baseline comparison  |
                 CFI |      0.945   Comparative fit index
                 TLI |      0.939   Tucker-Lewis index
---------------------+-----------------------------------------------------
Size of residuals    |
                SRMR |      0.068   Standardized root mean squared residual
                  CD |      0.999   Coefficient of determination
-------------------------------------------------------------------------------
```

Structural Equations Model (SEM) Output for Model 2B

```
Structural equation model                       Number of obs     =        461
Estimation method  = ml
Log likelihood     = -38756.813

 ( 1)  [_dis_04]DIS = 1
 ( 2)  [_nar_04]NAR = 1
 ( 3)  [_opt_02]OPT = 1
 ( 4)  [_aut_05]AUT = 1
 ( 5)  [_ese_03]ESE = 1
 ( 6)  [_pse_01]PSE = 1
 ( 7)  [_y_ll1_2a]Y_L_1 = 1
 ( 8)  [w_mt2]W_MT = 1
 ( 9)  [_hub_02]HUB = 1
 (10)  [OPT]ESA = 1
------------------------------------------------------------------------------
                             |                 OIM
                             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
Structural                   |
  DIS                        |
                   edu_yrs |  -.0494204   .0143476    -3.44   0.001    -.0775411   -.0212996
                   age_yrs |  -.0037818   .0019311    -1.96   0.050    -.0075667    2.98e-06
                    female |  -.0519247   .0618369    -0.84   0.401    -.1731228    .0692734
                       HUB |    .571009   .0757641     7.54   0.000     .4225142    .7195039
                       ESA |   .3726539   .0560933     6.64   0.000      .262713    .4825948
  ---------------------------+------------------------------------------------------------------
  NAR                        |
                       ESA |   .9515592   .0785494    12.11   0.000     .7976051    1.105513
  ---------------------------+------------------------------------------------------------------
  OPT                        |
                       ESA |          1  (constrained)
  ---------------------------+------------------------------------------------------------------
  AUT                        |
                       ESA |   .8826525   .0636656    13.86   0.000     .7578702    1.007435
  ---------------------------+------------------------------------------------------------------
  ESE                        |
                       ESA |   1.016216   .1059544     9.59   0.000     .8085492    1.223883
  ---------------------------+------------------------------------------------------------------
  PSE                        |
                       ESA |    .748968   .0625405    11.98   0.000     .6263908    .8715452
  ---------------------------+------------------------------------------------------------------
  Y_L_1                      |
                       DIS |   .4883403   .1783051     2.74   0.006     .1388687    .8378119
                     W_MT |   .4729251    .365003     1.30   0.195    -.2424676    1.188318
                   edu_yrs |  -.0694804   .0339182    -2.05   0.041    -.1359588    -.003002
                   age_yrs |   -.016391   .0046483    -3.53   0.000    -.0255015   -.0072806
                    female |  -.0902404   .1454782    -0.62   0.535    -.3753725    .1948916
                       HUB |   .1342583   .1620114     0.83   0.407    -.1832782    .4517947
```

```
                        ESA |   .5288441   .1293139     4.09   0.000     .2753934    .7822947
  --------------------------+-----------------------------------------------------------------
  W_MT                      |
                        DIS |  -.0004053   .0245885    -0.02   0.987    -.0485979    .0477873
                    edu_yrs |   .0080239   .0048005     1.67   0.095    -.0013849    .0174327
                    age_yrs |  -.0006655   .0006601    -1.01   0.313    -.0019594    .0006283
                     female |  -.0248787   .0217933    -1.14   0.254    -.0675929    .0178354
                        HUB |   -.004159   .0252965    -0.16   0.869    -.0537392    .0454213
                        ESA |   .0626049   .0225157     2.78   0.005     .0184749    .1067349
----------------------------+-----------------------------------------------------------------
LR test of model vs. saturated: chi2(1887) =   3054.87, Prob > chi2 = 0.0000
  Estimation sample sem                     Number of obs =        461

  ------------------------------------------------------------------------
      Variable |          Mean      Std. Dev.         Min           Max
  -------------+----------------------------------------------------------
       _hub_02 |      1.718004      .9293997           1             5
       _hub_07 |      1.984816      1.072273           1             5
       _hub_01 |      1.655098      .8873024           1             5
       _hub_06 |      1.761388      .9732875           1             5
       _hub_03 |      1.895879      1.009738           1             5
       _hub_05 |      2.036876      1.030379           1             5
       _hub_04 |       1.91757      .9856224           1             5
       _dis_04 |      2.603037      1.261776           1             5
       _dis_03 |      2.557484      1.138006           1             5
       _dis_08 |      2.490239      1.122116           1             5
       _dis_05 |      2.956616      1.066417           1             5
       _dis_02 |      2.960954      1.027129           1             5
       _dis_01 |      2.689805       1.16156           1             5
       _dis_06 |      2.928416      1.039061           1             5
       _nar_04 |        3.4859      1.086637           1             5
       _nar_09 |      3.544469       1.02823           1             5
       _nar_03 |      3.843818      .9357105           1             5
       _nar_08 |      3.184382      1.012238           1             5
       _nar_05 |       3.45987      1.113658           1             5
       _nar_10 |      3.069414      1.130389           1             5
       _nar_02 |      3.555315      1.099248           1             5
       _nar_07 |      3.373102      1.079278           1             5
       _nar_01 |       3.62039      1.024237           1             5
       _nar_06 |       3.45987       1.07593           1             5
       _opt_02 |      3.724512      1.107301           1             5
       _opt_01 |      3.778742      1.025153           1             5
       _opt_03 |      3.527115      1.058004           1             5
       _aut_05 |      4.008677      .9230918           1             5
       _aut_04 |      3.791757      1.000009           1             5
       _aut_01 |      3.687636      1.043634           1             5
       _aut_06 |      3.848156      1.039827           1             5
       _aut_03 |      3.720174      1.016069           1             5
       _aut_02 |      3.859002      .9530673           1             5
       _aut_07 |      4.034707      .9662171           1             5
       _ese_03 |      3.607375      1.042504           1             5
       _ese_02 |      3.503254      1.186193           1             5
       _ese_04 |      3.344902      1.228432           1             5
       _ese_01 |      3.596529      1.070305           1             5
       _ese_06 |       3.54013      1.022048           1             5
       _ese_05 |      3.483731      1.123976           1             5
       _pse_01 |      4.086768      .8347471           1             5
       _pse_06 |       3.89154      .9331771           1             5
       _pse_05 |      3.950108      .8966756           1             5
       _pse_02 |      3.954447      .8521627           1             5
       _pse_07 |      3.796095      .9050978           1             5
       _pse_04 |      3.856833      .9697052           1             5
       _pse_03 |      3.993492      .8379329           1             5
       _pse_08 |      3.913232      .9142938           1             5
     _y_ll1_2a |      5.310195      2.532674           0             8
     _y_ll1_2b |      4.776573      2.466289           0             8
     _y_ll1_4a |      5.845987      2.167981           0             8
     _y_ll1_4b |      5.327549      2.258097           0             8
     _y_ln1_2a |      3.952278      2.475511           0             8
     _y_ln1_2b |      3.737527       2.54748           0             8
```

```
    _y_ln1_4a |     4.318872      2.372911           0            8
    _y_ln1_4b |     4.171367      2.368939           0            8
    _y_lg1_2a |      3.08243      2.571105           0            8
    _y_lg1_2b |     3.041215      2.624391           0            8
    _y_lg1_4a |      3.32538      2.457992           0            8
    _y_lg1_4b |     3.314534      2.528702           0            8
        w_mt2 |     .8698482      .2881383           0            1
        w_mt4 |     .8904555      .2687249           0            1
      edu_yrs |     2.323818       2.19582         .01           10
      age_yrs |     48.28959      16.32104          18           99
       female |     .6160521      .4868738           0            1
  ------------------------------------------------------------------
```

Direct effects

	OIM				
	Coef.	Std. Err.	z	P>|z|	Std. Coef.
Structural					
DIS					
edu_yrs	-.0494204	.0143476	-3.44	0.001	-.1549342
age_yrs	-.0037818	.0019311	-1.96	0.050	-.0881244
female	-.0519247	.0618369	-0.84	0.401	-.036094
HUB	.571009	.0757641	7.54	0.000	.5185977
ESA	.3726539	.0560933	6.64	0.000	.3910128
NAR					
ESA	.9515592	.0785494	12.11	0.000	.8048235
OPT					
ESA	1	(constrained)			.7971886
AUT					
ESA	.8826525	.0636656	13.86	0.000	.9185624
ESE					
ESA	1.016216	.1059544	9.59	0.000	.9109973
PSE					
ESA	.748968	.0625405	11.98	0.000	.9560308
Y_L_1					
DIS	.4883403	.1783051	2.74	0.006	.2053744
W_MT	.4729251	.365003	1.30	0.195	.0596314
edu_yrs	-.0694804	.0339182	-2.05	0.041	-.0916068
age_yrs	-.016391	.0046483	-3.53	0.000	-.1606286
female	-.0902404	.1454782	-0.62	0.535	-.0263807
HUB	.1342583	.1620114	0.83	0.407	.0512805
ESA	.5288441	.1293139	4.09	0.000	.2333656
W_MT					
DIS	-.0004053	.0245885	-0.02	0.987	-.0013517
edu_yrs	.0080239	.0048005	1.67	0.095	.0839012
age_yrs	-.0006655	.0006601	-1.01	0.313	-.0517267
female	-.0248787	.0217933	-1.14	0.254	-.0576807
HUB	-.004159	.0252965	-0.16	0.869	-.0125984
ESA	.0626049	.0225157	2.78	0.005	.2190963

Indirect effects

	OIM				
	Coef.	Std. Err.	z	P>|z|	Std. Coef.
Structural					
DIS					
edu_yrs	0	(no path)			0
age_yrs	0	(no path)			0
female	0	(no path)			0
HUB	0	(no path)			0
ESA	0	(no path)			0

```
  -----------+------------------------------------------------------------------
  NAR        |
         ESA |          0  (no path)                                           0
  ----------+------------------------------------------------------------------
  OPT        |
         ESA |          0  (no path)                                           0
  ----------+------------------------------------------------------------------
  AUT        |
         ESA |          0  (no path)                                           0
  ----------+------------------------------------------------------------------
  ESE        |
         ESA |          0  (no path)                                           0
  ----------+------------------------------------------------------------------
  PSE        |
         ESA |          0  (no path)                                           0
  ----------+------------------------------------------------------------------
  Y_L_1      |
         DIS |  -.0001917   .0116403    -0.02   0.987               -.0000806
        W_MT |          0  (no path)                                           0
     edu_yrs |  -.0203298   .0114821    -1.77   0.077               -.0268039
     age_yrs |  -.0021609   .0012175    -1.77   0.076               -.0211759
      female |  -.0371128   .0345094    -1.08   0.282               -.0108495
         HUB |   .2767704   .1042565     2.65   0.008                .1057136
         ESA |   .2115179   .0744103     2.84   0.004                .0933375
  ----------+------------------------------------------------------------------
  W_MT       |
         DIS |          0  (no path)                                           0
     edu_yrs |     .00002   .0012152     0.02   0.987                .0002094
     age_yrs |   1.53e-06    .000093     0.02   0.987                .0001191
      female |    .000021   .0012769     0.02   0.987                .0000488
         HUB |  -.0002314   .0140399    -0.02   0.987                -.000701
         ESA |   -.000151   .0091633    -0.02   0.987               -.0005285
-------------------------------------------------------------------------------

Total effects
-------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
-------------+-----------------------------------------------------------------
Structural   |
  DIS        |
     edu_yrs |  -.0494204   .0143476    -3.44   0.001               -.1549342
     age_yrs |  -.0037818   .0019311    -1.96   0.050               -.0881244
      female |  -.0519247   .0618369    -0.84   0.401                -.036094
         HUB |    .571009   .0757641     7.54   0.000                .5185977
         ESA |   .3726539   .0560933     6.64   0.000                .3910128
  -----------+-----------------------------------------------------------------
  NAR        |
         ESA |   .9515592   .0785494    12.11   0.000                .8048235
  -----------+-----------------------------------------------------------------
  OPT        |
         ESA |          1  (constrained)                              .7971886
  -----------+-----------------------------------------------------------------
  AUT        |
         ESA |   .8826525   .0636656    13.86   0.000                .9185624
  -----------+-----------------------------------------------------------------
  ESE        |
         ESA |   1.016216   .1059544     9.59   0.000                .9109973
  -----------+-----------------------------------------------------------------
  PSE        |
         ESA |    .748968   .0625405    11.98   0.000                .9560308
  -----------+-----------------------------------------------------------------
  Y_L_1      |
         DIS |   .4881486      .1786     2.73   0.006                .2052938
        W_MT |   .4729251    .365003     1.30   0.195                .0596314
     edu_yrs |  -.0898102   .0333821    -2.69   0.007               -.1184106
     age_yrs |  -.0185519   .0046994    -3.95   0.000               -.1818045
      female |  -.1273532   .1468249    -0.87   0.386               -.0372301
         HUB |   .4110287   .1287653     3.19   0.001                .1569942
         ESA |    .740362   .1184513     6.25   0.000                .3267031
```

```
  -----------+------------------------------------------------------------------
  W_MT       |
         DIS |  -.0004053   .0245885    -0.02   0.987               -.0013517
     edu_yrs |   .0080439    .004673     1.72   0.085                .0841106
     age_yrs |   -.000664   .0006596    -1.01   0.314               -.0516076
      female |  -.0248577   .0216922    -1.15   0.252                -.057632
         HUB |  -.0043904   .0192029    -0.23   0.819               -.0132994
         ESA |   .0624539   .0194105     3.22   0.001                .2185678
------------------------------------------------------------------------------
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
       chi2_ms(1887) |   3054.870   model vs. saturated
            p > chi2 |      0.000
       chi2_bs(2077) |  21603.425   baseline vs. saturated
            p > chi2 |      0.000
---------------------+--------------------------------------------------------
Population error     |
              RMSEA |      0.037   Root mean squared error of approximation
 90% CI, lower bound |      0.034
         upper bound |      0.039
              pclose |      1.000   Probability RMSEA <= 0.05
---------------------+--------------------------------------------------------
Information criteria |
                AIC |  78141.625   Akaike's information criterion
                BIC |  79439.512   Bayesian information criterion
---------------------+--------------------------------------------------------
Baseline comparison  |
                CFI |      0.940   Comparative fit index
                TLI |      0.934   Tucker-Lewis index
---------------------+--------------------------------------------------------
Size of residuals    |
               SRMR |      0.068   Standardized root mean squared residual
                 CD |      1.001   Coefficient of determination
------------------------------------------------------------------------------
```

Structural Equations Model (SEM) Output for Model 3B

```
Structural equation model                       Number of obs     =        321
Estimation method  = ml
Log likelihood     = -29440.869

 ( 1)  [_dis_04]DIS = 1
 ( 2)  [_nar_04]NAR = 1
 ( 3)  [_opt_02]OPT = 1
 ( 4)  [_aut_05]AUT = 1
 ( 5)  [_ese_03]ESE = 1
 ( 6)  [_pse_01]PSE = 1
 ( 7)  [_y_ll1_2a]Y_L_1 = 1
 ( 8)  [w_tu_2]W_TU = 1
 ( 9)  [_hub_02]HUB = 1
 (10)  [OPT]ESA = 1
------------------------------------------------------------------------------
                             |                 OIM
                             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
Structural                   |
  DIS                        |
                   edu_yrs |  -.0567768   .0173617    -3.27   0.001    -.0908051   -.0227484
                   age_yrs |  -.0049504   .0023883    -2.07   0.038    -.0096314   -.0002694
                    female |  -.0748266   .0754862    -0.99   0.322    -.2227768    .0731235
                       HUB |   .6998407    .106754     6.56   0.000     .4906067    .9090746
                       ESA |   .3616225   .0636379     5.68   0.000     .2368945    .4863506
  --------------------------+------------------------------------------------------------------
  NAR                        |
                       ESA |   .9367631   .0816208    11.48   0.000     .7767893    1.096737
  --------------------------+------------------------------------------------------------------
```

```
  OPT                     |
                      ESA |          1  (constrained)
  ------------------------+------------------------------------------------------------------------
  AUT                     |
                      ESA |   .8164402   .0627876    13.00   0.000     .6933788    .9395017
  ------------------------+------------------------------------------------------------------------
  ESE                     |
                      ESA |   .9750498   .0849117    11.48   0.000     .8086259    1.141474
  ------------------------+------------------------------------------------------------------------
  PSE                     |
                      ESA |   .6802651   .0631255    10.78   0.000     .5565413    .8039889
  ------------------------+------------------------------------------------------------------------
  Y_L_1                   |
                      DIS |   .0597874   .1604074     0.37   0.709    -.2546053    .3741801
                     W_TU |   .0475842   .0043524    10.93   0.000     .0390536    .0561148
                  edu_yrs |   -.034662   .0293485    -1.18   0.238    -.0921839      .02286
                  age_yrs |  -.0046396   .0040784    -1.14   0.255    -.0126332     .003354
                   female |   .0531214   .1274859     0.42   0.677    -.1967463    .3029892
                      HUB |   .1389161   .1652963     0.84   0.401    -.1850586    .4628908
                      ESA |   .0239243   .1067375     0.22   0.823    -.1852773     .233126
  ------------------------+------------------------------------------------------------------------
  W_TU                    |
                      DIS |   12.15222   3.738724     3.25   0.001     4.824458    19.47999
                  edu_yrs |  -1.074481   .6742307    -1.59   0.111    -2.395949    .2469864
                  age_yrs |  -.1517833   .0929192    -1.63   0.102    -.3339016    .0303349
                   female |  -4.281413   2.928216    -1.46   0.144    -10.02061    1.457785
                      HUB |  -.3456419   3.799165    -0.09   0.928    -7.791868    7.100585
                      ESA |   10.11555   2.510305     4.03   0.000     5.195444    15.03566
--------------------------+------------------------------------------------------------------------
LR test of model vs. saturated: chi2(1924) =   3136.13, Prob > chi2 = 0.0000
  Estimation sample sem                   Number of obs =        321

  ------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------
       _hub_02 |     1.725857      .9583113           1            5
       _hub_07 |     1.996885      1.099711           1            5
       _hub_01 |     1.663551      .9179862           1            5
       _hub_06 |     1.788162       .999367           1            5
       _hub_03 |     1.912773      .9930345           1            5
       _hub_05 |     2.046729      1.040281           1            5
       _hub_04 |     1.875389       .982687           1            5
       _dis_04 |      2.65109      1.319235           1            5
       _dis_03 |     2.588785      1.185485           1            5
       _dis_08 |     2.538941      1.161577           1            5
       _dis_05 |     3.015576      1.079528           1            5
       _dis_02 |     2.950156      1.079934           1            5
       _dis_01 |     2.679128      1.196284           1            5
       _dis_06 |     2.934579      1.054197           1            5
       _nar_04 |     3.545171      1.089144           1            5
       _nar_09 |      3.52648      1.066573           1            5
       _nar_03 |     3.853583      .9587074           1            5
       _nar_08 |     3.280374      .9597629           1            5
       _nar_05 |     3.514019      1.137688           1            5
       _nar_10 |     3.130841      1.138124           1            5
       _nar_02 |     3.563863      1.099632           1            5
       _nar_07 |     3.398754      1.113777           1            5
       _nar_01 |     3.647975      1.035648           1            5
       _nar_06 |     3.476636      1.086961           1            5
       _opt_02 |     3.813084      1.082221           1            5
       _opt_01 |     3.844237      .9685876           1            5
       _opt_03 |     3.588785      1.057296           1            5
       _aut_05 |     4.074766      .8699957           1            5
       _aut_04 |     3.884735      .9597122           1            5
       _aut_01 |     3.806854      .9906199           1            5
       _aut_06 |     3.906542      1.020411           1            5
       _aut_03 |     3.775701      .9615262           1            5
       _aut_02 |     3.915888      .9265679           1            5
       _aut_07 |     4.065421      .8937739           1            5
       _ese_03 |      3.71028      1.042917           1            5
```

_ese_02	3.601246	1.168545	1	5
_ese_04	3.448598	1.208566	1	5
_ese_01	3.676012	1.022108	1	5
_ese_06	3.638629	1.024819	1	5
_ese_05	3.545171	1.117468	1	5
_pse_01	4.130841	.8187351	1	5
_pse_06	3.975078	.8620481	1	5
_pse_05	4.006231	.8328932	1	5
_pse_02	3.990654	.8272166	1	5
_pse_07	3.866044	.8895924	1	5
_pse_04	3.94081	.9046328	1	5
_pse_03	4.046729	.8145149	1	5
_pse_08	3.981308	.8730118	1	5
_y_ll1_2a	5.361371	2.458455	0	8
_y_ll1_2b	4.909657	2.398163	0	8
_y_ll1_6a	5.834891	2.252949	0	8
_y_ll1_6b	5.317757	2.16621	0	8
_y_ln1_2a	4.084112	2.472808	0	8
_y_ln1_2b	3.915888	2.541363	0	8
_y_ln1_6a	4.520249	2.361222	0	8
_y_ln1_6b	4.202492	2.312897	0	8
_y_lg1_2a	3.158879	2.540237	0	8
_y_lg1_2b	3.202492	2.600383	0	8
_y_lg1_6a	3.476636	2.531103	0	8
_y_lg1_6b	3.445483	2.451591	0	8
w_tu_2	49.20016	29.54562	0	100
w_tu_6	54.27726	27.81079	0	100
edu_yrs	2.467196	2.258858	.01	10
age_yrs	47.57788	16.23538	18	99
female	.5856698	.4933751	0	1

Direct effects

	OIM				
	Coef.	Std. Err.	z	P>|z|	Std. Coef.
Structural					
DIS					
edu_yrs	-.0567768	.0173617	-3.27	0.001	-.1722278
age_yrs	-.0049504	.0023883	-2.07	0.038	-.1079308
female	-.0748266	.0754862	-0.99	0.322	-.0495766
HUB	.6998407	.106754	6.56	0.000	.5596485
ESA	.3616225	.0636379	5.68	0.000	.3667745
NAR					
ESA	.9367631	.0816208	11.48	0.000	.7883017
OPT					
ESA	1	(constrained)			.8289938
AUT					
ESA	.8164402	.0627876	13.00	0.000	.9075816
ESE					
ESA	.9750498	.0849117	11.48	0.000	.8709326
PSE					
ESA	.6802651	.0631255	10.78	0.000	.9477432
Y_L_1					
DIS	.0597874	.1604074	0.37	0.709	.0263541
W_TU	.0475842	.0043524	10.93	0.000	.7857029
edu_yrs	-.034662	.0293485	-1.18	0.238	-.0463473
age_yrs	-.0046396	.0040784	-1.14	0.255	-.0445887
female	.0531214	.1274859	0.42	0.677	.0155142
HUB	.1389161	.1652963	0.84	0.401	.0489674
ESA	.0239243	.1067375	0.22	0.823	.010696
W_TU					
DIS	12.15222	3.738724	3.25	0.001	.3244129

```
     edu_yrs |  -1.074481   .6742307    -1.59   0.111               -.087011
     age_yrs |  -.1517833   .0929192    -1.63   0.102              -.0883431
      female |  -4.281413   2.928216    -1.46   0.144               -.075727
         HUB |  -.3456419   3.799165    -0.09   0.928              -.0073788
         ESA |   10.11555   2.510305     4.03   0.000               .2738897
-------------------------------------------------------------------------------

Indirect effects
-------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
-------------+-----------------------------------------------------------------
Structural   |
  DIS        |
     edu_yrs |          0  (no path)                                         0
     age_yrs |          0  (no path)                                         0
      female |          0  (no path)                                         0
         HUB |          0  (no path)                                         0
         ESA |          0  (no path)                                         0
  -----------+-----------------------------------------------------------------
  NAR        |
         ESA |          0  (no path)                                         0
  -----------+-----------------------------------------------------------------
  OPT        |
         ESA |          0  (no path)                                         0
  -----------+-----------------------------------------------------------------
  AUT        |
         ESA |          0  (no path)                                         0
  -----------+-----------------------------------------------------------------
  ESE        |
         ESA |          0  (no path)                                         0
  -----------+-----------------------------------------------------------------
  PSE        |
         ESA |          0  (no path)                                         0
  -----------+-----------------------------------------------------------------
  Y_L_1      |
         DIS |   .5782533   .1854459     3.12   0.002               .2548922
        W_TU |          0  (no path)                                         0
     edu_yrs |  -.0873542   .0330612    -2.64   0.008              -.1168032
     age_yrs |   -.010381   .0046165    -2.25   0.025              -.0997666
      female |  -.2514699   .1445999    -1.74   0.082              -.0734421
         HUB |   .4300798    .174293     2.47   0.014               .1516015
         ESA |   .7120699   .1315337     5.41   0.000               .3183499
  -----------+-----------------------------------------------------------------
  W_TU       |
         DIS |          0  (no path)                                         0
     edu_yrs |  -.6899639   .2850595    -2.42   0.016              -.0558729
     age_yrs |  -.0601582    .033805    -1.78   0.075              -.0350142
      female |  -.9093101   .9518898    -0.96   0.339              -.0160833
         HUB |    8.50462   2.725157     3.12   0.002               .1815572
         ESA |   4.394518   1.467104     3.00   0.003               .1189864
-------------------------------------------------------------------------------

Total effects
-------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
-------------+-----------------------------------------------------------------
Structural   |
  DIS        |
     edu_yrs |  -.0567768   .0173617    -3.27   0.001              -.1722278
     age_yrs |  -.0049504   .0023883    -2.07   0.038              -.1079308
      female |  -.0748266   .0754862    -0.99   0.322              -.0495766
         HUB |   .6998407    .106754     6.56   0.000               .5596485
         ESA |   .3616225   .0636379     5.68   0.000               .3667745
  -----------+-----------------------------------------------------------------
  NAR        |
         ESA |   .9367631   .0816208    11.48   0.000               .7883017
  -----------+-----------------------------------------------------------------
  OPT        |
```

```
       ESA |          1  (constrained)                                .8289938
-----------+------------------------------------------------------------------
AUT        |
       ESA |   .8164402   .0627876    13.00   0.000                .9075816
-----------+------------------------------------------------------------------
ESE        |
       ESA |   .9750498   .0849117    11.48   0.000                .8709326
-----------+------------------------------------------------------------------
PSE        |
       ESA |   .6802651   .0631255    10.78   0.000                .9477432
-----------+------------------------------------------------------------------
Y_L_1      |
       DIS |   .6380407   .2302901     2.77   0.006                .2812463
       W_TU |   .0475842   .0043524    10.93   0.000                .7857029
    edu_yrs |  -.1220161   .0406543    -3.00   0.003               -.1631505
    age_yrs |  -.0150206   .0058118    -2.58   0.010               -.1443553
     female |  -.1983484    .181933    -1.09   0.276               -.0579279
        HUB |   .5689958   .1753519     3.24   0.001                .2005689
        ESA |   .7359943   .1399383     5.26   0.000                .3290459
-----------+------------------------------------------------------------------
W_TU       |
       DIS |   12.15222   3.738724     3.25   0.001                .3244129
    edu_yrs |  -1.764445   .6546911    -2.70   0.007               -.1428839
    age_yrs |  -.2119416   .0937103    -2.26   0.024               -.1233573
     female |  -5.190723   2.980092    -1.74   0.082               -.0918103
        HUB |   8.158978   2.792265     2.92   0.003                .1741784
        ESA |   14.51007   2.236299     6.49   0.000                .3928761
------------------------------------------------------------------------------
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
      chi2_ms(1924) |   3136.134   model vs. saturated
           p > chi2 |      0.000
      chi2_bs(2077) |  16746.772   baseline vs. saturated
           p > chi2 |      0.000
---------------------+--------------------------------------------------------
Population error     |
              RMSEA |      0.044   Root mean squared error of approximation
 90% CI, lower bound |      0.041
         upper bound |      0.047
              pclose |      1.000   Probability RMSEA <= 0.05
---------------------+--------------------------------------------------------
Information criteria |
                 AIC |  59435.738   Akaike's information criterion
                 BIC |  60480.427   Bayesian information criterion
---------------------+--------------------------------------------------------
Baseline comparison  |
                 CFI |      0.917   Comparative fit index
                 TLI |      0.911   Tucker-Lewis index
---------------------+--------------------------------------------------------
Size of residuals    |
                SRMR |      0.076   Standardized root mean squared residual
                  CD |      0.996   Coefficient of determination
------------------------------------------------------------------------------
```

Structural Equations Model (SEM) Output for Model 4B

```
Structural equation model                       Number of obs     =        348
Estimation method  = ml
Log likelihood     = -31906.649

 ( 1)  [_dis_04]DIS = 1
 ( 2)  [_nar_04]NAR = 1
 ( 3)  [_opt_02]OPT = 1
 ( 4)  [_aut_05]AUT = 1
 ( 5)  [_ese_03]ESE = 1
 ( 6)  [_pse_01]PSE = 1
```

```
 ( 7)  [_y_ll1_2a]Y_L_1 = 1
 ( 8)  [w_mu_2]W_MU = 1
 ( 9)  [_hub_02]HUB = 1
 (10)  [OPT]ESA = 1
------------------------------------------------------------------------------
                             |                 OIM
                             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
Structural                   |
  DIS                        |
                   edu_yrs |   -.054308   .0164357    -3.30   0.001    -.0865214   -.0220946
                   age_yrs |  -.0034851   .0022178    -1.57   0.116    -.0078319    .0008617
                    female |  -.0451301   .0698089    -0.65   0.518    -.1819531    .0916929
                       HUB |   .6249288   .0974603     6.41   0.000     .4339102    .8159475
                       ESA |   .3500988   .0604854     5.79   0.000     .2315495     .468648
  ---------------------------+------------------------------------------------------------------
  NAR                        |
                       ESA |     .89164   .0762125    11.70   0.000     .7422662    1.041014
  ---------------------------+------------------------------------------------------------------
  OPT                        |
                       ESA |          1  (constrained)
  ---------------------------+------------------------------------------------------------------
  AUT                        |
                       ESA |   .8613684   .0630142    13.67   0.000     .7378629     .984874
  ---------------------------+------------------------------------------------------------------
  ESE                        |
                       ESA |   .9661084   .0870237    11.10   0.000     .7955451    1.136672
  ---------------------------+------------------------------------------------------------------
  PSE                        |
                       ESA |   .6986292   .0629497    11.10   0.000       .57525    .8220084
  ---------------------------+------------------------------------------------------------------
  Y_L_1                      |
                       DIS |   .0748995   .1491188     0.50   0.615    -.2173678    .3671669
                     W_MU |    .054525   .0044562    12.24   0.000     .0457909     .063259
                   edu_yrs |  -.0274221   .0284157    -0.97   0.335    -.0831159    .0282716
                   age_yrs |  -.0055663   .0039238    -1.42   0.156    -.0132569    .0021243
                    female |   .0297787   .1226386     0.24   0.808    -.2105885    .2701459
                       HUB |   .2870244   .1487053     1.93   0.054    -.0044327    .5784814
                       ESA |   .0714863   .1076458     0.66   0.507    -.1394956    .2824683
  ---------------------------+------------------------------------------------------------------
  W_MU                       |
                       DIS |   10.41255    3.50166     2.97   0.003     3.549424    17.27568
                   edu_yrs |  -1.123548   .6474007    -1.74   0.083     -2.39243    .1453345
                   age_yrs |  -.1973044   .0884471    -2.23   0.026    -.3706574   -.0239513
                    female |  -1.942145   2.791651    -0.70   0.487     -7.41368    3.529389
                       HUB |  -1.689949   3.337931    -0.51   0.613    -8.232174    4.852275
                       ESA |   10.10086   2.387858     4.23   0.000     5.420742    14.78097
-----------------------------+------------------------------------------------------------------
LR test of model vs. saturated: chi2(1903) =   3139.81, Prob > chi2 = 0.0000
  Estimation sample sem                    Number of obs =        348

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min           Max
  -------------+----------------------------------------------------------
       _hub_02 |     1.747126       .956921           1             5
       _hub_07 |            2       1.08434           1             5
       _hub_01 |     1.672414      .8896704           1             5
       _hub_06 |     1.801724      .9712272           1             5
       _hub_03 |     1.939655      1.009655           1             5
       _hub_05 |     2.068966      1.019047           1             5
       _hub_04 |     1.902299      .9995361           1             5
       _dis_04 |     2.655172      1.311247           1             5
       _dis_03 |     2.563218      1.180545           1             5
       _dis_08 |      2.54023      1.139337           1             5
       _dis_05 |      3.04023      1.075583           1             5
       _dis_02 |     2.977011      1.059901           1             5
       _dis_01 |     2.704023      1.193781           1             5
       _dis_06 |     2.979885      1.047653           1             5
       _nar_04 |     3.586207      1.066133           1             5
       _nar_09 |     3.594828      1.037997           1             5
```

```
      _nar_03 |     3.853448      .9383379            1            5
      _nar_08 |     3.252874      .9924022            1            5
      _nar_05 |      3.54023      1.108569            1            5
      _nar_10 |     3.137931      1.137999            1            5
      _nar_02 |      3.62069      1.076245            1            5
      _nar_07 |     3.442529      1.086796            1            5
      _nar_01 |     3.658046      1.038603            1            5
      _nar_06 |     3.502874      1.066921            1            5
      _opt_02 |     3.810345      1.086308            1            5
      _opt_01 |     3.856322      .9881373            1            5
      _opt_03 |     3.612069      1.039049            1            5
      _aut_05 |     4.054598      .9172736            1            5
      _aut_04 |     3.862069      .9653646            1            5
      _aut_01 |     3.798851      1.004198            1            5
      _aut_06 |     3.922414      1.025475            1            5
      _aut_03 |     3.781609      .9713509            1            5
      _aut_02 |      3.91092      .9424942            1            5
      _aut_07 |     4.077586      .9250051            1            5
      _ese_03 |     3.718391      1.035956            1            5
      _ese_02 |     3.637931      1.146828            1            5
      _ese_04 |     3.514368      1.179713            1            5
      _ese_01 |     3.701149      1.005632            1            5
      _ese_06 |      3.66092      .9956512            1            5
      _ese_05 |     3.571839      1.109565            1            5
      _pse_01 |     4.155172      .8134686            1            5
      _pse_06 |     3.968391      .8831635            1            5
      _pse_05 |     4.011494      .8521105            1            5
      _pse_02 |     4.017241      .8104088            1            5
      _pse_07 |     3.850575      .9018551            1            5
      _pse_04 |     3.974138      .8995151            1            5
      _pse_03 |     4.063218      .8187451            1            5
      _pse_08 |     3.988506       .868856            1            5
    _y_ll1_2a |     5.393678      2.501335            0            8
    _y_ll1_2b |     4.971264      2.436344            0            8
    _y_ll1_4a |     5.956897      2.109641            0            8
    _y_ll1_4b |     5.494253      2.199678            0            8
    _y_ln1_2a |     4.117816      2.461326            0            8
    _y_ln1_2b |     3.933908      2.551758            0            8
    _y_ln1_4a |     4.520115      2.305775            0            8
    _y_ln1_4b |     4.359195      2.352325            0            8
    _y_lg1_2a |     3.204023      2.548953            0            8
    _y_lg1_2b |     3.206897      2.633799            0            8
    _y_lg1_4a |     3.474138      2.439331            0            8
    _y_lg1_4b |     3.451149      2.544231            0            8
       w_mu_2 |     53.41523      28.72799            0          100
       w_mu_4 |     61.18894      25.62079            0          100
      edu_yrs |     2.452356      2.220365          .01           10
      age_yrs |     47.72126      16.11285           18           99
       female |     .5948276      .4916323            0            1
  ------------------------------------------------------------------------------
Direct effects
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|                Std. Coef.
-------------+----------------------------------------------------------------
Structural   |
  DIS        |
     edu_yrs |   -.054308   .0164357    -3.30   0.001               -.1706501
     age_yrs |  -.0034851   .0022178    -1.57   0.116               -.0794703
      female |  -.0451301   .0698089    -0.65   0.518               -.0313997
         HUB |   .6249288   .0974603     6.41   0.000                .544668
         ESA |   .3500988   .0604854     5.79   0.000                .376057
  -----------+----------------------------------------------------------------
  NAR        |
         ESA |     .89164   .0762125    11.70   0.000                .788537
  -----------+----------------------------------------------------------------
  OPT        |
         ESA |          1  (constrained)                            .8168696
  -----------+----------------------------------------------------------------
  AUT        |
```

```
       ESA |   .8613684   .0630142    13.67   0.000                .9107707
-----------+------------------------------------------------------------------
ESE        |
       ESA |   .9661084   .0870237    11.10   0.000                .8762059
-----------+------------------------------------------------------------------
PSE        |
       ESA |   .6986292   .0629497    11.10   0.000                .9552896
-----------+------------------------------------------------------------------
Y_L_1      |
       DIS |   .0748995   .1491188     0.50   0.615                .0290065
      W_MU |    .054525   .0044562    12.24   0.000                 .79776
   edu_yrs |  -.0274221   .0284157    -0.97   0.335               -.0333703
   age_yrs |  -.0055663   .0039238    -1.42   0.156               -.0491556
    female |   .0297787   .1226386     0.24   0.808                .0080238
       HUB |   .2870244   .1487053     1.93   0.054                .0968805
       ESA |   .0714863   .1076458     0.66   0.507                .0297373
-----------+------------------------------------------------------------------
W_MU       |
       DIS |   10.41255    3.50166     2.97   0.003                .2756109
   edu_yrs |  -1.123548   .6474007    -1.74   0.083               -.0934487
   age_yrs |  -.1973044   .0884471    -2.23   0.026               -.1190876
    female |  -1.942145   2.791651    -0.70   0.487               -.0357668
       HUB |  -1.689949   3.337931    -0.51   0.613               -.0389865
       ESA |   10.10086   2.387858     4.23   0.000                .2871842
------------------------------------------------------------------------------

Indirect effects
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
-------------+----------------------------------------------------------------
Structural   |
  DIS        |
     edu_yrs |          0  (no path)                                         0
     age_yrs |          0  (no path)                                         0
      female |          0  (no path)                                         0
         HUB |          0  (no path)                                         0
         ESA |          0  (no path)                                         0
  -----------+----------------------------------------------------------------
  NAR        |
         ESA |          0  (no path)                                         0
  -----------+----------------------------------------------------------------
  OPT        |
         ESA |          0  (no path)                                         0
  -----------+----------------------------------------------------------------
  AUT        |
         ESA |          0  (no path)                                         0
  -----------+----------------------------------------------------------------
  ESE        |
         ESA |          0  (no path)                                         0
  -----------+----------------------------------------------------------------
  PSE        |
         ESA |          0  (no path)                                         0
  -----------+----------------------------------------------------------------
  Y_L_1      |
         DIS |   .5677439   .1938107     2.93   0.003                .2198713
        W_MU |          0  (no path)                                         0
     edu_yrs |  -.0961621   .0359831    -2.67   0.008               -.1170207
     age_yrs |  -.0129977    .005042    -2.58   0.010               -.1147817
      female |   -.134898   .1558498    -0.87   0.387                -.036348
         HUB |    .309462   .1667915     1.86   0.064                .1044539
         ESA |   .7757374   .1420891     5.46   0.000                .3226963
  -----------+----------------------------------------------------------------
  W_MU       |
         DIS |          0  (no path)                                         0
     edu_yrs |  -.5654849    .242826    -2.33   0.020                -.047033
     age_yrs |  -.0362887   .0258336    -1.40   0.160               -.0219029
      female |  -.4699195   .7425931    -0.63   0.527               -.0086541
         HUB |   6.507104   2.262838     2.88   0.004                .1501164
         ESA |   3.645421   1.292762     2.82   0.005                .1036454
```

```
------------------------------------------------------------------------------

Total effects
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
-------------+----------------------------------------------------------------
Structural   |
  DIS        |
     edu_yrs |   -.054308   .0164357    -3.30   0.001               -.1706501
     age_yrs |  -.0034851   .0022178    -1.57   0.116               -.0794703
      female |  -.0451301   .0698089    -0.65   0.518               -.0313997
         HUB |   .6249288   .0974603     6.41   0.000                .544668
         ESA |   .3500988   .0604854     5.79   0.000                .376057
  -----------+----------------------------------------------------------------
  NAR        |
         ESA |     .89164   .0762125    11.70   0.000                .788537
  -----------+----------------------------------------------------------------
  OPT        |
         ESA |          1  (constrained)                             .8168696
  -----------+----------------------------------------------------------------
  AUT        |
         ESA |   .8613684   .0630142    13.67   0.000                .9107707
  -----------+----------------------------------------------------------------
  ESE        |
         ESA |   .9661084   .0870237    11.10   0.000                .8762059
  -----------+----------------------------------------------------------------
  PSE        |
         ESA |   .6986292   .0629497    11.10   0.000                .9552896
  -----------+----------------------------------------------------------------
  Y_L_1      |
         DIS |   .6426434   .2241956     2.87   0.004                .2488778
        W_MU |    .054525   .0044562    12.24   0.000                 .79776
     edu_yrs |  -.1235842   .0414189    -2.98   0.003                -.150391
     age_yrs |   -.018564   .0058831    -3.16   0.002               -.1639373
      female |  -.1051193   .1836145    -0.57   0.567               -.0283242
         HUB |   .5964864   .1713537     3.48   0.000                .2013344
         ESA |   .8472238    .140366     6.04   0.000                .3524337
  -----------+----------------------------------------------------------------
  W_MU       |
         DIS |   10.41255    3.50166     2.97   0.003                .2756109
     edu_yrs |  -1.689032   .6347353    -2.66   0.008               -.1404817
     age_yrs |  -.2335931   .0894782    -2.61   0.009               -.1409904
      female |  -2.412065   2.836855    -0.85   0.395               -.0444208
         HUB |   4.817154   2.537316     1.90   0.058                .1111299
         ESA |   13.74628   2.115548     6.50   0.000                .3908296
------------------------------------------------------------------------------

Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
       chi2_ms(1903) |   3139.806   model vs. saturated
            p > chi2 |      0.000
       chi2_bs(2077) |  17698.565   baseline vs. saturated
            p > chi2 |      0.000
---------------------+--------------------------------------------------------
Population error     |
              RMSEA  |      0.043   Root mean squared error of approximation
 90% CI, lower bound |      0.041
         upper bound |      0.046
              pclose |      1.000   Probability RMSEA <= 0.05
---------------------+--------------------------------------------------------
Information criteria |
                 AIC |  64409.298   Akaike's information criterion
                 BIC |  65557.254   Bayesian information criterion
---------------------+--------------------------------------------------------
Baseline comparison  |
                 CFI |      0.921   Comparative fit index
                 TLI |      0.914   Tucker-Lewis index
---------------------+--------------------------------------------------------
```

```
Size of residuals    |
                SRMR |      0.075   Standardized root mean squared residual
                  CD |      0.997   Coefficient of determination
-------------------------------------------------------------------------------
```

Structural Equations Model (SEM) Output for Model 5B

```
Structural equation model                       Number of obs     =        399
Estimation method  = ml
Log likelihood     = -30889.673

 ( 1)  [_dis_04]DIS = 1
 ( 2)  [_nar_04]NAR = 1
 ( 3)  [_opt_02]OPT = 1
 ( 4)  [_aut_05]AUT = 1
 ( 5)  [_ese_03]ESE = 1
 ( 6)  [_pse_01]PSE = 1
 ( 7)  [_y_ll1_8a]Y_L_1 = 1
 ( 8)  [_hub_02]HUB = 1
 ( 9)  [OPT]ESA = 1
------------------------------------------------------------------------------
                             |                 OIM
                             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
Structural                   |
  w_tr_8                     |
                         DIS |   3.016197   2.718385     1.11   0.267    -2.311739    8.344134
                     edu_yrs |   .4970528   .5408799     0.92   0.358    -.5630524    1.557158
                     age_yrs |  -.1326798   .0736787    -1.80   0.072    -.2770874    .0117278
                      female |  -4.569781   2.365559    -1.93   0.053    -9.206191    .0666285
                         HUB |  -1.698785   2.732184    -0.62   0.534    -7.053768    3.656198
                         ESA |   8.175701   1.921242     4.26   0.000     4.410135    11.94127
                       _cons |   74.79528   4.321808    17.31   0.000      66.3247    83.26587
  -------------------------+------------------------------------------------------------------
  DIS                        |
                     edu_yrs |  -.0563539   .0159067    -3.54   0.000    -.0875305   -.0251773
                     age_yrs |  -.0027104   .0021433    -1.26   0.206    -.0069111    .0014903
                      female |   -.040701   .0688719    -0.59   0.555    -.1756875    .0942854
                         HUB |   .6179413   .0853433     7.24   0.000     .4506715    .7852111
                         ESA |    .335032   .0565943     5.92   0.000     .2241092    .4459548
  -------------------------+------------------------------------------------------------------
  NAR                        |
                         ESA |   .9245143    .073277    12.62   0.000      .780894    1.068135
  -------------------------+------------------------------------------------------------------
  OPT                        |
                         ESA |          1  (constrained)
  -------------------------+------------------------------------------------------------------
  AUT                        |
                         ESA |   .8738585   .0600475    14.55   0.000     .7561676    .9915494
  -------------------------+------------------------------------------------------------------
  ESE                        |
                         ESA |   .9203135   .0751475    12.25   0.000     .7730271      1.0676
  -------------------------+------------------------------------------------------------------
  PSE                        |
                         ESA |   .7086971    .057101    12.41   0.000     .5967812    .8206131
  -------------------------+------------------------------------------------------------------
  Y_L_1                      |
                       w_tr_8 |   .0407223   .0035585    11.44   0.000     .0337478    .0476969
                          DIS |   .1141091   .1247661     0.91   0.360    -.1304279    .3586461
                     edu_yrs |  -.0208823   .0246558    -0.85   0.397    -.0692068    .0274422
                     age_yrs |  -.0081105    .003425    -2.37   0.018    -.0148233   -.0013976
                      female |   .0197635   .1092697     0.18   0.856    -.1944011    .2339282
                         HUB |  -.0084516   .1268068    -0.07   0.947    -.2569885    .2400852
                         ESA |   .1294617   .0874337     1.48   0.139    -.0419052    .3008286
-----------------------------+------------------------------------------------------------------
LR test of model vs. saturated: chi2(1538) =   2613.50, Prob > chi2 = 0.0000
  Estimation sample sem                     Number of obs =        399
```

Variable	Mean	Std. Dev.	Min	Max
_hub_02	1.706767	.9252077	1	5
_hub_07	1.942356	1.036609	1	5
_hub_01	1.64411	.870314	1	5
_hub_06	1.754386	.9562408	1	5
_hub_03	1.867168	.9719171	1	5
_hub_05	2.027569	1.02076	1	5
_hub_04	1.902256	.9812155	1	5
_dis_04	2.596491	1.27405	1	5
_dis_03	2.553885	1.148072	1	5
_dis_08	2.541353	1.126505	1	5
_dis_05	2.977444	1.064263	1	5
_dis_02	2.957393	1.027604	1	5
_dis_01	2.679198	1.172269	1	5
_dis_06	2.932331	1.045657	1	5
_nar_04	3.533835	1.064849	1	5
_nar_09	3.541353	1.038296	1	5
_nar_03	3.847118	.9373251	1	5
_nar_08	3.223058	.9862724	1	5
_nar_05	3.486216	1.11823	1	5
_nar_10	3.090226	1.12392	1	5
_nar_02	3.581454	1.085657	1	5
_nar_07	3.423559	1.072051	1	5
_nar_01	3.621554	1.014783	1	5
_nar_06	3.45614	1.069192	1	5
_opt_02	3.786967	1.073776	1	5
_opt_01	3.819549	.9962335	1	5
_opt_03	3.558897	1.039866	1	5
_aut_05	4.045113	.8955333	1	5
_aut_04	3.842105	.9681519	1	5
_aut_01	3.749373	1.006184	1	5
_aut_06	3.899749	1.01989	1	5
_aut_03	3.764411	.9795069	1	5
_aut_02	3.882206	.9370429	1	5
_aut_07	4.067669	.9339667	1	5
_ese_03	3.656642	1.044199	1	5
_ese_02	3.571429	1.158012	1	5
_ese_04	3.401003	1.217378	1	5
_ese_01	3.674185	1.009557	1	5
_ese_06	3.619048	.9849307	1	5
_ese_05	3.536341	1.097305	1	5
_pse_01	4.142857	.8033491	1	5
_pse_06	3.977444	.8488789	1	5
_pse_05	3.987469	.8549844	1	5
_pse_02	3.994987	.8236302	1	5
_pse_07	3.819549	.8952801	1	5
_pse_04	3.917293	.9137018	1	5
_pse_03	4.055138	.7778126	1	5
_pse_08	3.964912	.890357	1	5
_y_ll1_8a	6.270677	1.994192	0	8
_y_ll1_8b	5.87218	2.07793	0	8
_y_ln1_8a	5.030075	2.094285	0	8
_y_ln1_8b	4.862155	2.226733	0	8
_y_lg1_8a	3.952381	2.390357	0	8
_y_lg1_8b	3.784461	2.432745	0	8
w_tr_8	65.96679	24.00007	0	100
edu_yrs	2.446466	2.229072	.01	10
age_yrs	48.15288	16.30559	18	99
female	.6065163	.4891359	0	1

Direct effects

	OIM				
	Coef.	Std. Err.	z	P>|z|	Std. Coef.
Structural					
Y_L_1					
w_tr_8	.0407223	.0035585	11.44	0.000	.6832898

```
         DIS |   .1141091   .1247661     0.91   0.360                .0567989
     edu_yrs |  -.0208823   .0246558    -0.85   0.397               -.0325434
     age_yrs |  -.0081105    .003425    -2.37   0.018               -.0924574
      female |   .0197635   .1092697     0.18   0.856                .0067585
         HUB |  -.0084516   .1268068    -0.07   0.947               -.0036997
         ESA |   .1294617   .0874337     1.48   0.139                .0675832
-------------+------------------------------------------------------------------
  w_tr_8     |
         DIS |   3.016197   2.718385     1.11   0.267                .0894762
     edu_yrs |   .4970528   .5408799     0.92   0.358                .0461651
     age_yrs |  -.1326798   .0736787    -1.80   0.072               -.0901423
      female |  -4.569781   2.365559    -1.93   0.053               -.0931349
         HUB |  -1.698785   2.732184    -0.62   0.534               -.0443187
         ESA |   8.175701   1.921242     4.26   0.000                .2543609
  -----------+------------------------------------------------------------------
  DIS        |
     edu_yrs |  -.0563539   .0159067    -3.54   0.000               -.1764362
     age_yrs |  -.0027104   .0021433    -1.26   0.206               -.0620747
      female |   -.040701   .0688719    -0.59   0.555               -.0279624
         HUB |   .6179413   .0853433     7.24   0.000                .5434359
         ESA |    .335032   .0565943     5.92   0.000                .3513692
  -----------+------------------------------------------------------------------
  NAR        |
         ESA |   .9245143    .073277    12.62   0.000                .7960313
  -----------+------------------------------------------------------------------
  OPT        |
         ESA |          1  (constrained)                              .842462
  -----------+------------------------------------------------------------------
  AUT        |
         ESA |   .8738585   .0600475    14.55   0.000                .9182402
  -----------+------------------------------------------------------------------
  ESE        |
         ESA |   .9203135   .0751475    12.25   0.000                .8278795
  -----------+------------------------------------------------------------------
  PSE        |
         ESA |   .7086971    .057101    12.41   0.000                 .954318
-------------------------------------------------------------------------------

Indirect effects
-------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
-------------+-----------------------------------------------------------------
Structural   |
  Y_L_1      |
      w_tr_8 |          0  (no path)                                         0
         DIS |   .1228266   .1110838     1.11   0.269                .0611382
     edu_yrs |   .0068889    .022479     0.31   0.759                .0107358
     age_yrs |  -.0060452   .0030831    -1.96   0.050               -.0689142
      female |  -.1957358   .0987952    -1.98   0.048               -.0669359
         HUB |   .0772339   .1138395     0.68   0.497                .0338087
         ESA |   .4123148   .0870944     4.73   0.000                .2152417
-------------+-----------------------------------------------------------------
  w_tr_8     |
         DIS |          0  (no path)                                         0
     edu_yrs |  -.1699745    .158673    -1.07   0.284               -.0157868
     age_yrs |  -.0081752   .0097847    -0.84   0.403               -.0055542
      female |  -.1227623   .2352194    -0.52   0.602                -.002502
         HUB |   1.863833   1.683356     1.11   0.268                .0486246
         ESA |   1.010523   .9165996     1.10   0.270                .0314392
  -----------+-----------------------------------------------------------------
  DIS        |
     edu_yrs |          0  (no path)                                         0
     age_yrs |          0  (no path)                                         0
      female |          0  (no path)                                         0
         HUB |          0  (no path)                                         0
         ESA |          0  (no path)                                         0
  -----------+-----------------------------------------------------------------
  NAR        |
         ESA |          0  (no path)                                         0
```

```
  ----------+--------------------------------------------------------------
  OPT       |
       ESA |          0  (no path)                                         0
  ----------+--------------------------------------------------------------
  AUT       |
       ESA |          0  (no path)                                         0
  ----------+--------------------------------------------------------------
  ESE       |
       ESA |          0  (no path)                                         0
  ----------+--------------------------------------------------------------
  PSE       |
       ESA |          0  (no path)                                         0
------------------------------------------------------------------------------

Total effects
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
-------------+----------------------------------------------------------------
Structural   |
  Y_L_1      |
      w_tr_8 |   .0407223   .0035585    11.44   0.000                .6832898
         DIS |   .2369357   .1679914     1.41   0.158                .1179371
     edu_yrs |  -.0139934    .031823    -0.44   0.660               -.0218076
     age_yrs |  -.0141557   .0046097    -3.07   0.002               -.1613716
      female |  -.1759723   .1468222    -1.20   0.231               -.0601774
         HUB |   .0687822   .1298088     0.53   0.596                .0301091
         ESA |   .5417765   .1071925     5.05   0.000                .2828248
-------------+----------------------------------------------------------------
  w_tr_8     |
         DIS |   3.016197   2.718385     1.11   0.267                .0894762
     edu_yrs |   .3270783   .5189201     0.63   0.528                .0303783
     age_yrs |   -.140855   .0736446    -1.91   0.056               -.0956965
      female |  -4.692544    2.36844    -1.98   0.048               -.0956369
         HUB |   .1650478   2.041662     0.08   0.936                .0043058
         ESA |   9.186224   1.685089     5.45   0.000                .2858001
  -----------+----------------------------------------------------------------
  DIS        |
     edu_yrs |  -.0563539   .0159067    -3.54   0.000               -.1764362
     age_yrs |  -.0027104   .0021433    -1.26   0.206               -.0620747
      female |   -.040701   .0688719    -0.59   0.555               -.0279624
         HUB |   .6179413   .0853433     7.24   0.000                .5434359
         ESA |    .335032   .0565943     5.92   0.000                .3513692
  -----------+----------------------------------------------------------------
  NAR        |
       ESA |   .9245143    .073277    12.62   0.000                .7960313
  ----------+--------------------------------------------------------------
  OPT       |
       ESA |          1  (constrained)                                  .842462
  ----------+--------------------------------------------------------------
  AUT       |
       ESA |   .8738585   .0600475    14.55   0.000                .9182402
  ----------+--------------------------------------------------------------
  ESE       |
       ESA |   .9203135   .0751475    12.25   0.000                .8278795
  ----------+--------------------------------------------------------------
  PSE       |
       ESA |   .7086971    .057101    12.41   0.000                 .954318
------------------------------------------------------------------------------
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
       chi2_ms(1538) |   2613.504   model vs. saturated
            p > chi2 |      0.000
       chi2_bs(1650) |  15069.238   baseline vs. saturated
            p > chi2 |      0.000
---------------------+--------------------------------------------------------
Population error     |
               RMSEA |      0.042   Root mean squared error of approximation
```

```
 90% CI, lower bound |      0.039
         upper bound |      0.045
               pclose |      1.000   Probability RMSEA <= 0.05
---------------------+-----------------------------------------------------
Information criteria |
                AIC |  62223.346   Akaike's information criterion
                BIC |  63108.895   Bayesian information criterion
---------------------+-----------------------------------------------------
Baseline comparison  |
                CFI |      0.920   Comparative fit index
                TLI |      0.914   Tucker-Lewis index
---------------------+-----------------------------------------------------
Size of residuals    |
               SRMR |      0.077   Standardized root mean squared residual
                 CD |      0.996   Coefficient of determination
-------------------------------------------------------------------------------
```

Structural Equations Model (SEM) Output for Model 6B

```
Structural equation model                       Number of obs     =        413
Estimation method  = ml
Log likelihood     =  -32048.27

 ( 1)  [_dis_04]DIS = 1
 ( 2)  [_nar_04]NAR = 1
 ( 3)  [_opt_02]OPT = 1
 ( 4)  [_aut_05]AUT = 1
 ( 5)  [_ese_03]ESE = 1
 ( 6)  [_pse_01]PSE = 1
 ( 7)  [_y_ll1_8a]Y_L_1 = 1
 ( 8)  [_hub_02]HUB = 1
 ( 9)  [OPT]ESA = 1
------------------------------------------------------------------------------
                             |                 OIM
                             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
Structural                   |
  w_mr_8                     |
                         DIS |   4.488309   2.722961     1.65   0.099    -.8485963    9.825214
                     edu_yrs |   .6472822    .534909     1.21   0.226    -.4011201    1.695685
                     age_yrs |  -.1522371   .0713086    -2.13   0.033    -.2919995   -.0124748
                      female |  -2.048611   2.322352    -0.88   0.378    -6.600337    2.503115
                         HUB |  -3.845978   2.956606    -1.30   0.193     -9.64082    1.948864
                         ESA |   7.788077    1.87273     4.16   0.000     4.117594    11.45856
                       _cons |   74.76926   4.197059    17.81   0.000     66.54317    82.99534
  ---------------------------+------------------------------------------------------------------
  DIS                        |
                     edu_yrs |  -.0545139   .0159489    -3.42   0.001    -.0857731   -.0232547
                     age_yrs |  -.0030084   .0021089    -1.43   0.154    -.0071418    .001125
                      female |  -.0553378   .0688279    -0.80   0.421     -.190238    .0795625
                         HUB |   .6960148   .0952937     7.30   0.000     .5092425    .8827871
                         ESA |    .329503   .0556212     5.92   0.000     .2204875    .4385184
  ---------------------------+------------------------------------------------------------------
  NAR                        |
                         ESA |   .9232565   .0715178    12.91   0.000     .7830841    1.063429
  ---------------------------+------------------------------------------------------------------
  OPT                        |
                         ESA |          1  (constrained)
  ---------------------------+------------------------------------------------------------------
  AUT                        |
                         ESA |   .8542357   .0579502    14.74   0.000     .7406553     .967816
  ---------------------------+------------------------------------------------------------------
  ESE                        |
                         ESA |   .8803756   .0714479    12.32   0.000     .7403404    1.020411
  ---------------------------+------------------------------------------------------------------
  PSE                        |
                         ESA |   .6908329   .0559483    12.35   0.000     .5811764    .8004895
  ---------------------------+------------------------------------------------------------------
```

```
  Y_L_1                       |
                       w_mr_8 |   .0478341   .0034738    13.77   0.000     .0410257    .0546426
                          DIS |   .0944064   .1271051     0.74   0.458    -.1547151    .3435279
                      edu_yrs |  -.0138567   .0250065    -0.55   0.579    -.0628685    .0351552
                      age_yrs |  -.0069667   .0034061    -2.05   0.041    -.0136425   -.0002909
                       female |  -.1072282   .1088668    -0.98   0.325    -.3206033    .1061469
                          HUB |  -.0320878   .1400541    -0.23   0.819    -.3065888    .2424132
                          ESA |   .0698023   .0868032     0.80   0.421    -.1003288    .2399333
------------------------------+------------------------------------------------------------------
LR test of model vs. saturated: chi2(1534) =   2604.35, Prob > chi2 = 0.0000
  Estimation sample sem                     Number of obs =        413

  ------------------------------------------------------------------------
      Variable |         Mean      Std. Dev.         Min          Max
  -------------+----------------------------------------------------------
       _hub_02 |     1.716707        .92413           1            5
       _hub_07 |     1.968523      1.055028           1            5
       _hub_01 |     1.651332      .8671342           1            5
       _hub_06 |     1.765133      .9682056           1            5
       _hub_03 |     1.895884      .9884319           1            5
       _hub_05 |     2.033898      1.016282           1            5
       _hub_04 |     1.898305      .9600374           1            5
       _dis_04 |      2.59322      1.276811           1            5
       _dis_03 |     2.554479      1.140627           1            5
       _dis_08 |     2.530266      1.113544           1            5
       _dis_05 |     2.973366       1.05746           1            5
       _dis_02 |     2.958838       1.02434           1            5
       _dis_01 |      2.68523      1.156535           1            5
       _dis_06 |     2.920097      1.036194           1            5
       _nar_04 |     3.525424      1.071456           1            5
       _nar_09 |     3.549637      1.028988           1            5
       _nar_03 |     3.842615      .9331671           1            5
       _nar_08 |     3.215496      .9949153           1            5
       _nar_05 |     3.479419      1.107208           1            5
       _nar_10 |     3.065375      1.116116           1            5
       _nar_02 |     3.583535      1.075283           1            5
       _nar_07 |     3.421308      1.068858           1            5
       _nar_01 |     3.624697      1.010657           1            5
       _nar_06 |     3.455206      1.063997           1            5
       _opt_02 |     3.769976      1.069375           1            5
       _opt_01 |     3.811138      .9991122           1            5
       _opt_03 |     3.554479       1.03345           1            5
       _aut_05 |     4.041162      .8953768           1            5
       _aut_04 |     3.825666        .96724           1            5
       _aut_01 |      3.74092      1.008794           1            5
       _aut_06 |     3.895884      1.015084           1            5
       _aut_03 |     3.760291      .9819596           1            5
       _aut_02 |     3.878935      .9346963           1            5
       _aut_07 |     4.072639      .9293238           1            5
       _ese_03 |     3.653753      1.028108           1            5
       _ese_02 |     3.552058      1.157637           1            5
       _ese_04 |     3.392252      1.207235           1            5
       _ese_01 |      3.64891      1.016958           1            5
       _ese_06 |     3.602906      .9789985           1            5
       _ese_05 |     3.530266      1.091529           1            5
       _pse_01 |     4.123487      .8105826           1            5
       _pse_06 |     3.953995      .8676017           1            5
       _pse_05 |     3.985472       .858867           1            5
       _pse_02 |     3.985472      .8213073           1            5
       _pse_07 |     3.820823      .8905394           1            5
       _pse_04 |     3.903148      .9271078           1            5
       _pse_03 |     4.048426      .7774608           1            5
       _pse_08 |     3.953995      .8869686           1            5
     _y_ll1_8a |     6.217918      2.054115           0            8
     _y_ll1_8b |     5.799031      2.124933           0            8
     _y_ln1_8a |     4.956416      2.140238           0            8
     _y_ln1_8b |     4.779661      2.245248           0            8
     _y_lg1_8a |     3.881356      2.401045           0            8
     _y_lg1_8b |     3.716707      2.429518           0            8
        w_mr_8 |     66.31356      23.96182           0          100
```

```
      edu_yrs |          2.4      2.208645          .01          10
      age_yrs |     48.32446      16.39959          18          99
       female |     .6150121      .4871826           0           1
  ------------------------------------------------------------------------------

Direct effects
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
-------------+----------------------------------------------------------------
Structural   |
  Y_L_1      |
      w_mr_8 |   .0478341   .0034738    13.77   0.000                .7400164
         DIS |   .0944064   .1271051     0.74   0.458                .0440742
     edu_yrs |  -.0138567   .0250065    -0.55   0.579               -.0197591
     age_yrs |  -.0069667   .0034061    -2.05   0.041               -.0737637
      female |  -.1072282   .1088668    -0.98   0.325               -.0337275
         HUB |  -.0320878   .1400541    -0.23   0.819               -.0121503
         ESA |   .0698023   .0868032     0.80   0.421                .0339009
-------------+----------------------------------------------------------------
  w_mr_8     |
         DIS |   4.488309   2.722961     1.65   0.099                .1354448
     edu_yrs |   .6472822    .534909     1.21   0.226                .0596623
     age_yrs |  -.1522371   .0713086    -2.13   0.033               -.1041919
      female |  -2.048611   2.322352    -0.88   0.378               -.0416516
         HUB |  -3.845978   2.956606    -1.30   0.193               -.0941346
         ESA |   7.788077    1.87273     4.16   0.000                .244494
  -----------+----------------------------------------------------------------
  DIS        |
     edu_yrs |  -.0545139   .0159489    -3.42   0.001               -.1665074
     age_yrs |  -.0030084   .0021089    -1.43   0.154                -.068229
      female |  -.0553378   .0688279    -0.80   0.421               -.0372833
         HUB |   .6960148   .0952937     7.30   0.000                .5645225
         ESA |    .329503   .0556212     5.92   0.000                .3427818
  -----------+----------------------------------------------------------------
  NAR        |
         ESA |   .9232565   .0715178    12.91   0.000                .7977269
  -----------+----------------------------------------------------------------
  OPT        |
         ESA |          1  (constrained)                             .8525419
  -----------+----------------------------------------------------------------
  AUT        |
         ESA |   .8542357   .0579502    14.74   0.000                 .916272
  -----------+----------------------------------------------------------------
  ESE        |
         ESA |   .8803756   .0714479    12.32   0.000                 .818039
  -----------+----------------------------------------------------------------
  PSE        |
         ESA |   .6908329   .0559483    12.35   0.000                .9573932
------------------------------------------------------------------------------

Indirect effects
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
-------------+----------------------------------------------------------------
Structural   |
  Y_L_1      |
      w_mr_8 |          0  (no path)                                        0
         DIS |   .2146944   .1309798     1.64   0.101                .1002313
     edu_yrs |   .0141119   .0258176     0.55   0.585                .0201231
     age_yrs |   -.008212   .0034972    -2.35   0.019               -.0869495
      female |  -.1150985   .1124883    -1.02   0.306                -.036203
         HUB |   .0311697   .1353725     0.23   0.818                .0118026
         ESA |   .4743856   .0945718     5.02   0.000                .2303949
-------------+----------------------------------------------------------------
  w_mr_8     |
         DIS |          0  (no path)                                        0
     edu_yrs |  -.2446751   .1617352    -1.51   0.130               -.0225526
     age_yrs |  -.0135026   .0124429    -1.09   0.278               -.0092413
      female |  -.2483729   .3431442    -0.72   0.469               -.0050498
```

```
       HUB |   3.123929   1.916136     1.63   0.103                .0764616
       ESA |   1.478911   .9151708     1.62   0.106                 .046428
-----------+--------------------------------------------------------------
DIS        |
   edu_yrs |          0  (no path)                                        0
   age_yrs |          0  (no path)                                        0
    female |          0  (no path)                                        0
       HUB |          0  (no path)                                        0
       ESA |          0  (no path)                                        0
-----------+--------------------------------------------------------------
NAR        |
       ESA |          0  (no path)                                        0
-----------+--------------------------------------------------------------
OPT        |
       ESA |          0  (no path)                                        0
-----------+--------------------------------------------------------------
AUT        |
       ESA |          0  (no path)                                        0
-----------+--------------------------------------------------------------
ESE        |
       ESA |          0  (no path)                                        0
-----------+--------------------------------------------------------------
PSE        |
       ESA |          0  (no path)                                        0
------------------------------------------------------------------------------

Total effects
------------------------------------------------------------------------------
             |                 OIM
             |      Coef.   Std. Err.      z    P>|z|               Std. Coef.
-------------+----------------------------------------------------------------
Structural   |
  Y_L_1      |
      w_mr_8 |   .0478341   .0034738    13.77   0.000                .7400164
         DIS |   .3091008   .1832758     1.69   0.092                .1443055
    edu_yrs |   .0002552   .0344993     0.01   0.994                 .000364
    age_yrs |  -.0151787   .0048641    -3.12   0.002               -.1607133
     female |  -.2223267   .1564949    -1.42   0.155               -.0699305
        HUB |  -.0009181   .1469362    -0.01   0.995               -.0003477
        ESA |   .5441879   .1115817     4.88   0.000                .2642957
------------+----------------------------------------------------------------
  w_mr_8    |
        DIS |   4.488309   2.722961     1.65   0.099                .1354448
    edu_yrs |   .4026071   .5150502     0.78   0.434                .0371097
    age_yrs |  -.1657398   .0712817    -2.33   0.020               -.1134331
     female |  -2.296984   2.325913    -0.99   0.323               -.0467014
        HUB |  -.7220489   2.127132    -0.34   0.734               -.0176729
        ESA |   9.266988   1.646422     5.63   0.000                 .290922
  ----------+-----------------------------------------------------------------
  DIS       |
    edu_yrs |  -.0545139   .0159489    -3.42   0.001               -.1665074
    age_yrs |  -.0030084   .0021089    -1.43   0.154                -.068229
     female |  -.0553378   .0688279    -0.80   0.421               -.0372833
        HUB |   .6960148   .0952937     7.30   0.000                .5645225
        ESA |    .329503   .0556212     5.92   0.000                .3427818
  ----------+-----------------------------------------------------------------
  NAR       |
        ESA |   .9232565   .0715178    12.91   0.000                .7977269
  ----------+-----------------------------------------------------------------
  OPT       |
        ESA |          1  (constrained)                               .8525419
  ----------+-----------------------------------------------------------------
  AUT       |
        ESA |   .8542357   .0579502    14.74   0.000                 .916272
  ----------+-----------------------------------------------------------------
  ESE       |
        ESA |   .8803756   .0714479    12.32   0.000                 .818039
  ----------+-----------------------------------------------------------------
  PSE       |
        ESA |   .6908329   .0559483    12.35   0.000                .9573932
```

Fit statistic	Value	Description
Likelihood ratio		
chi2_ms(1534)	2604.350	model vs. saturated
p > chi2	0.000	
chi2_bs(1650)	15350.783	baseline vs. saturated
p > chi2	0.000	
Population error		
RMSEA	0.041	Root mean squared error of approximation
90% CI, lower bound	0.038	
upper bound	0.044	
pclose	1.000	Probability RMSEA <= 0.05
Information criteria		
AIC	64548.539	Akaike's information criterion
BIC	65457.839	Bayesian information criterion
Baseline comparison		
CFI	0.922	Comparative fit index
TLI	0.916	Tucker-Lewis index
Size of residuals		
SRMR	0.076	Standardized root mean squared residual
CD	0.996	Coefficient of determination

APPENDIX B – PROCEDURE USED FOR IDENTIFYING AND FLAGGING 'INTENTIONALLY INATTENTIVE' RESPONDENTS

In terms of 'data quality' researchers earnestly desire to have participants respond to each question with thoughtfulness and attentiveness. However, we must be realistic and realize that a certain percentage of any population being sampled will comprise individuals who genuinely struggle with staying thoughtful and attentive, especially while filling out a lengthy online questionnaire. As such, we need a method to objectively identify respondents who were intentionally thoughtless, careless, or inattentive without excluding those who were 'normally' thoughtless, careless, or inattentive. There are at least four ways we can *try* to accomplish this noble feat:

1. Force participants to declare their intention to be thoughtful and attentive (i.e. force 'intentionally inattentive' respondents to lie in order for their responses to be considered),
2. Ask respondents at the end of the questionnaire to affirm whether they were thoughtful and attentive,
3. Test respondents' actual attentiveness via attention check questions (but what is the proper 'threshold' for declaring attention-check failures as 'intentional inattentiveness'?),
4. Try to test their 'intentions' by timing their responses (and then making inferences about what an 'intentionally inattentive' response looks like, from a timing perspective).

In an effort to ensure data quality, we employed all four methods. Regarding method #1, all respondents were given the following question near the beginning of the questionnaire: "**Do you commit to providing thoughtful and honest answers to the questions in this survey?**" Any response other than "Yes, I will provide my best answers". Seventy-four participants had their participation terminated early for honestly acknowledging their inability or unwillingness to provide thoughtful and honest answers.

Regarding method #2, all respondents were asked, near the end of the questionnaire, "**Please assess the thoughtfulness and honesty of the answers you provided**" with the following possible response options:

- I did my best to consistently provide thoughtful and honest answers.
- I did not provide my best answers; I do not recommend including my responses in this research study.
- I am not sure whether I provided my best answers, because ... (please explain)

Any respondents who admitted to not providing their best answers (the second response option) were excluded. This amounted to five respondents who were not excluded due to other reasons.

Regarding method #3, as stated previously, the decision was made prior to commencing data collection to exclude any respondents who missed four or five of the five attention check questions. In addition, the decision had been made to NOT automatically exclude respondents who missed only one attention check question. We hoped to be able to objectively decide how to handle those who missed two or three attention check questions by applying method #4.

Regarding method #4, the decision had been made up front (by the paid panel service) to automatically exclude any respondent who completed the entire questionnaire in less than one-half the median completion time recorded during the soft launch (which was 19 minutes, meaning that any response completed in less than 9.5 minutes was automatically excluded). Thirty respondents were automatically excluded based on this criterion. In order to more fully implement method #4, we collected the following data from all respondents:

- Page-submit timing for every page of questions (i.e. time in seconds from the time the page is loaded until the time the 'submit' button is clicked). This was done using the survey platform's default 'timing' feature.
- Time-between-clicks data (using the aforementioned custom Javascript routine) on
    - First conjoint design (which was presented as 2 sets of hypothetical scenarios, spanning 20 questions each),
    - Psychometric scales (which were presented as 6 pages with 18 questions on each page),
    - Overconfidence questions (as one group, spanning 5 pages of 1 question each),
    - Second conjoint design (which was presented as a single set of scenarios, spanning 40 questions),
    - Preliminary demographic questions (as one group, spanning multiple pages, multiple questions), and
    - Final demographic questions (as one group, spanning multiple pages, multiples questions).

Of the six different groupings of time-between-clicks data enumerated above, the psychometric scales provided the most consistent set of results. This is not surprising because the pages were

all formatted the same, each page had a mix of both short and medium length questions, the order of the questions were randomized on each page, and the order the pages were presented was also randomized. The median page-submit times ranged from 59.4 to 62.8 seconds across those six pages and the median of the median time-between-clicks ranged from 2182 ms to 2217 ms. Regarding time-between-clicks, we calculated this value for each psychometric page for each respondent. Whereas each page comprised 18 questions, a typical time-between-clicks distribution for a given psychometric page would be 18 between-click times resulting from 19 clicks (one click for each question plus one for the 'submit' button). For each page, we calculated the following percentiles for each respondent's time-between-clicks for each psychometric page: 25^{th}, 50^{th}, 75^{th}, 85^{th}, and 95^{th}. So, the 75^{th} percentile represented the time, in milliseconds, wherein 75% of the respondent's clicks (on that page) were at least that fast or faster. In other words, if a respondent's 75^{th} percentile on psychometric 'page 1' was 855 ms and the respondent did not second-guess any answers (i.e. they only clicked 19 times), then 13 of those clicks were less than 855 ms after the previous click and only 5 clicks were slower (i.e. greater than 855 ms after the previous click).

We established two different analysis thresholds: one-half and one-third of the median of the median time-between-clicks across all six psychometric pages (1100 ms and 735 ms respectively). We then flagged every observation where 50% or more of the time-between-clicks were below the analysis threshold for any of the six psychometric pages and created six scatter plots for each psychometric page for each analysis threshold as follows:

- XX-percentile time-between-clicks displayed on the y-axis (where 'XX" was 25^{th}, 50^{th}, 75^{th}, 85^{th}, 90^{th}, and 95^{th}),
- # of failed attention checks displayed on the x-axis (see Figure 24 to Figure 30),

- With each observation color-coded as
    - Bad (i.e. failed four or five of the five attention check questions) = red,
    - Maybe bad (i.e. had *at least one* median-time-between-clicks *below* the analysis threshold across the six psychometric scale pages) = green, and
    - Presumably good (i.e. all median-time-between-clicks across *all* six psychometric scale pages were *above* the analysis threshold) = yellow.

Figure 25 to Figure 30 show the six scatter plots for psychometric 'page 1' using the 735 ms analysis threshold (with 'jitter' to enable viewing of otherwise-overlapping data points). It is important to note that all six of those scatter plots are presenting the same set of 'flagged observations' and those observations were flagged based on each respondent's median (i.e. 50^{th}-percentile) time-between-clicks for 'page 1'. Also, although Figure 25 to Figure 30 show the time-between-clicks for 'page 1', the flagged observations (i.e. those shown in green) are those respondents that had their median-time-between-clicks measurement below the analysis threshold for *any* of the six psychometric pages. This is why some of the 'maybe bad' observations (green dots) appear above the 1100 ms threshold (i.e. that observation was flagged due to a threshold violation with one of the other five pages). Also, because of the use of 'jitter' some of the 'presumably good' observations (yellow dots) may show up below the 735 ms threshold (even though no 'presumably good' observations actually exist below the threshold).

When looking across all Figure 25 to Figure 30, one sees a striking similarity between the 'distribution' of time-between-clicks for respondents with three failed attention checks as for respondents with four or five failed attention checks. This similarity holds across all the different percentile charts. This strongly suggests that respondents who failed three (or more)

of the five attention check questions all fit squarely in the 'intentionally inattentive' category and thus should be excluded. This exclusion could also be justified purely based on the logic that those respondents were 'more inattentive than they were attentive' in that they failed over 50% of the attention checks. Based on both those arguments, all respondents with three failed attention checks were also excluded from any future analyses. Thirty-four respondents were excluded based on this criterion.

The last remaining question related to method #4 deals with assessing 'intentional inattentiveness' for those respondents who failed zero, one, or two of the attention check questions. We find it highly unlikely, though plausible, that an individual would be 'intentionally inattentive, yet correctly answer all five attention check questions. One plausible explanation would be an individual who intentionally speeds through online surveys (in order to receive incentive rewards), but who knows there will be attention check questions that may negate the rewards. Under those conditions, we might expect a respondent to spend time scanning the page for attention check questions, 'correctly' answering those, then simply clicking through all the other questions for that page. In any event, comparing Figure 24 and Figure 25, one sees that the one-third threshold (735 ms) eliminates notably fewer 'perfect attention check' respondents than the one-half threshold (1100 ms), but still seems to eliminate respondents following a similar 'distribution pattern' as those that failed four or five of the attention checks. This 'distributional comparison' also holds when one looks at the 'distribution' of 'maybe bad' observations compared to 'bad' observations across all the one-third threshold charts (Figure 25 to Figure 30). In light of the foregoing, the one-third threshold was applied to the remaining respondents, resulting in the exclusion of another 65 observations.

So, to summarize the above, there were 145 of the 649 initial observations that were excluded based on the aforementioned after-the-fact quality-check analyses. An additional 148 responses were then collected. Of the additional responses, 21 failed the aforementioned quality checks, leading to a final sample size of 631 (albeit with various degrees of 'missingness' across key variables).

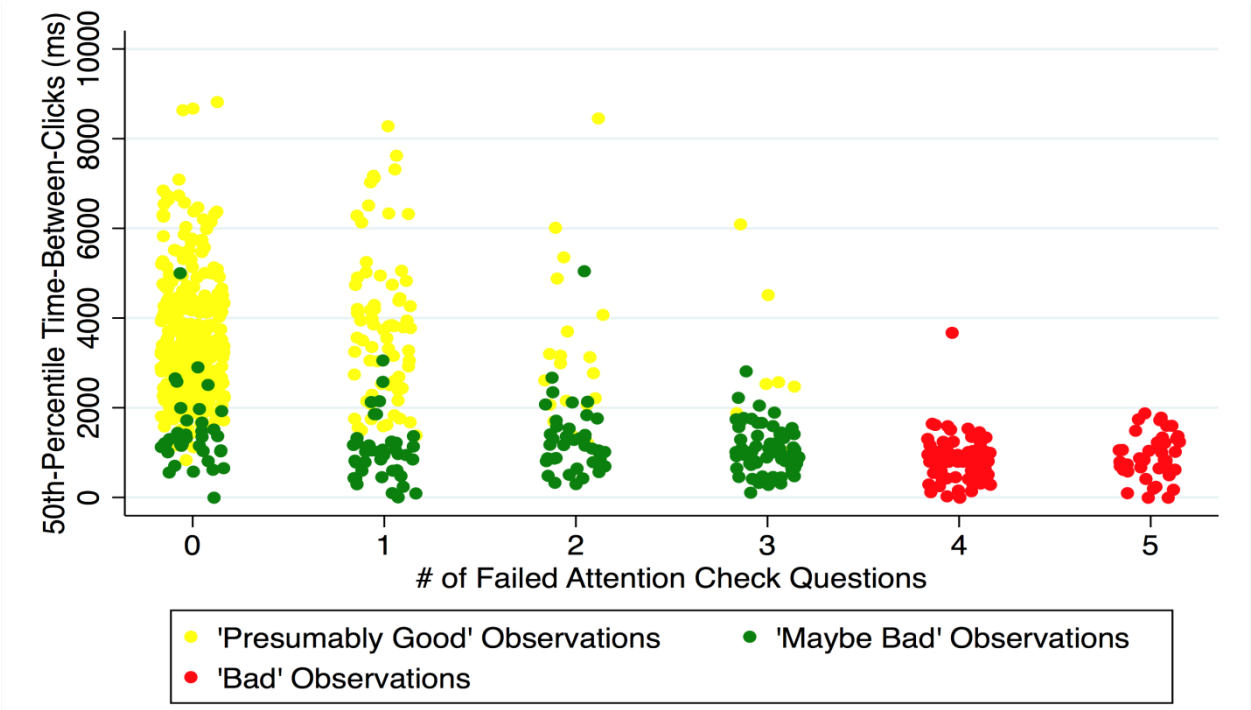


Figure 24 – 'Intentional Inattentiveness' Check
(1100 ms Threshold, Psychometric Scales Page 1, 50th Percentile)

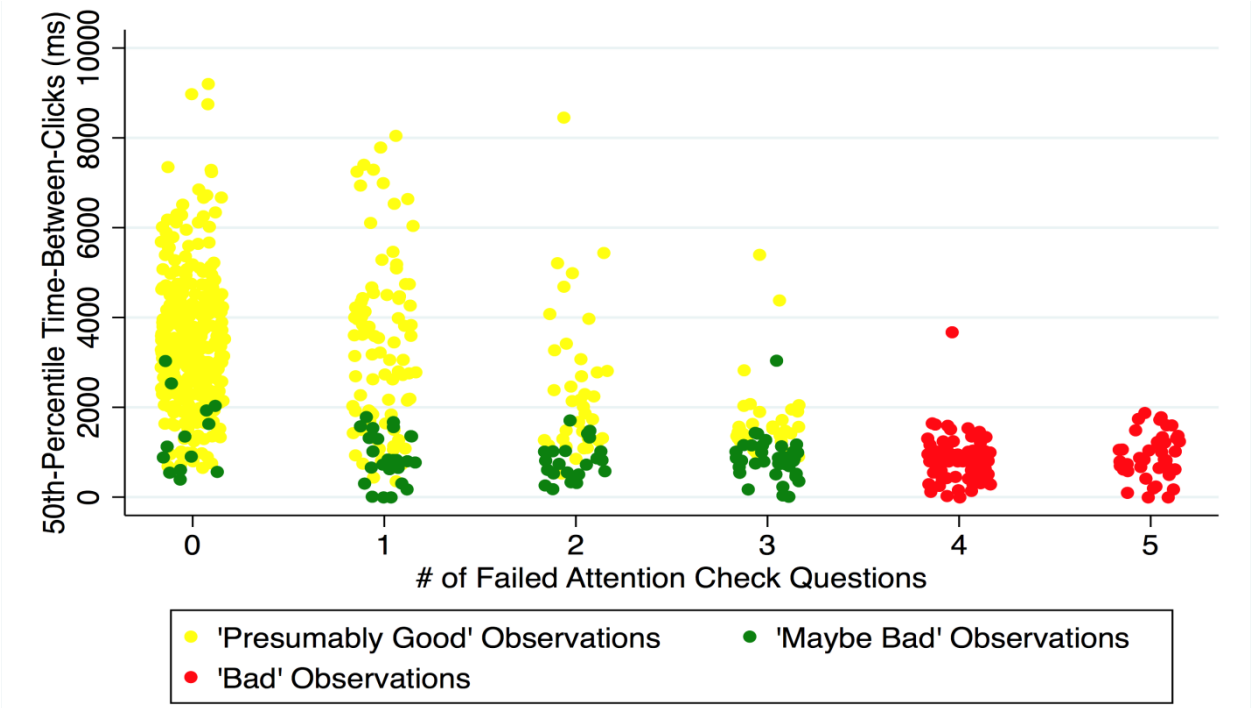


Figure 25 – 'Intentional Inattentiveness' Check
(735 ms Threshold, Psychometric Scales Page 1, 50th Percentile)

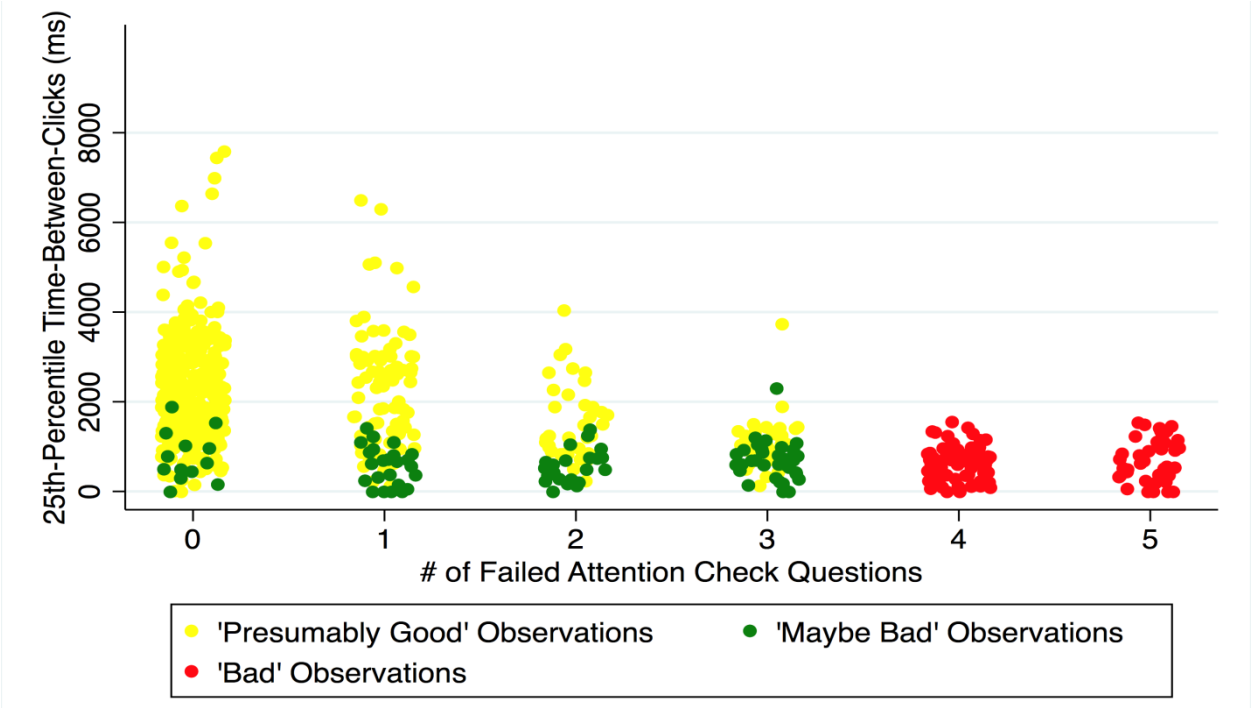


Figure 26 – 'Intentional Inattentiveness' Check
(735 ms Threshold, Psychometric Scales Page 1, 25th Percentile)

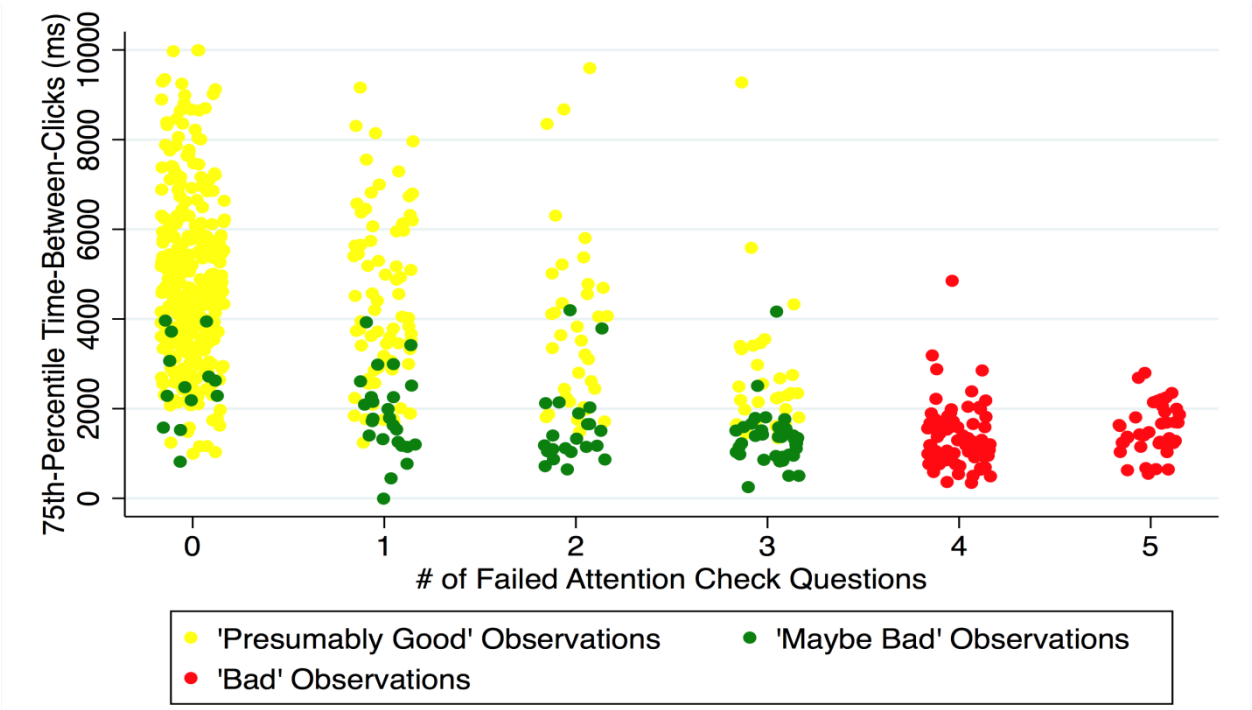


Figure 27 – 'Intentional Inattentiveness' Check
(735 ms Threshold, Psychometric Scales Page 1, 75th Percentile)

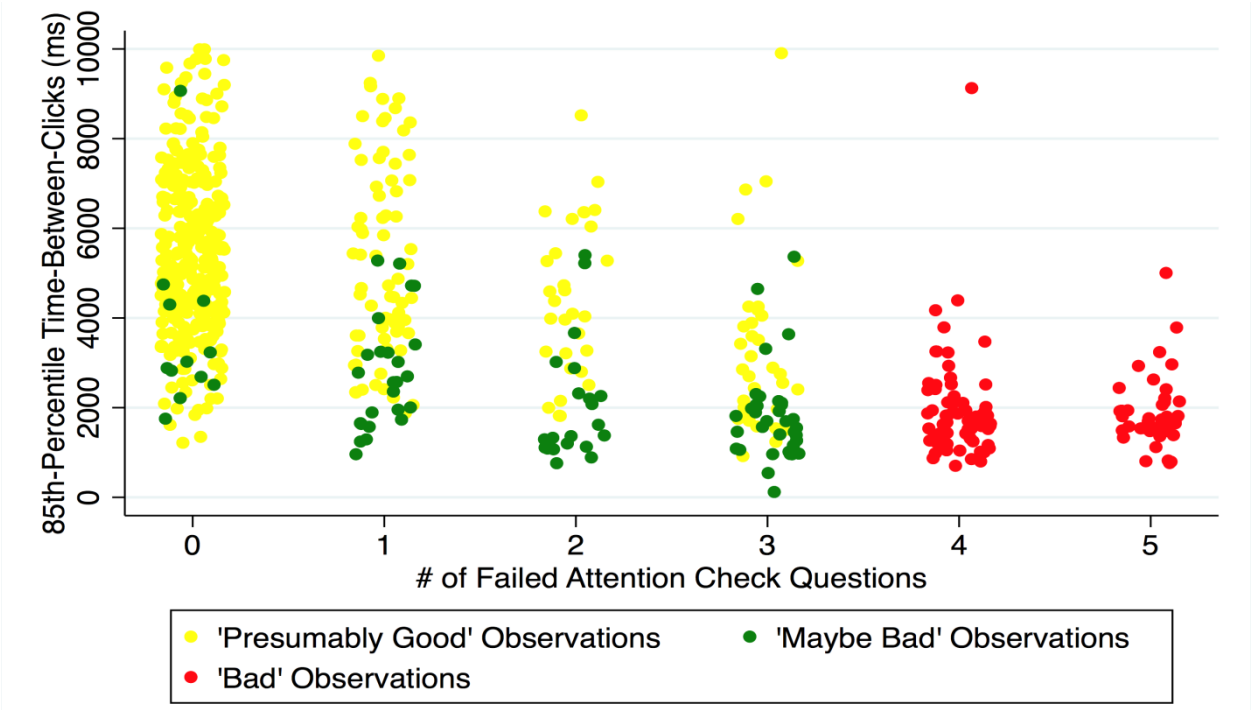


Figure 28 – 'Intentional Inattentiveness' Check
(735 ms Threshold, Psychometric Scales Page 1, 85th Percentile)

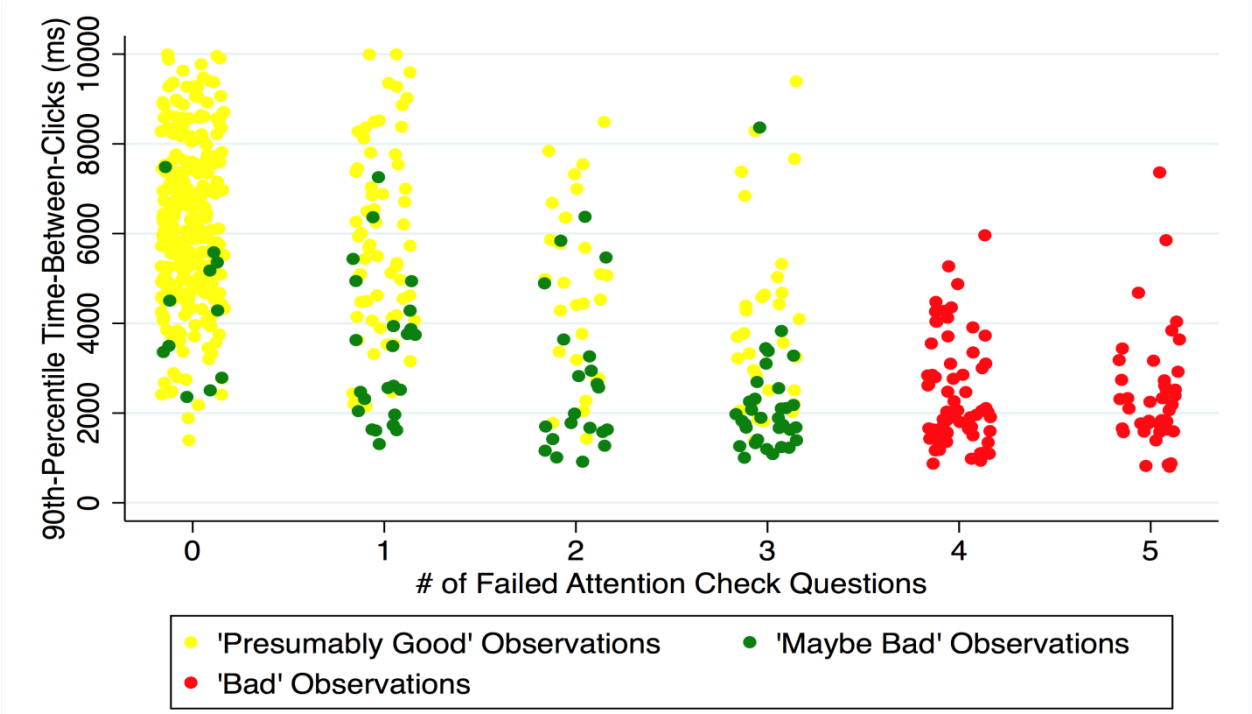


Figure 29 – 'Intentional Inattentiveness' Check
(735 ms Threshold, Psychometric Scales Page 1, 90th Percentile)

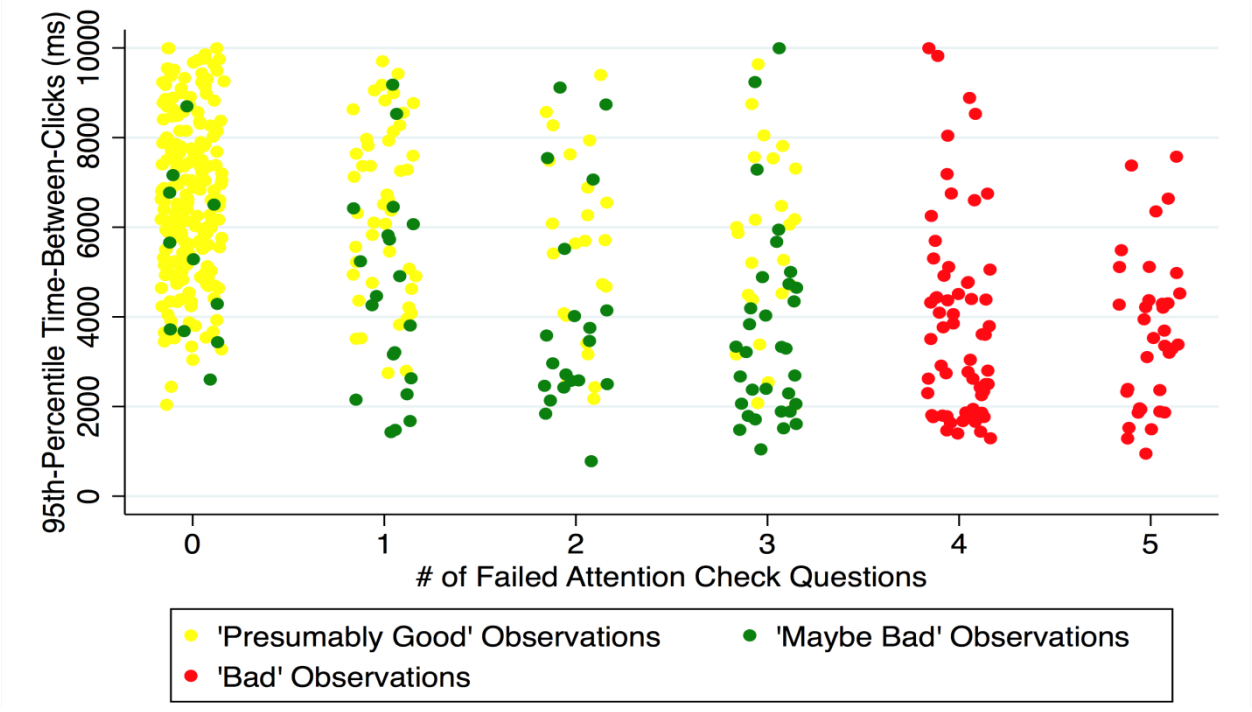


Figure 30 – 'Intentional Inattentiveness' Check
(735 ms Threshold, Psychometric Scales Page 1, 95th Percentile)

APPENDIX C – AN EXPLICIT DELINEATION OF THE DIFFERENCES BETWEEN OUR MODEL OF ENTREPRENEURIAL ACTION IN THE MIDST OF UNCERTAINTY AND MCMULLEN AND SHEPHERD'S (2006) MODEL

We have done our best throughout this document to be clear and precise in our demarcations of the differences between McMullen and Shepherd's (2006) seminal model and our extension of that model. To that end, we provide the following to be more explicit and concise in delineating the key differences:

Definitions of 'Uncertainty' or 'The Unknown'

- McMullen and Shepherd (2006) apply an intentionally broad definition (e.g. risk, Knightian uncertainty, ambiguity, turbulence, equivocality).
- We are applying an intentionally narrow definition (i.e. non-probabilistic uncertainty).

Definitions of 'Knowledge' and 'Prior Knowledge'

- McMullen and Shepherd (2006) focus on knowledge in both a general and specific sense. Their model incorporates all available knowledge that a would-be entrepreneur might have available, including both explicit and tacit knowledge and including both general knowledge about the world and the industry within which they are operating as well as specific knowledge about the opportunity being evaluated or pursued.
- We intentionally use the narrow term 'prior knowledge' and, furthermore, we specifically define prior knowledge as 'knowledge related to the opportunity being

pursued'. We also recognize that, whereas some would-be entrepreneurs may begin pursuing an 'opportunity' without consideration for the potential economic or business aspects of the endeavor, 'prior knowledge' can even include knowledge that the would-be entrepreneur is even considering or pursuing an opportunity.

The Role of Doubt

- McMullen and Shepherd (2006) focus on reducing uncertainty by means of reducing doubt.
- We are focusing primarily on entrepreneurs who, for whatever reason, are not driven by doubt (i.e. doubt does not seem to hinder or limit their propensity to pursue entrepreneurial action).

Definitions of 'Entrepreneurial Action'

- McMullen and Shepherd (2006) narrowly define entrepreneurial action as pursuing a specific opportunity that has been evaluated and vetted (i.e. a first-person opportunity). Any actions during the evaluation stage (i.e. discovering the existence of a third-person opportunity and evaluating it to determine whether it represents a first-person opportunity) are not considered 'entrepreneurial action'.
- We are applying an intentionally broad definition of entrepreneurial action as 'immediate and irreversible commitment of resources' in pursuit or furtherance of an economic endeavor that one's prospective rivals view (or would view) as being wrought with Knightian uncertainty. As such, our definition would encompass the opportunity costs associated with expending time to evaluate a third-person opportunity. In other

words, our definition of ‘entrepreneurial action’ would (or at least *could*) commence in the middle of the McMullen and Shepherd (2006) model.

- Also, our definition includes ‘project-focused’ entrepreneurs who are spending time and energy pursuing a project that they might not even view as a future business or as an economic endeavor (yet); the key is that their prospective rivals are NOT pursuing it and that they are not pursuing it because the chance of success, to them, is “anybody’s guess” rather than because of any form of objective or subjective evaluation of risk versus return.

VITA

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