University of Central Oklahoma

Graduate College

Unpredictable Indulgence: How Childhood Unpredictability and Deprivation Influence Adult Materialism

A THESIS

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE IN EXPERIMENTAL PSYCHOLOGY

By

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Edmond, Oklahoma

2026

Unpredictable Indulgence: How Childhood Unpredictability and Deprivation Influence Adult Materialism

Jackson College of Graduate Studies at the University of Central Oklahoma

A THESIS APPROVED FOR

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By

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Acknowledgements

I would like to thank my research mentor and committee chairperson, Adam Randell, for believing in me from the beginning. I would also like to thank my committee members, Nora Gayzur and Peter Rerick, for their patience and understanding through this process. I also thank all of UCO's psychology faculty for their invaluable knowledge and passion for the field that has led me to this point.

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Abstract

Evolutionary mismatch perspectives suggest that some behaviors that benefitted humans in evolutionary contexts may be maladaptive in modern society. One example is spending behavior, which previous research has found to vary by life history strategy. Life history theory is an evolutionary theory that proposes that the levels of harshness and unpredictability in childhood environments shape behavior throughout life. Recently, researchers have incorporated the threat-deprivation model of childhood adversity to better understand the individual and interacting long-term effects of adverse experiences. While this integration of evolutionary and developmental perspectives opens a wealth of potential research paths to better understand the intricacies of how people function in modern society, inconsistencies in measurement and methodology have resulted in diverse findings. This project seeks to contribute to this growing body of work by expanding on previous findings concerning spending behavior and life history strategy, as well as comparing different measurements of unpredictability and deprivation. In line with the results of previous studies, I propose that individuals with high levels of childhood deprivation and unpredictability will have a greater desire to conspicuously consume, while individuals who experienced low levels of each will result in a greater desire to save money.

Analysis found that in the economic threat condition, low levels of deprivation predicted higher levels of saving when unpredictability was low, but not when it was high. Future research can continue to delve into the nuances of dimensional measures as well as explore the role of threat in adult behavior.

Keywords: Life history theory, behavioral ecology, deprivation, unpredictability, threat-deprivation model

Chapter One: Introduction

Life history theory (LHT) is an evolutionary theory that predicts different behavioral strategies based on the qualities of the rearing environment (Ellis et al., 2009), and thus far has been a useful heuristic in predicting behavior (Figueredo et al., 2006). Previous research has used life history measurements to explore how some mechanisms that, while adaptive for survival and reproduction in humans' evolutionary history, may have become somewhat maladaptive in modern contexts. Previously, researchers have utilized an evolutionary mismatch perspective to explore declining birthrates in developed countries (Lim et al., 2023; Yong et al., 2024). The same logic could be applied to better understand consumer behavior and economic decisions. The evolutionary drive towards survival and reproduction may add understanding of why some individuals make decisions that seem to go against their best interest, such as risky spending (Griskevicius et al., 2013).

As research in LHT broadens, the limitations of previous ways of conceptualizing and measuring life history strategies have become increasingly apparent. In response, researchers have begun to revisit and refine LHT, particularly surrounding the implications of different environmental factors (Ellis et al., 2022a). Here, I will further explore a growing avenue of research which borrows from the field of developmental psychology to broaden the components of LHT to better understand the diversity of human behavior, particularly how childhood experiences may manifest in adult spending behavior. In the following, I begin with an overview of LHT and its major factors, then delve into the threat-deprivation model of childhood adversity, followed by how these combined frameworks can be used to better understand behaviors, in the case of this project, saving and conspicuous consumption.

Life History Theory

Built on the observation that an organism's energy reserves are limited, LHT originated in evolutionary biology to predict differential allocation of those limited resources towards either self-maintenance, mating, or parenting (Belsky et al., 1991). LHT proposes that due to their energy limitations, organisms must make trade-offs between investing in these activities, such that energy spent on growth or self-maintenance cannot be spent on reproductive effort, energy spent on parenting cannot be spent on other mating opportunities, and so forth. In psychology, LHT researchers seek to understand intraspecies variations in reproductive timing and investment. Differential K theory (Rushton, 1985), for instance, applies LHT to the individual level by suggesting that rearing environments select for different life history strategies (LHS) which alter how quickly a person begins investing in reproductive effort. These strategies are thought to be calibrated to a person's environment to optimize survival and reproduction within that individual's lifetime.

LHS are broadly conceptualized as coordinated sets of behaviors and traits on a fast-slow continuum (Figueredo et al., 2005; Ellis et al., 2009). On one end, fast-life strategists (FLS) tend to invest in reproductive effort earlier in life and invest in present over future gains. Conversely, slow-life strategists (SLS) tend to delay reproduction, invest in parental effort over mating effort, and prioritize long-term gains (Belsky et al., 1991; Figueredo et al., 2005). LHS speed is thought to be calibrated within the first five to seven years of life based on the harshness and unpredictability of the surrounding environment (Belsky et al., 1991). Environments that are high in harshness and unpredictability should favor early maturation and a greater focus on immediate opportunities in order to provide a better chance for reproductive success, thus favoring faster strategies. An environment that is safe and predictable should favor SLS, as

individuals can afford a longer maturational period and delayed reproduction to maximize future rewards.

Up until recently, measurements of LHS have tended to conflate harshness and unpredictability into a single factor (e.g., Figueredo et al., 2005; Griskevicius et al, 2013), thus their independent effects have not received ample attention and are not well accounted for within the original theory. Since harshness and unpredictability often cooccur, LHT has remained useful in its ability to broadly predict behavior based on early life circumstances. However, recent research suggests that these two factors may indeed have distinct effects on the development of LHS (Ellis et al., 2009; Martinez et al., 2022; Maranges et al., 2021; Usacheva et al., 2022). Indeed, unpredictability and harshness themselves may be multi-dimensional factors with differing effects based upon the domain in which they occur (i.e., social-based harshness versus resource-based harshness). To understand and expand upon their differences, it is important to understand how unpredictability and harshness have been conceptualized and measured up to this point.

Unpredictability

Unpredictability refers to spatial or temporal variation in environmental harshness (Ellis et al., 2009). As will be further discussed later, this connection of unpredictability to harshness means it could come in several forms, including instability of social or material resources or of other threats such as predation or disease. In general, in a predictable environment, an individual can reasonably assume that their actions will have certain, reliable consequences, such as if a threat does occur, there is a known and reliable way to neutralize it. Conversely, in an unpredictable environment, there is little correlation between action and outcome. This can then

influence the degree of control an individual feels they have in adulthood, particularly in times of uncertainty (Mittal & Griskevicius, 2014).

While research has traditionally conflated the consequences of unpredictability with harshness, more recent work has measured childhood unpredictability and childhood harshness separately, providing insight into the unique role unpredictability plays in shaping adult behaviors. Independent of harshness, unpredictability has been linked to several traits associated with FLS such as delay-discounting (Martinez et al., 2022), externalizing behavior (Martinez et al., 2022; Farkas & Jacquet, 2024), impulsivity and risk-taking (Usacheva et al., 2022), a greater number of sexual partners (Simpson et al., 2012), favoring exploitation over exploration earlier in life (Frankenhuis & Gopnik, 2023; Xu et al., 2023), and psychopathology (Farkas & Jacquet, 2024; Mededovic, 2016).

However, research concerning the interaction of unpredictability and harshness provides a less clear picture of the consequences. A few different patterns have been found. First, the dual-risk pattern suggests that unpredictability and harshness compound one another, such that individuals who experience both have the highest rates of risk-taking (Doom et al., 2016). The buffering hypothesis suggests that effects of harshness may be attenuated when there is low unpredictability, such that reliable social support is present (Cohen & Willis, 1985). Conversely, Li and colleagues (2018) found a pattern in which the worst outcomes (i.e., higher rates of externalizing behavior, teacher conflict, etc.) were found in children who experienced high harshness and low unpredictability. Further research that yielded similar results suggests that high unpredictability may reduce the usefulness of environmental cues of harshness, thus attenuating its effects (Farkas & Jacquet, 2024). A possible explanation for the diverse findings

in the interaction of harshness and unpredictability could be attributed to the multiple ways of defining and operationalizing unpredictability.

Within the LHT framework, there is not yet a standardized way of measuring unpredictability. Previous research has used childhood socioeconomic status (SES) as a proxy to LHS (Griskevicius et al, 2011; 2013). However, SES is related more closely to resource availability than predictability and in more recent research has been used as a measure of harshness alone (see Jonason et al., 2016; Li and Belsky, 2022; Szepsenwol et al., 2022).

Researchers have put forth two leading theories to explain how individuals assess unpredictability in their environments, both with their own methods for measurement. First, the *ancestral cue perspective* proposes that humans rely on cues that have consistently and accurately indicated unpredictable conditions throughout our evolutionary history (Young et al., 2020). This can include changing residence or changes within the family structure, such as the death of a parent. Alternatively, the *statistical learning perspective* suggests that individuals assess the number of prediction errors they make throughout the course of life (Young et al., 2020). The main difference between these perspectives is the mechanism used to assess unpredictability, thus holding different implications for measurement as well as behavior. However, these perspectives are not mutually exclusive and in fact may work together to create a model of environmental unpredictability (Young et al., 2020). Generally speaking, the ancestral cue perspective is approached through assessing the frequency of objective experiences thought to be evolutionary indicators of unpredictability, like changes in residence, family structure, or parents' employment (Szepsenwol et al., 2022; Young et al., 2022), while the statistical learning approach can include measuring random fluctuations in income (Li et al., 2018; Li & Belsky, 2022) or self-reports of perceptions of unpredictability (Young et al., 2022; Martinez et al.,

2022). These methods and conceptualizations may provide people with different information on environmental unpredictability, but further research is required to gain better insight into how they may vary (See Appendix A).

Harshness

Harshness refers to the morbidity-mortality rate in the environment (Ellis et al., 2009). When death or sickness are more frequent, particularly in ways that affect fertility or reproduction, this is thought to select for greater investment in reproductive effort to increase reproductive success, thus leading to a greater prevalence of FLS. Harshness can come in many different forms (Ellis et al., 2022a). In evolutionary history, death could result from external threats (i.e. predators, intergroup conflict), disease, resource scarcity, or intragroup conflict, all representing adaptive problems that must be overcome to survive.

Given the inherent differences in various sources of harshness, they likely cannot all be dealt with by a single catch-all behavioral response. Rather, exposure to one form of harshness may calibrate an individual to deal with that form, but not necessarily others, resulting in distinct behavioral patterns based on the types of adversity faced in childhood. To better understand the differences that may arise from different sources of harshness, we next turn to developmental literature.

Dimensional Model of Adversity

The threat-deprivation model (TDM) of childhood adversity suggests that different dimensions of environmental experiences underlie childhood adversity and that these dimensions create distinct patterns in cognitive and neural development (McLaughlin et al, 2014; McLaughlin & Sheridan, 2016). Currently, this model recognizes two distinct dimensions. Threat refers to an experience that causes physical or psychological damage, such as physical abuse,

whereas deprivation refers to a lack of social or material resources. While some experiences of adversity strongly reflect one dimension or the other, many reflect both to some extent (for dimensional model, see McLaughlin & Sheridan, 2016). The experiences of these dimensions are reflected on the neurological level (McLaughlin et al., 2014; McLaughlin et al., 2019), which can then have behavioral consequences both in childhood and adulthood.

While researchers, teachers, and other parties have labeled traits associated with adversity as maladaptive in the past, a new wave of research has reframed them as stress-adapted (Mittal et al., 2015; Frankenhuis et al., 2020; Ellis et al., 2022b). This approach recognizes that childhood adversity calibrates individuals for living in stressful environments by creating adaptive behaviors for dealing with the particular stressors being faced in their ecology. Not only does this allow for a deeper analysis of strengths in addition to the setbacks of stress-adapted traits, but it also allows for an evolution-based foundation with which to examine why and how certain traits arise from certain experiences that align well with LHT (Ellis et al., 2022a).

Previous research examining the dimensional model from a life history perspective has explored how a three-factor theory (unpredictability, threat, and deprivation) predicts differences in behavior. Usacheva and colleagues (2022) found that material deprivation was related to more limited cognitive capacity and poor physical health, while threat-exposure predicted heightened aggression, and unpredictability, as measured through ancestral cues, predicted risky behavior, including greater and earlier substance use and riskier sexual behavior, all aligning with previous observations and predictions (Ellis et al., 2009; 2022a; McLaughlin et al., 2014; Martinez et al., 2022; Young et al., 2022).

While understanding the individual effects of each factor is important, they are rarely experienced in isolation, thus it is important to understand the interactions of threat, deprivation,

and unpredictability on subsequent behavior. However, most previous research surrounding harshness has principally highlighted deprivation (i.e., childhood SES; see Maranges et al., 2025 for review). For this reason, as well as avoiding over-complexity, this study will focus on the interaction of unpredictability and resource deprivation in early childhood

According to the sensitization hypothesis (Griskevicius et al., 2013), differences brought about by developmental experiences may not be immediately present under typical or safe circumstances. Instead, different behaviors may only arise under uncertain or threatening circumstances, such as war, natural disaster, or economic decline. Furthermore, the strength of the sensitizing effect may depend on how relevant a current experience is to an individual's early childhood experiences. If adverse childhood experience (ACEs) result in stress adaptations of the brain and behavior to specific conditions, it would stand to reason that only similar conditions in adulthood would trigger the use of those adaptations. Scenarios most pertinent to childhood resource deprivation might be those in which present or future resources are threatened, such as in times of personal or national economic uncertainty. When experiencing material deprivation, it is reasonable for corresponding responses to be material focused.

Materialism

Materialism has long been considered a personality trait assigned to individuals that place great emphasis on consuming or possessing material items as a source of fulfillment and happiness or equating wealth with quality of life (Belk, 1985). Through the lens of existentialism and humanistic psychology, materialism has been considered a negative quality and counterproductive to the goal of achieving self-fulfillment (Saunders et al., 1998). However, from an evolutionary perspective, materialism, or the pursuit of material items, could be an adaptive tendency (Górnick-Durose & Jack, 2020; Griskevicius & Kenrick, 2013). Indeed,

material items such as food, clothing, and shelter are imperative to both survival and reproduction. As such, a certain level of desire for material items is warranted in every individual. Similarly, material items have further importance as status symbols, which can be used to (a) signal group identity or social rank, as well as (b) secure a mate (Griskevicius & Kenrick, 2013). With this understanding of materialism, LHT can provide some insight into how and why consumers make certain economic decisions and when priorities might change. Given the basic importance of material items for survival and status-acquisition/maintenance, it would stand to reason that, when they are threatened, individuals may have an increased awareness of them and, in turn, greater materialism.

One of the forms through which materialism can be expressed is conspicuous consumption. Conspicuous consumption occurs when an individual engages in lavish or extreme spending despite possible negative consequences, such as going into debt (Solomon et al., 2004). First coined in 1899, conspicuous consumption has been used to describe the exuberant spending and lifestyles of the upper class, as well as the tendency to display luxury items or experiences as a show of status (Patsiaouras & Fitchett, 2012). While the wealthy may be able to elude the most negative drawbacks, conspicuous consumption can be used by individuals of any class to artificially boost one's status (Landis & Gladstone, 2017). This may aid in mating prospects, particularly when trying to court a mate in a social rank higher than one's own (Sundie et al., 2011). However, as conspicuous consumption becomes more costly as actual resources decrease, the decision to engage in such may depend on environmental and personal factors that may be related to LHS, in particular, temporal orientation.

Temporal Orientation

Temporal orientation refers to the general time horizon an individual tends to consider when taking action or setting goals (Zimbardo & Boyd, 1999). An individual with a future orientation tends to engage in more long-term planning and have greater consideration for future consequences, while an individual with present orientation tends to be more impulsive, have less consideration for the future, and set more short-term goals (Dunkel et al., 2013; Zimbardo & Boyd, 1999; Martinez & Maner, 2025). In other words, individuals with a present orientation are more focused on present gains, and this has been linked to a lower predicted life-expectancy (Dunkel et al., 2013), childhood unpredictability (Martinez & Maner, 2025), and low childhood SES (Amir et al., 2018). Specifically, as harshness and unpredictability increase, the future becomes less certain, so long-term planning and investment become less adaptive than focusing on what can be gained in the present.

Individuals with a present orientation, particularly a present-hedonic focus, are characterized by desires for short-term fulfillment such as thrill-seeking and risk-taking (Jochemczyk et al., 2017; Zimbardo & Boyd, 1999), which could be provided through conspicuous consumption. On the other hand, individuals with a future orientation may have a greater propensity to save for the future in order to achieve goals or as a safety measure.

Previous research has found that individuals who come from low SES backgrounds tend to engage riskier financial behavior than those with high childhood SES, who tend to decrease risk-taking (Griskevicius et al., 2013; 2011). Given the above information, it would stand to reason that childhood deprivation may enhance present orientation and inhibit future orientation, which could subsequently increase conspicuous consumption. Vice versa, low levels of childhood deprivation may increase future orientation, which would lead to greater saving behavior. The relationship between deprivation and temporal orientation could be moderated by

unpredictability, which may have a similar effect of inhibiting future orientation and enhancing present orientation. Additionally, as predicted by the sensitization hypothesis (Griskevicius et al., 2013), the differences in desire to conspicuously consume or save based on childhood experiences may only become apparent under threatening conditions such as economic uncertainty.

Current Study

In the current study, I propose using LHT and TDM in an attempt to advance our understanding of the relationship between ACEs and adult behavior. Specifically, I expect that childhood unpredictability and childhood deprivation will interact to affect both the desire to conspicuously consume and save. Theoretical models for moderated moderation and moderated mediation predictions are included in *figures 1* and *2* respectively.

Specifically, I predict that (1) as childhood deprivation increases, conspicuous consumption will also increase, (2) childhood unpredictability will moderate this relationship such that it will be stronger when childhood unpredictability is high. Additionally, I predict that (3) present orientation will mediate the relationship between childhood deprivation and conspicuous consumption, and that (4) childhood unpredictability will moderate this relationship also, such that the relationship between childhood deprivation and present orientation will be stronger when childhood unpredictability is high. Further, I am expecting (5) a moderated mediation pattern, such that when childhood unpredictability is high, I expect present orientation will mediate the positive relationship between childhood deprivation and conspicuous consumption.

Conversely, I expect that (6) as childhood deprivation *decreases*, people's desire to save will increase. Additionally, I expect that (7) childhood unpredictability will moderate this

Figure 1

Theoretical Model for Moderated Moderation

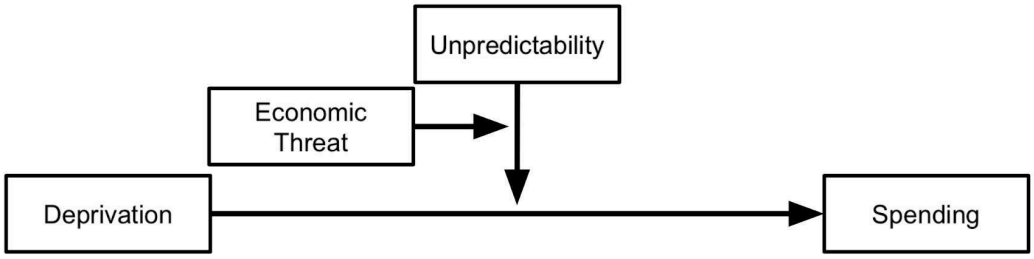
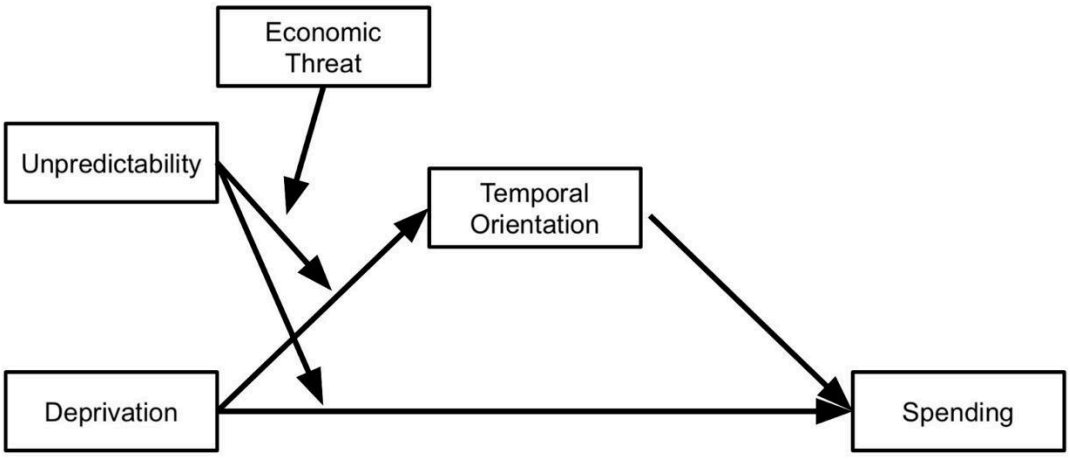


Figure 2

Theoretical Model for Moderated Mediation



relationship such that it will be stronger when unpredictability is *low*. I also expect that (8) future orientation will mediate the relationship between deprivation and desire to save, and (9)

childhood unpredictability will moderate the relationship, such that the relationship between childhood deprivation and future orientation will be stronger when childhood unpredictability is low. Further, I am expecting (10) a moderated mediation pattern here as well, such that when unpredictability is low, I expect future orientation will mediate the negative relationship between childhood deprivation and desire to save. What is more is that I also expect (11) all of these predicted relationships will be stronger under conditions of economic threat rather than experiencing little to no threat.

Chapter Two: Method

Participants

A total of 124 participants were recruited online. 19 participants' data was excluded due to failed attention checks or otherwise incomplete data, and an addition 4 participants were excluded for not meeting study criterion, leaving a total of N = 101 participants. Participant ages ranged from 18 to 59 (M = 26.9, SD = 9.818). 70 participants identified as women and 7 identified as non-binary/third gender.

Materials

Unpredictability

To measure childhood unpredictability, participants completed the childhood unpredictability scale (CUS; Maranges et al., 2022). This questionnaire contains 15 items related to environmental predictability up to age 10 with statements such as "I never knew whether my parents would be there to pick me up from school" and "I never knew what to expect from other students at school." Participants indicate on a seven-point scale the degree to which they agree or disagree with each statement (1 = *strongly disagree*, 7 = *strongly agree*). After averaging, higher

scores indicate greater childhood unpredictability and lower scores indicate lower childhood unpredictability (See appendix B).

Deprivation

To measure childhood deprivation, participants completed the childhood harshness scale (CHS; Maranges et al., 2022). This scale contains 11 items that assess levels of deprivation, such as "We had to try to save money when shopping for anything" and "My family rarely had enough money to go out for a nice dinner." Participants indicate on a seven-point scale how true they believe each item to be of them up to age 10. Higher averaged scores indicate greater childhood deprivation, and lower overall scales indicate lower childhood deprivation. Both the CHS and the CUS have been shown to have good reliability as well as convergent, discrimination, and predicative validity (Martinez et al., 2022; Maranges et al., 2022; See appendix C).[1]

Economic Threat Manipulation

To manipulate exposure to economic threat, participants were randomly assigned to view 10 images of either "harsh" environments (economic threat condition) or "predictable" environments (comparison condition; see Appendix E). This manipulation is based on a manipulation used by Griskevicius and colleagues (2013). In order to minimize variability between the condition stimuli, the image selection is based on research on ecological stereotypes (Williams et al., 2016). The images will be shown in successive order for two seconds each. This will be presented as a memory task in which the participants will be asked to remember which images they were shown for a later memory check.

As a manipulation check, after the images are shown, participants are also asked whether they agree or disagree with the statement "I feel uncertain about the economy" on a 5-point

scale. The associated attention check (presented as a memory check) occurred at the end of the survey and had participants select which from 10 images they were previously shown.

Temporal Orientation

To measure present and future orientation, participants responded to select items from the Zimbardo Time Perspective Inventory (ZTPI) that correspond to the present-hedonic and future factors respectively. The present-hedonic factor contains 14 statements that reflect a focus on present gains, such as "I do things impulsively" and "It is important to put excitement in my life." The future factor contains 13 statements which reflect concern and planning for the future, such as "I complete projects on time by making steady progress" and "I keep working at difficult, uninteresting tasks if they will help me get ahead." Participants are asked to indicate on a five-point scale (1 = *very uncharacteristic*, 5 = *very characteristic*) how characteristic each statement is of them. These factors are mutually exclusive, and participants were scored for each factor separately. After averaging, high scores on the present-hedonic factor indicate greater present orientation, while high scores on the future factor indicate greater future orientation (See appendix F).

Conspicuous Consumption

To measure conspicuous consumption, participants completed the conspicuous spending index (CSI) used by Sundie and colleagues (2011). The CSI asks participants to indicate how much money they are willing to spend on 8 conspicuous items. Participants are asked "Compared to the average student, how much money would you be willing to spend on ____?" Participants indicate on a nine-point scale ranging from *much less than the average student* to *much more than the average student* how much they would be willing to comparatively spend on items such as a new watch or dinner with friends. The responses are averaged into a conspicuous

spending index with higher scores indicating greater desire to conspicuously consume (See appendix G).

Saving

Participants' desire to save money was assessed with five items based on various questionnaires from previous literature (Heslin & Frey, 1995; Dangol & Maharjan, 2018; Lay & Furnham, 2018). These items will include "If I have money left over at the end of the month, I would rather save it then spend it," and "I feel like my current amount of savings is inadequate." Participants will indicate on a seven-point scale (1 = *strongly disagree,* 7 = *strongly agree*) how true they believe each statement to be of them. Once responses are added together, higher scores will indicate greater concern with saving. This measure was selected to focus on the desire to save money going forward rather than past saving behavior, which most existing scales tend to measure (See appendix H).

Procedure

Participants accessed the study through an online link. After giving consent, participants completed the CHS and CUS. Participants were then randomly assigned to either the economic threat or comparison condition, in which they viewed ten images corresponding to the condition for two seconds each. Participants then completed the ZTPI, with the manipulation check being included as the first item immediately after the manipulation. This was followed by the assessments of conspicuous consumption and saving. This was followed by the attention check. Finally, participants' demographic information was collected followed by a debriefing and thanks.

Chapter Three: Results

Manipulation Check

An independent samples t-test was used to analyze the manipulation check. In terms of feeling uncertain about the economy, those in the economic threat condition (M = 3.93, SD = 1.007) did not significantly differ from those in the comparison condition (M = 4.09, SD = .855), t(99) = -.849, p = .398.

Conspicuous Consumption

Zero-order correlations did not support hypothesis 1, that conspicuous consumption would increase as childhood deprivation increases. Analysis revealed a negative relationship between the deprivation measure and conspicuous consumption (r = -.221, p = .026), such that as childhood deprivation increased, conspicuous consumption decreased.

Hypothesis 2 was that childhood unpredictability would moderate the relationship between deprivation and conspicuous consumption such that it would be stronger when unpredictability is high. Hierechical regression was used to analyze this by regressing participants' conspicuous consumption scores on their deprivation and unpredictability scores and their interaction. The results of this interaction were non-significant, (b = .01, b^* = .018, SE = .6, t(100) = .174, p = .863). Due to present orientation not being correlated with deprivation, unpredictability, or conspicuous consumption, hypotheses 3-5, which concern the mediation role of present orientation, were not tested. All zero-order correlations can be seen in Table 1. Additionally, partially disconfirming hypothesis 11 – all predicted relationships would be stronger in the economic threat condition – no three-way interaction between childhood unpredictability, childhood deprivation, and the economic threat manipulation was found, (b = .034, b^* = .033, SE = .139, t(100) = .242, p = .810).

Desire to Save

Table 1

Zero-order Correlations for Study Variables

Variable	CUS	CHS	PO	FO	DSM	CSI
Childhood unpredictability (CUS)	-					
Childhood deprivation (CHS)	.468**	-				
Present orientation (PO)	.087	.016	-			
Future orientation (FO)	.139	.176	-.193	-		
Desire to save (DSM)	.309**	.182	-.199*	.310**	-	
Conspicuous consumption (CSI)	-.196*	-.221*	.036	-.176	-.363**	-

*$p < .05$. **$p < .01$

Hypothesis 6, which was that the desire to save would increase as deprivation decreased, was also examined using zero-order correlations. This revealed a positive, but non-significant, relationship between the deprivation and saving measures ($r = .182$, $p = .068$). That is, descriptively, as childhood deprivation increased, individuals had a greater desire to save money. Therefore, hypothesis 6 was also not supported.

To examine hypothesis 7 – that a negative relationship between childhood deprivation and savings would be moderated by childhood unpredictability – participants savings scores were regressed on their deprivation and unpredictability scores and their interaction. However, analysis failed to confirm hypothesis 7 ($b = .034$, $b* = .033$, $SE = .139$, $t(100) = .242$, $p = .810$).

Hypotheses 8-10 concerned the role of future orientation as a mediator between deprivation and the desire to save. Zero-order correlations revealed a significant positive relationship between the savings measure and future orientation ($r = -.310$, $p = .002$), which

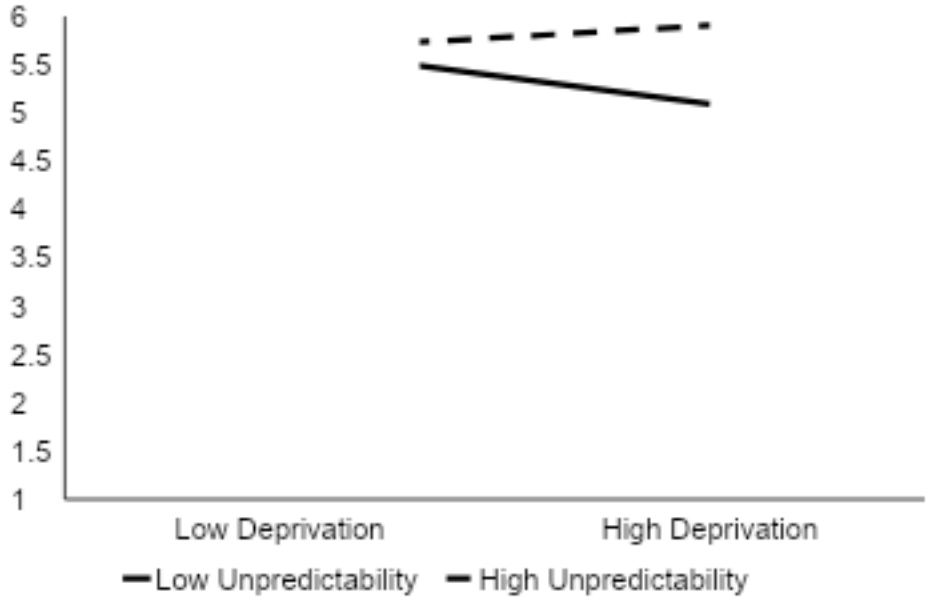
aligned with predictions. However, due to the lack of zero-order relationships between future orientation and deprivation, Hypotheses 8 through 10 were not examined.

Interestingly, however, when regressing participants' savings behavior on childhood deprivation, childhood unpredictability, and the economic uncertainty manipulation, hypotheses 7 and 11 received partial support. While the three-way interaction was not significant (b = -.163, b^* = -.208, SE = .1, $t(100)$ = -1.623, p = .108), the interaction between childhood unpredictability and childhood deprivation was significant in the economic threat condition. That is, in the economic threat condition, childhood unpredictability did moderate the relationship between childhood deprivation and savings (b = .116, b^* = .258, SE = .053, $t(100)$ = 2.184, p = .031). This same interaction was not significant in the comparison condition (b = -.047, b^* = -.104, SE = .085, $t(100)$ = -.549, p = .584).

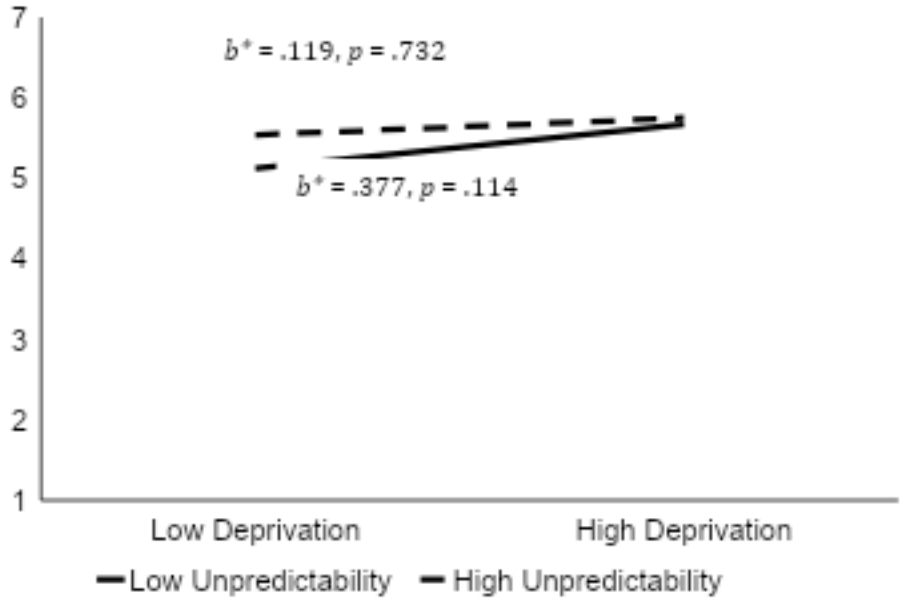
Exploring the simple two-way interaction between childhood unpredictability and childhood deprivation among those who experienced the economic threat condition revealed that as childhood deprivation decreased, the desire to save increased, but only when childhood unpredictability was also low (b = -.203, b^* = -.426, SE = .097, $t(100)$ = -2.090, p = .039). The same relationship was descriptively reversed but not statistically significant when childhood unpredictability was high (b = .101, b^* = .213, SE = .093, $t(100)$ = 1.086, p = .280; see *figure 3*).

Figure 3

Deprivation x Unpredictability Interaction in Economic Threat Condition



Deprivation x Unpredictability Interaction in Comparison Condition



Chapter Four: Discussion

With this project I had sought to contribute to a growing body of literature dedicated to understanding behavioral ecology and stress adaptation (Ellis et al., 2022b; Young et al., 2022). However, the current project's sample size likely prevented our analyses from being fully powered (see *Limitations* for further discussion).

Some relationships appeared to contradict expectations. For instance, the simple correlational relationships between childhood deprivation and unpredictability with conspicuous consumption and the desire to save were all in the opposite direction of what was expected. In contrast to Griskevicius and colleagues' (2013) findings, the present findings suggest that the presence of deprivation or unpredictability in childhood was related to an *increase* in saving behavior. This difference could be due to the measurements used in this study. While SES, which was used by Griskevicius et al., is technically a measure of deprivation, individuals with low SES tend to be vulnerable to many aversive experiences, which are difficult to disentangle when using a broad measure alone. If the current correlations are maintained at full power, the use of separate measures may reveal intricacies in the relationship between childhood adversity and spending behavior that would warrant further theoretical consideration.

The current data did lend some support to my predictions. The only significant interaction found here was in the economic threat condition, which is consistent with expectations based on sensitization hypothesis literature (Griskevicius et al., 2013; Mittal et al., 2015; Tan et al., 2022). Additionally, I found that when childhood unpredictability was low, less exposure to childhood deprivation predicted greater savings, a finding in-line with the dual-benefit hypothesis (Doom et al., 2016). This hypothesis suggests that the most ideal outcomes come from individuals who experienced low levels of both deprivation and unpredictability in childhood. In traditional LHT

terms, this childhood context would be expected to lead to the adoption of SLS for who we might expect savings behavior the most.

The presence of this relationship in the economic threat condition but not the comparison condition could provide insight into how individuals act in their present economic context. Specifically, when times are good (i.e., comparison condition) SLS may have fewer reasons to focus on saving money. In contrast, when times are uncertain or threatening, this may prompt SLS to save for the future, which is consistent with the typical reserved response people often have to uncertainty (Alquist et al., 2020). Further, this behavioral inhibition may also prompt a delay in reproduction. On the other hand, FLS may not alter their behavior as much in different contexts. However, this is speculatory given the current findings.

Additional data collection may allow for a more thorough evaluation of the current predictions. For instance, the role of temporal orientation in the relationship between rearing environment and adult behaviors may benefit from greater power. As it stands, my predictions related to temporal orientation as a mediator between childhood deprivation and spending behavior could not be properly tested due to a lack of significant zero-order correlations with either predictor or with conspicuous consumption. Notably, the desire to save had a significant positive relationship with future orientation and a significant negative relationship with present orientation, both of which were in the predicted directions. These findings could indicate the predicted relationships may be borne out given additional power but reflect weak effects. Presently, I hesitate to draw any firm interpretation from the current findings.

Similarly, while I hypothesized three-way interactions to predict both conspicuous consumption and saving desire, the lack of significant findings is not surprising given the sample size. However, the emergence of the interaction between deprivation and unpredictability, while

exclusively in the economic threat condition, is a promising finding that matched my predictions. While lacking significant results for many of the predicted relationships, I believe that the present findings justify continued data collection.

Further research in this area might also benefit from examining the role of threat in predicting behaviors. For instance, it would be interesting to examine whether traits resulting from deprivation and threat are sensitized by different present circumstances (i.e., economic recession vs. war). The specialization hypothesis suggests that exposure to different dimensions of adversity should result in adaptations to that specific dimension (See Ellis et al., 2017 for review). While certain behaviors may be triggered by the presence of uncertainty in adverse conditions, childhood exposure to different dimensions of adversity may result in varied behavior. An individual who was exposed to primarily deprivation may not respond to present uncertainty the same way as an individual exposed to primarily threat.

Additionally, our understanding of consumer behavior might benefit from exploring differences in specific spending behaviors. SLS and FLS may spend their money differently in times of economic flourishing or recession. In some ways, currency in consumer-based economies can be analogous to energy within an organism. The ways in which individuals spend their money could then reflect their strategy related to their goals of maintenance, mating, or reproduction. For example, a SLS prioritizing maintenance may be more likely to cut back on spending to prioritize saving for the future. In the same vein, investment in offspring is likely reflected in spending on said offsprings basic needs, as well as desires and enrichment. The presence of economic hardship likely necessitates sacrifices of investment in the self, mating effort, or current offspring, and the subsequent sacrifices made will likely reflect the LHS of the individual, as well as influence the LHS of their offspring. For SLS, this may mean reducing

spending on one's own desires or recreations in order to allocate more resources towards one's children. In contrast, FLS prioritizing reproductive effort may spend more money on socialization opportunities to increase their pool of potential mates as well as conspicuous personal items (i.e. clothing, accessories, vehicles) to increase their perceived value as a mate. This behavior may not change based on the state of the economy. However, items of consumption may vary based on gender. Previous research has found that in times of economic recession, women tend to increase spending on beauty products (Hill et al., 2012). This would stand to reason when considering the goal of mating, as different strategies are employed to attract the opposite genders. In this case, male spending may reflect more traditional conspicuous products, such cars, watches, or expensive clothing, which act as wealth displays. In contrast, female spending may focus on items to increase their physical attractiveness. Considering the participants in this study predominately identified as women, the lack of significant interactions predicting conspicuous consumption may be a reflection of the measurement not adequately capturing desired spending behavior.

Delimitations

This study primarily relies on surveys to measure the variables of interest. The measures used for conspicuous consumption and saving do not necessarily reflect actual intents or behaviors. Additionally, retrospective surveys, especially ones like CUS and CHS that assess childhood experiences, are vulnerable to errors due to memory decay, which can result in inaccurate responses. The surveys used in this study likely reflect perceptions of childhood environments and spending behavior and thus may not line up entirely accurately with objective reality or actual behavior.

However, it is reasonable to assume that most individuals have a general idea of what their childhood was like in relation to the variables being assessed, even if specific details are lost. Indeed, considering the role perception plays in actual behavior, the surveys used still provide important data. Additionally, since this project is focused on a relatively novel avenue of research, survey data allows for a quick way to find significant patterns and trends which can guide further research. If further data collection supports the current hypotheses, then the findings predicted here would benefit from conceptual replications and confirmatory longitudinal work.

Limitations

One of the limitations of this study is the sample size. A priori testing suggests a sample size of 367 participants is needed to find a small effect for a three-way interaction. Indeed, some work indicates even two-way interactions require over one thousand participants to be adequately powered (Sommet et al., 2023). Additionally, research suggests that correlations can change directions before they stabilize at around 250 participants (Schönbrodt & Perugini, 2013). Due to the analysis being underpowered, all interpretations of results are made with caution, and relationships may change in direction and significance as more data is collected.

Another significant limitation for this study is the manipulation. The selected images were not tested for their priming effect prior to use in this project. Any effect that may have occurred, and whether it occurred at all., is unclear, especially since the manipulation check found no difference between groups. The manipulation check itself may not have adequately captured an effect of the manipulation. Additionally, both groups' mean scores suggested some concern, rather than neutrality, for the current economy, which may indicate an unaccounted for confounding, real-world factor may have exerted influence.

Conclusion

This project sought to expand on previous work in evolutionary psychology in two main ways: first, by expanding on the relationships differing childhood environments have with adult behaviors, and second by exploring which factors contribute to adult spending behaviors, particularly when it comes to economic decision made in times of stress. Work of this type could further contribute to the developmental literature by advancing our understanding of the long-term effects of childhood experiences. Further, it could lay a foundation on which to build a better understanding of the unique challenges posed by exposure to different types of childhood experiences.

Further research is needed to explore the intricacies of how deprivation, threat, and unpredictability in childhood interact with each other and affect adult behaviors. Additionally, this area of research would also likely benefit from refinement of measures and longitudinal research. All such work would help to build a stronger theoretical backbone for this growing body of research.

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Footnote

[1]Some research suggests that the presence of parental warmth and affection may mitigate long term effects of harshness (Rothrauff et al., 2009; Cohodes et al., 2023). To control for this, participants also completed maternal and paternal warmth scales (Rothrauff et al., 2009). Both scales contain the same six questions concerning the involvement and emotional warmth of the respective parent, such as “How much love and affection did your mother/father give you?” and “How much did your mother/father teach you about life?”. Responses can range from 1 (a lot) to 4 (not at all). Responses are averaged and reverse-coded so that higher numbers relate to higher levels of parental warmth (see Appendix D). However, given the current sample size and findings concerning the main predictions, this measure was not analyzed.

Appendix A

Alternate Unpredictability Measure Hypothesis

Due to the conflicting evidence from previous research, I have added an exploratory hypothesis concerning measurements of unpredictability. Specifically, I suspect that different conceptualizations of unpredictability will have different interactive patterns with deprivation, such that ancestral cue measures will tend to compound the effects of deprivation, whereas statistical learning measures will show a mitigation pattern. However, statistical learning measures typically involve collecting longitudinal data or otherwise require methods that cannot be easily included with the existing study (i.e., Li et al., 2018; Li & Belsky, 2022). The primary measure of unpredictability in this study is the childhood unpredictability scale (CUS; see appendix B), which contains elements of both types of measure. To explore my predictions concerning the type of measurements, I also included a secondary, ancestral cue measure of unpredictability. I predicted that there would be a difference in the predictive strength between these two measures. However, given the previous literature, it was difficult to predict which measure would reveal stronger relationships, if there would be any differences in the direction of moderation, or what those differences might have been.

The secondary unpredictability measure I included was a modified version of the derivative life events schedule (LES; Egeland et al., 1980; Belsky et al., 2012), in which participants were be asked for the number of times there were cohabitation changes (i.e., changes in parents or other family members who lived in the same household), resident moves (i.e., moving houses, neighborhoods, or cities), and parental employment status (i.e., amount of times a parent changed employment or was unemployed). Participants answered using a three-point

scale (0 - *never*, 1 - *once,* 2, - *twice or more*) for each question. Once averaged, higher overall scores corresponded to greater unpredictability.

Zero-order correlation revealed that the LES was positively correlated with the CUS ($r = .489$, $p < .001$). However, the LES was not significantly correlated with temporal orientation, the saving measure, or the conspicuous spending index. Regressions revealed no significant interactions between the LES and childhood deprivation when predicting conspicuous consumption nor when predicting the desire to save. Additionally, unlike the interaction between CUS and childhood deprivation, the interaction between LES and deprivation did not become significant under the economic threat condition (for results of analysis using CUS, see Results section).

At this stage in the data collection, all interpretations of data are hesitant and could be subject to change with an increased sample size. However, the results found in analysis using the LES versus the CUS suggest differences in the measures. This could be due to technical differences between the measures, such as the number of questions, the response options and scoring, or the questions themselves. Further research is needed to further compare these measures to determine if there is a substantial difference between these measures and, if so, whether it results from the measure itself or the construct it's measuring.

Appendix B

Childhood Unpredictability Scale

Please indicate how much you agree or disagree with each statement based on your experiences up to age 10.

Strongly disagree(-3) somewhat disagree(-2) slightly disagree(-1) N/A(0) slightly agree(1) somewhat agree(2) strongly agree(3)

1. I never knew if my caregivers would be there to pick me up from school.
2. When I woke up, I often didn't know what could happen in my house that day.
3. My family was generally inconsistent and unpredictable from day-to-day.
4. When I left my house, I was never quite certain what would happen in my neighborhood.
5. Things were often chaotic in my house.
6. I did not know what to expect from my family when I had friends over.
7. My family environment was often tense and on edge.
8. I did not know when I would see my caregivers.
9. I could not predict which of my caretakers (e.g., babysitters, nannies, neighbors, family) would be watching me.
10. I was never certain where it was safe to play.
11. The traffic around the house(s) I lived in was unpredictable and chaotic.
12. People often moved in and out of my house fairly frequently.
13. I often did not know what to expect from other students at school.
14. I had a hard time knowing what my caretakers or other people in my house were going to say.
15. My family had a consistent schedule, so I knew what to expect each day.*

*reverse-coded

Appendix C

Childhood Harshness Scale

Please indicate how much you agree or disagree with each statement based on your experiences up to age 10.

Strongly disagree(-3) somewhat disagree(-2) slightly disagree(-1) N/A(0) slightly agree(1) somewhat agree(2) strongly agree(3)

1. Despite how much my parents worked, we rarely had enough for luxury items.
2. My family rarely had enough money to go out for a nice dinner.
3. Growing up, I rarely got spoiled because money was so tight.
4. My family was strained financially.
5. I felt uncomfortable asking my parents for money because money was tight.
6. We had to try to save money when shopping for anything.
7. I never had the newest style of shoes or clothes.
8. My family and I were usually able to purchase expensive presents for holidays, birthdays, etc.*
9. I felt relatively wealthy compared with kids in my school.*
10. I grew up in a relatively wealthy neighborhood.*
11. My family usually had enough money for things when I was growing up.*

*reverse-coded

Appendix D

Parental Warmth Scale

The following questions pertain to your relationship with your mother/father while growing up. Please answer each question as accurately as possible.

1. A lot, 2. Somewhat, 3. A little, 4. Not at all

1. How much did your mother/father understand your problems and worries?
2. How much could you confide in her/him about things that were bothering you?
3. How much love and affection did your mother/father give you when you needed it?
4. How much time and attention did you mother/father give you when you needed it?
5. How much effort did your mother/father put into watching over you and making sure you had a good upbringing?
6. How much did your mother/father teach you about life?

Appendix E

Economic Threat Manipulation

Economic Uncertainty Condition Stimuli





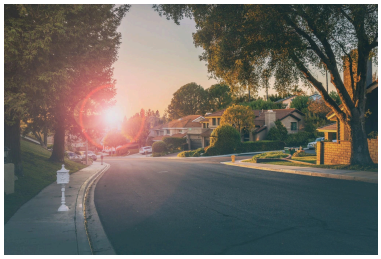





Control Condition Stimuli







Appendix F

Zimbardo Time Perspective Inventory

Please indicate below how true you believe each statement is of you:

Very uncharacteristic(1) uncharacteristic(2) don't know/ neither uncharacteristic not characteristic(3) characteristic(4) very characteristic(5)

Present-hedonic Factor

1. I believe that getting together with one's friends to party is one of life's important pleasures.
2. I do things impulsively.
3. When listening to my favorite music, I often lose all track of time.
4. I try to live my life as fully as possible, one day at a time.
5. Ideally, I would live each day as if it were my last.
6. I make decisions on the spur of the moment.
7. It is important to put excitement in my life.
8. Taking risks keeps my life from becoming boring.
9. It is more important for me to enjoy life's journey than to focus only on the destination.
10. I take risks to put excitement in my life.
11. I often follow my heart more than my head.
12. I find myself getting swept up in the excitement of the moment.
13. I prefer friends who are spontaneous rather than predictable.
14. I like my close relationships to be passionate.

Future Factor

1. I believe that a person's day should be planned ahead each morning.
2. If things don't get done on time, I don't worry about it.*
3. When I want to achieve something, I set goals and consider specific means for reaching those goals.
4. Meeting tomorrow's deadlines and doing other necessary work comes before tonight's play.
5. It upsets me to be late for appointments.
6. I meet my obligations to friends and authorities on time.
7. I take each day as it is rather than try to plan it out.*
8. Before making decisions, I weigh the costs against the benefits.
9. I complete projects on time by making steady progress.
10. I make lists of things to do.
11. I am able to resist temptations when I know there is work to be done.
12. I keep working at difficult, uninteresting tasks if I know they will help me get ahead.
13. There will always be time to catch up on my work.*

*reverse-coded

Appendix G

Conspicuous Spending Index

For each item below, please answer the following question:

Compared to the average student, how much would you be willing to spend on…

Much less than an average student(1) less than an average student(2) slightly less than an average student(3) about the same as an average student(4) slightly more than an average student(5) more than an average student(6) much more than an average student(7)

1. a nice dinner with friends?
2. a new car?
3. a new watch?
4. a new cell phone?
5. dress shoes?
6. new sunglasses?
7. a new jacket?
8. a nice shirt?

Appendix H

Desire to Save Measure

Please indicate the degree to which you agree or disagree with each statement below:

Strongly disagree(1) somewhat disagree(2) slightly disagree(3) Not sure(4) slightly agree(5) somewhat agree(6) strongly agree(7)

1. If I have money left over at the end of the month, I would rather save it then spend it
2. I would be interested in investing in a high yield savings account, even if it means losing quick access to the invested money
3. Saving money is a way to reach my goals
4. I prefer to spend as little as possible
5. I feel like my current amount of savings is inadequate.