

OKLAHOMA STATE UNIVERSITY

STRUCTURAL INFLUENCES IN DECISION-
MAKING PROCESSES: THE ROLE OF
ATTRIBUTIONAL STYLE AND
DISPOSITIONAL OPTIMISM

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1992

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
MASTER OF SCIENCE
July, 1996

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ACKNOWLEDGMENTS

I wish to express my sincere appreciation to my research advisor, Dr. Vicki Green for her instruction and supervision during the course of this study. Her patience, diligence, and mentorship throughout this endeavor has been invaluable and has made it possible for me to accomplish this goal. I would also like to express my thanks to my committee members, Dr. John Chaney, and Dr. Lynne Steinberg, for their time, comments, and recommendations that helped to make this study a success. I would also like to recognize Dr. Larry Mullins and Dr. James Price for their generous help and patience in assisting me with this project.

I would also like to thank my parents, Dan and Nani; my brother, Daniel; and my sister, Christina. Without their continuous support and encouragement I would have never been able to achieve my academic goals.

Finally, I would like to thank the Department of Psychology, not only for providing me with the opportunity to further my education, but also for this research opportunity and their financial support over the past two years.

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Abstract

Models have been constructed to explain the process of decision-making. Most of these focused on explaining the types of errors people make in decision-making, specifically looking at group tendencies not individual differences. Recent models have focused on explaining the types of errors people make in decision-making (see Kahneman & Tversky, 1979) and demonstrating reason-based decision-making (see Tversky & Shafir, 1992; Shafir, 1993). Such models have focused on group tendencies not individual differences. Individuals' perception of the decision context and their focus on particular alternatives may influence their decisions; such individual differences are especially critical in decisions involving risk. The individual characteristics of interest in the present study are dispositional optimism-pessimism and attributional style. While the literature does not explore the relationship of these characteristics to decision-making, risky behaviors and perceptions of risk have been found to be related to both dispositional optimism (Taylor, 1992) and attributional style (Peterson, 1988). Results do not generally support that dispositional optimism and attributional style are related to decisions on paradigms used. Examination of significant tests does reveal some patterns. Significant findings suggests: a) those with an optimistic attributional style may be risk avoidant, b) those with an optimistic attributional style chose to make decisions now rather than delay, c) those with low levels of dispositional optimism will accept impoverished options and reject enriched options d) cognitive style is a more influential in more personally salient decisions, and e) attributional style is more influential in decision making processes than dispositional optimism. Results do support hypotheses regarding the relationship between attributional style and dispositional optimism. It was

found that dispositional optimism is related to the positive event scores of attributional style but not the negative event scores. These findings further the understanding between cognitive style and processes. Limitations of this study as well as directions for future research are discussed.

Structural Influences in Decision Making Processes:

The Role of Attributional Style and Dispositional Optimism.

When faced with a situation of choice, individuals often make a decision which differs from that made by others faced with the same choice. This variability of decision-making among individuals is still not well understood. Models of decision-making have been constructed to explain the process of decision-making. Most of these are focused on explaining the types of errors people make in decision-making, specifically looking at group tendencies not individual differences. Individuals' perception of the decision context and their focus on particular alternatives may influence their decision. This individual difference in decision-making is especially critical in decisions involving risk. What makes one person decide to take risks in light of potential loss while others decide to play it safe? It is possible that within the same environment, when making a decision, people will focus on different types of information. In a risky situation one person may focus on the potential gains while another person may focus on the potential losses. These two different perspectives may lead to very different decisions. The present study will investigate the relations between a person's causal attribution, dispositional optimism, and the type of decisions made.

Decision-Making Processes

Traditionally psychology has used formal models to study decision-making. Originally developed by scholars in economics and management science, then adopted by psychologists, formal decision models associate numeric values with choices and view decision outcome as the maximization of value. Models subsumed under this category would include normative models such as Expected Utility Theory (von Neuman &

Morgenstern, 1947), as well as descriptive models such as Prospect Theory (Kahneman & Tversky, 1979).

Kahneman and Tversky (1979), have demonstrated that people often make counterintuitive decisions which are not compatible with the normative formal models. According to these researchers, decisions are based on the subjective value assigned to alternatives and the decision weights of outcomes expected. Individuals evaluate choice options (prospects) with regard to possible gains and losses; these prospects influence decisions in proportion to their subjective value. Despite the prospect's actual probability, different prospects are assigned different weights depending upon their importance to the individual. Thus, while Prospect Theory is a model utilizing the assignment of numeric value to alternatives and choice is a maximization of value, this theory recognizes that numeric values assigned are subjective and do not conform to probability theory. Kahneman and Tversky (1979) found that individuals take risks when they are facing a sure loss situation and avoid risks when facing a sure gain situation. However, these authors found this pattern does not hold for situations in which extremely low probabilities are present (e.g., .1% chance to lose/gain \$5,000 or 100% to lose/gain \$5). In such cases more subjects are risk seeking in gain situations and risk avoidant in loss situations. Kahneman and Tversky explain this presumably disparate finding as follows: In the range of low probability, subjects tend to over weight probabilities; this leads to the inflation of choosing such options.

Prospect Theory also examines decision errors made in situations of uncertainty. It has been demonstrated that, under uncertainty, individuals use heuristics in order to reduce the complexity of the task presented. The use of heuristics may aid in information

reduction but may also result in systematic errors in judgment. Often these heuristics result in decisions which are counterintuitive according to the value maximization concept included in formal models. The heuristics and/or biases demonstrated by Kahneman and Tversky include: framing effects (Kahneman & Tversky, 1979; Tversky & Kahneman, 1981), extensional versus intuitive reasoning (the conjunctive fallacy) (Tversky & Kahneman, 1983), anchoring and adjustment (Tversky & Kahneman, 1974), the availability heuristic (Tversky & Kahneman, 1973; 1974), regression bias (Kahneman & Tversky, 1973), disjunction effect (Tversky & Shafir, 1992b), law of small numbers (Tversky & Kahneman, 1971), and representativeness (Kahneman & Tversky, 1972; Tversky & Kahneman, 1974).

In a recent special issue of Cognition, Johnson-Laird and Shafir (1993) suggested that a reason-based model of decision-making may be more powerful in explaining the decision-making process than are the more traditional models. The reason-based choice model proposed by Shafir, Simonson, and Tversky (1993), evolves out of two literatures: one, containing formal models such as Kahneman and Tversky's Prospect Theory delineated above and two, decision-making literature that traditionally explains choice in terms of reasons for and against alternatives. To a great extent, reason-based explanations have been used to examine post decision-making "case studies" such as historical-political events (Allison, 1971; Telhami, 1990; Berman, 1982; Betts & Gelb, 1979). In the past, these two approaches to explaining decision-making have had little interaction, presenting little overlap in their explanation of similar constructs. One of the reasons formal models of decision-making have not attended to reason-based explanations is because research has

demonstrated that subjects often are not aware of the exact influences which have guided their decisions (Nisbett & Wilson, 1977; Wason & Evans, 1975).

Whether or not individuals are cognizant of the specific reasons behind their decisions, it would appear valuable to examine the subjective explanation a person can provide for the decisions he/she has made. Shafir et. al. (1993) specify that a reason based model will be a powerful addition to the traditional models. These authors delineated three reasons for adding a reason-based model. One, focusing on reasoning seems more analogous to how individuals normally think about choices. People traditionally think about the positive and negative aspects of alternatives and the impact a specific choice will have. They traditionally do not attempt to estimate numeric probability or the overall value of alternatives and decision outcomes. Two, by examining choices within a reason-based model, one has a more comprehensive model for explaining the cause of conflict found in choice. Formal models propose that choice is based on value maximization; thus, choices would not be subject to conflict unless the alternatives were equal in value. In a reason-based model, conflict arises when a person identifies pros and cons for alternatives or conflicting reasons for competing outcome options. Three, a reason-based model can incorporate comparative influences such as relative advantage or anticipated regret, issues which typically cannot be explained by the value maximization concept. In addition to these three reasons, use of a reason-based model of choice more clearly enables researchers to incorporate individual differences in decision making. Individual differences in decision-making could possibly be explained by differences in an individual's reasons to make that decision.

Shafir et. al. (1993), demonstrate the strength of a reason-based model by examining the role of reason in decision making involving: (a) uncertainty, (b) conflict, (c) context effects, and (d) normative decision rules. These are areas that have been observed to have influence in the decision-making process but have been difficult to incorporate in past models of decision making. Of interest to the present study are context effects and conflict as defined and explored by Shafir's work. Shafir (1993) demonstrated framing a dilemma as either an accept or reject problem will effect the type of decision being made and produce decisions which are counter to traditional models of decision making; these models assume that whether the individual is choosing or rejecting options should not affect the decision being made. Shafir (1993) extensively examined decision making in situations in which the framing of the question (e.g., accept versus reject) and the descriptive qualities of the options (e.g., enriched versus impoverished options) were manipulated. The paradigms examined changes in content (e.g., money and health decisions), the framing of the question in either present only (e.g., award/deny sole custody) or present-future decisions (e.g., take a course immediately or postpone to some future time). The paradigms also examined changes in the quantitative (e.g., five versus two), and qualitative nature (e.g., good versus bad) of the descriptive qualities listed. In all problems subjects were presented pairs of options where one option possessed both more positive and negative dimensions (enriched option) relative to another option (impoverished option). Shafir (1993) found the enriched option is both chosen and rejected more often than the impoverished option. Shafir explains the finding as follows: The pros and cons of an option can be more important to the individual depending on whether he/she is choosing to accept or reject an option.

Tversky and Shafir (1992a) examined decision-making in low and high conflict situations. When faced with a decision to buy one of two similar products or postpone the decision to buy (high conflict) more subjects chose to postpone. However when presented with only one of the two products or an option to postpone the purchase (low conflict) more subjects chose not to postpone. Traditional models of value maximization state that an option already present cannot become preferred when other options are added to a dilemma. Tversky and Shafir (1992a) interpret this finding as follows: In situations of low conflict there are compelling reasons to buy and a lack of conflicting information, thus, more individuals choose to purchase the item. However, in cases of high conflict the individual finds it difficult to make a decision and, thus, delays buying until more information is collected. In other words, a lack of conflict leads more individuals to purchase without considering that there may be better options available.

Factors Related to Decision-Making Processes

The influence of an individual's personality on decision-making may be exacerbated in situations of uncertainty. In well-defined situations, there are often standard rules of choice. In less-well-defined situations there is a lack of clear rules to follow. It is likely that in such ill-defined situations individual differences may have a greater influence upon choices made than in more well-defined situations. When demonstrating the risky/non-risky choices subjects make, Kahneman and Tversky and Shafir report the percentages of subjects who choose option 1 or 2. What is making some choose option 1 and others option 2? Since there are differences in the choices made by individuals, looking at idiographic variables may illuminate this process. The dichotomy of choice witnessed in Kahneman and Tversky's and Shafir's paradigms illustrate the

importance of individual differences (biological/ cognitive/ personality) in decision making. Furthermore, the effect of context on decision-making reported by Shafir (1993) demonstrates the importance of subject matter considered in decision-making.

Biological, cognitive, and personality (structural) and content variables are two of the three broad categories the literature identifies as influencing the decision-making process; the third category is context (Irwin & Millstein, 1991; Levitt, Selman, and Richmond, 1991; Linn, 1983). (Note that although Shafir referred to changes of context in dilemma adaptations, according to the adolescent literature, aspects of his work would focus on content influences.) Content refers to the subject matter to be decided upon, the specific information present in the problem. Content changes have been found to be important in the decision-making process (Linn, deBenedictis, & Dellucchi, 1982; Green & Runyan, 1995). Contextual factors refer to the environment or situation in which the dilemma or decision occurs. Examples of contextual factors influencing decision-making are culture (Thurman & Green, 1995), family structure (Steinberg, 1987), parenting strategies (Baumrind, 1991; Chilman, 1980) and peer group influences (Irwin & Millstein, 1986).

Structural variables, the third category of factors potentially influencing the decision-making process, is of interest to this present study. Structural factors include a wide variety of idiographic variables categorized as cognitive, biological, or personality. Cognitive variables can have a major influence on the type of decision-making that takes place. Gordon (1990), studying sexually active adolescents, found a correlation between choosing to use contraceptives and cognitive developmental level. Related research has found cognitive capacity and cognitive egocentrism to predict decision making regarding

sexual risk-taking (Green, Johnson & Kaplan, 1992; Johnson & Green, 1993). Other structural variables, which have been classified as cognitive, biological, or personality factors, that have been associated with decision-making are: self-esteem (Josephs, Larrick, Steel, & Nisbett, 1992), sensation seeking (Arnett, 1990), self-efficacy (Bandura, 1982; Larson, Piersel, Imao, & Allen, 1990), locus of control (Kumchy & Sayer, 1980; Parrott & Strongman, 1984; Hoorens & Buunk, 1993; Steinlauf, 1979), dispositional optimism (Taylor, Kemeny, Aspinwall, Schneider, Rodriguez, & Herbert, 1992; Perkins, Leserman, Murphy, Evans, 1993; Aspinwall, & Taylor, 1992) and attributional style (Peterson, 1988; Baumgardner, Heppner, & Arkin, 1986).

Of interest to this study are the relationships between both attributional style and dispositional optimism-pessimism and decision-making processes. The literature contains studies examining the relation between these two factors and engaging in risky behavior (Goodman, Chesney, & Tipton, 1992;) and the perception of risk (Taylor et. al. 1992; Weinstein, 1980, 1982; Alloy & Abramson, 1979). Little research exists studying the relation between these factors and decision-making in risk-taking or decision-making per se. Preliminary research demonstrated a relationship between attributional style and Kahneman and Tversky paradigms (Pichler, Green, V., Runyan, Durazzo, & Ercum, 1995).

Due to the way attributional style has been referred to in the literature, it may sometimes be confused with dispositional optimism. Scheier and Carver (1993) recognize that the two constructs do have some similarities such as their derivation from expectancies and parallel findings relating each of these variables to health behavior. In contrast, Scheier and Carver (1985) reported a correlation of .07 between the internal scale

of the Attributional Style Questionnaire (ASQ, Peterson, Semmel, von Baeyer, Abramson, Metalsky, & Seligman, 1982) a measure of attributional style and the Life Orientation Test (LOT,) a measure of dispositional optimism-pessimism (Note: scores for the other two scales of the ASQ were not reported) . Given this documented independence of accepted measures of these two constructs, the proposed study will include both measures. The relationship between these measures, as well as their independent relationship with decision-making paradigms will be assessed. For purposes of this paper the words dispositional optimism-pessimism will be reserved for those studies examining the LOT while those using attributional or attributional style, such as the ASQ will have the term pessimistic or optimistic attributional style.

Attributional Style

Attributional style is the tendency to select certain casual explanations for good and bad events (Peterson & Seligman, 1984). Stemming from Seligman's learned helplessness theory (Seligman, 1972), and further refined under the reformulated learned helplessness theory (Abramson, Seligman, & Teasdale, 1978) attributional style has been examined extensively in the social science literature. The reformulated theory of learned helplessness emphasizes that both the presence of non-contingency within an individual's environment and how the person perceives this lack of non-contingency are what leads to learned helplessness. The reformulated model purports that when faced with an uncontrollable bad event, a person will wonder why it occurred; how a person answers the "why" will help to determine their adaptation to the event.

According to Abramson et. al. (1978) there are three dimensions relevant to a person's causal attributions; each dimension is associated with a particular aspect of

adaptation to an uncontrollable event. The three dimensions of a person's attributional style are: locus, stability, and globality. Locus is conceptualized as an internal-external dimension and is similar to locus of control (Rotter, 1966,1992). It is the expectation that outcomes are contingent upon the individual (internal) or to some outside force (external). Stability is a temporal dimension; individuals may have a stable or transient perception of events. Environmental outcomes are viewed as more long-lasting (stable) or temporary (transient). Globality is the perception of whether contingencies across situations, are viewed as global or specific. Globality is the belief that a certain outcome will effect many aspects of life; specificity is the belief that an outcome will effect only that particular situation.

The reformulated learned helplessness model posits that those with learned helplessness will view negative outcomes as internal, stable, and global and positive outcomes as external, transient, and specific. This attributional style has been termed a pessimistic attributional style (notably in its initial usage, this was referred to as depressive attributional style) (Seligman, 1991; Seligman, Abramson, Semmel, & von Baeyer, 1979). The opposite of pessimistic attributional style is an optimistic attributional style. An optimistic attributional style is typified by the perception of negative outcomes as external, transient and specific, while positive outcomes are

Insert Table 1 About Here

internal, stable and global. Depressed people typically have a pessimistic attributional style while non-depressed people typical display a more optimistic attributional style.

Research has linked attributional style to a diverse range of behaviors including job and academic performance and health behaviors. An optimistic attributional style can predict positive job performance (Seligman & Schulman, 1986). Pessimistic attributional style has been related to poor academic achievement in children (Nolen-Hoeksems, Girgus, and Seligman, 1986) and university freshman (Peterson & Barrett, 1987).

Of direct relevance to the present study is research examining the relation of attributional style to health behaviors. This research documents that an optimistic attributional style has advantages over a pessimistic attributional style. In a year long longitudinal study, Peterson (1988) found that a person with a pessimistic attributional style was twice as likely to have unhealthy habits, contract infectious diseases, and visit a doctor. Peterson, Seligman, and Vaillant (1988) found that a pessimistic attributional style predicted physical illness over a 35 year span.

Based on this research, Seligman (1991) proposed several reasons why an optimistic attributional style could lead to better health. First, it could prevent helplessness so that the immune system would be more effective, Second, optimistic people would be more likely to engage in health-promoting behaviors. Third, optimists are believed to have experienced fewer negative life events and this might in itself lead to better health. The second reason for experiencing better health is of most relevance to the proposed study. The concept of a relationship between attributional style and health behavior choices is consistent with the assumption that attributional styles may be related to decision-making.

Research demonstrating the relationship between attributional style and realistic perceptions of control and outcome in a given situation is also consistent with the

assumption that attributional style may influence decision-making. Research by Alloy and Abramson (1979) suggests that those with pessimistic attributional style may actually possess a more realistic perception of control over their environment. These authors found that whereas depressed people possessed more realistic perceptions of control in a task per se, non-depressed individuals reported differential levels of perceived control depending upon the situation (e.g., higher levels of perceived control in win situations and lower levels of perceived control in loss situations). In a study of judgment of skill, Lewisohn, Mischel, Chaplin, & Barton (1980) found that non-depressed people overestimated their skill and that the judgments of depressed people were more congruent with third party raters. Thus, there is some evidence that an attributional style may result in errors in approximation of reality which in turn may lead to poor decision-making.

Dispositional Optimism

The literature demonstrates that the personality dimension of optimism-pessimism plays an important role in a wide range of psychological, behavioral, and physical outcomes when people are faced with adversity (see Scheier & Carver, 1992 for a review of this literature). Research has related optimism-pessimism with many behaviors including academic performance (Aspinwall et. al., 1992). Related research has indicated that optimists and pessimists differ in: (a) their stable coping tendencies (Carver, Scheier & Weintraub, 1989); (b) in the kinds of coping responses that they spontaneously generate when given hypothetical coping situations (Scheier, Weintraub, & Carver, 1986); (c) in the manner in which they cope with serious illness (Friedman, Nelson, Baer, Lane, Smith, & Rosalind, 1992; Carver, Pozo, Harris, Noriega, Scheier,

Robinson, Ketchan, Moffar, & Clark, 1993); (d) recovery from physical illness (Scheier, Matthews, Owens, Magovern, Lefebvre, Abbott, & Carver, 1989; Fitzgerald, Tennen, Affleck, & Pransky, 1993); and display different choices in health management (Goodman et. al., 1992).

Weinstein (1980) has shown that college students display unrealistic optimism about the likelihood of positive or negative events occurring in the future: individuals believe that they are more likely than others to experience good events and less likely than others to experience bad events. Weinstein (1980) has suggested that unrealistic optimism may prevent individuals from objectively perceiving risk and could keep individuals from adopting positive health behaviors or appropriate health practices to reduce their risk.

Two studies in the literature (Goodman, Chesney, & Tipton, 1995; Taylor, 1992) examined the relationship between optimism-pessimism and risk perception, risky behaviors, and HIV-AIDS. Goodman et. al. (1995) found that optimism in an at-risk adolescent female population was associated with higher levels of recent sexual activity and lower levels of seeking out health related information (e.g., chose not to have additional information on AIDS or be tested for HIV). Goodman et. al. also found that optimism was not associated with perceived risk. In a study of gay men, Taylor (1992) found that optimism was not associated with risk-related sexual behaviors. Errors in perception of risk, however, were associated with optimism. Dispositional optimism was associated with lower levels of perceived risk for developing AIDS despite having contracted the HIV virus. This unrealistic optimism may allow the subject to cope with

the serious illness at hand but runs contrary to the medical opinion that most individuals with HIV eventually develop AIDS.

In light of the data relating both dispositional optimism and attributional style to risky behaviors and perceptions of risk, and the contemporary assumption that decision making proceeds risk-taking (Beyth-Marom, Fischhoff, Jacobs, & Furby, 1989), investigating the relationship of dispositional optimism and explanatory style to decision-making processes would be beneficial. Given recent support for the view that decision-making is a subjective process and research pertaining to the importance of decision-making under risk, conflict, and uncertainty, use of Kahneman, Tversky, and Shafir's paradigms would appear appropriate. The aspects of these theories of decision-making which seem most relevant to dispositional optimism and attributional style are decisions under risk (gain and loss in low probability), conflict (high and low conflict), and effects of content and context on decision-making (accepting and rejecting).

The proposed study is designed to examine the relationship between both dispositional optimism-pessimism and optimistic-pessimistic attributional style and: (a) risk seeking/risk avoidance in situations of gain and loss where one choice option is of low probability; (b) accepting or rejecting enriched and impoverished options; and (c) decisions in situations of high and low conflict. In addition, the relation between the LOT and ASQ will be examined. Given that the literature demonstrates dispositional optimism and attributional style are related to risky behavior and given that the contemporary literature assumes decision-making processes underlie risky behavior, the general assumption is that dispositional optimism and attributional style will be related to decision making processes.

Specific Hypotheses

1a. Given data demonstrating that an optimistic attributional style is related to unrealistic perceptions of control and given that optimistic attributional style is related to health promoting behaviors, it was predicted that the mean score for optimistic attributional style of those subjects who choose the more risky option would be significantly different than the mean score for those who choose the less risky option.

1b. Given that dispositional optimism has been found to be related to risky behaviors in adolescent girls (Goodman et. al., 1992), it was hypothesized that the mean score for dispositional optimism of those subjects who choose the more risky option would be higher than the mean score for those who choose the less risky option.

2a. Given that dispositional optimism has been found to be related to not seeking out more information in at-risk female adolescents (Goodman et. al., 1992), it was hypothesized that dispositional and attributional style optimism would be related to the choice of buying now or opting to delay: in situations of high or low conflict, a larger percentage of pessimists as compared to optimists (both dispositional and attributional style) would choose to delay.

2b. Also, it was hypothesized that the mean score for dispositional optimism and mean score for optimistic attributional style of the group choosing to delay would be lower than the comparable means for those choosing to buy.

3a. Given the power of a person's cognitive style, dispositional optimism and attributional style may work as a frame. It was hypothesized that the mean score for dispositional optimism and for optimistic attributional style would be higher for those choosing to accept the enriched option and reject the impoverished option.

4. Due to similarities in item content domain it was predicted that the LOT and ASQ would be positively correlated. However, if Scheier and Carver's (1985) findings hold true, a non-significant correlation between these two measures would be predicted.

Methods

Subjects

Students enrolled in introductory psychology classes were recruited; volunteers received extra credit for participation. Of the 234 subjects who participated in the study, 38 international students were dropped from the pool. Due to the importance of language in many of the paradigms, it was assumed that non-native English speaking individuals would evidence different response styles. Examination of a number of paradigms indicated this group represented a unique sample. In addition, 12 subjects were removed prior to analysis due to incomplete questionnaires and ages over 25 years old.

Of the remaining 184 subjects, 51.5% were male and 48.5% were female. The age range was 18 to 25 years ($M = 19.43$, $SD = 1.53$); 87% were White, 5% were African-American, 2% were Hispanic, 3% were Native American, and 3% were Asian American. Grade levels were: 46% freshman, 36% sophomores, 9% juniors, 8% seniors, and 1% special student status. The majority of participants (57%) were from small towns (less than 30,000) or rural communities; 16% were from moderate sized towns/cities (30,001-99,000); and 26% were from cities of 100,000 or greater. A majority of subjects reported that their fathers had received a college degree and their mothers had received some college or advanced training. The sample's mean ACT score was 23.31 ($SD = 4.14$) and High School GPA was 3.47 ($SD = 0.22$).

Materials

Materials for this study consisted of four packets of questionnaires. Each packet contained a demographic questionnaire; Shafir paradigms; Kahneman and Tversky's paradigms; adapted paradigms; the Life Orientation Test-Revised; and the Attributional Style Questionnaire.

Two of the packets (Packet A) contained positively framed paradigms (e.g., accept, choose, gain, etc.). The two alternate packets (Packet B) contained negatively framed paradigms (e.g., reject, give-up, loss, etc.). Both frames of one paradigm were included in Packets A and Packets B; this problem was separated by a number of paradigms to reduce the chance of subjects identifying the repeated paradigm. For both Packets A and B, adapted and original paradigms were counterbalanced.

Demographic Questionnaire. The DQ assessed information regarding the following variables: Gender, university classification, age, ethnicity, size of hometown, education level of father and mother, applying for financial aid, ACT score, and High School GPA. Refer to Appendix A for a copy of this questionnaire.

Decision Making Paradigms. Each subject received a total of twelve paradigms, paradigms were counterbalanced within packet group. Paradigms used were as followed: One decision-making paradigm of loss (Packet B) or gain (Packet A) with low probability versus certainty in a gamble of money (Kahneman & Tversky, 1979); b) two content adapted paradigms (class extra credit and HIV), that were assumed to be more salient to college age participants; c) one decision-making paradigm of loss or gain with high probability versus certainty in a gamble of money (Kahneman & Tversky, 1979); d) two content adapted paradigms (grade on an examination and contraceptive effectiveness) that were assumed to be more salient to college age subjects; e) Tversky and Shafir's (1992)

paradigm of choosing to buy now or delaying to buy, in situations of low conflict (two choices, Packet A) or high conflict (three choices, Packet B); and f) four decision-making paradigms of accepting or rejecting an enriched or impoverished option (Shafir, 1993). For the four Shafir (1993) paradigms, content areas were granting/not granting parent custody of a child, enrolling/not enrolling in a required college course, choose/give-up a food health choice, and prefer/give-up a gamble with money. The latter paradigm, a gamble with money, was administered in both positive and negative frames to all subjects regardless of group assignment.

Attributional Style Questionnaire. The attributional style questionnaire (ASQ, Peterson et. al., 1982) contains 48 questions and is designed to measure an individual's explanatory style for 12 hypothetical events. Half of the situations are related to interpersonal relationships and half are related to achievement; additionally, half of the situations have negative outcomes and half have positive outcomes. The ASQ can be coded to give an overall score of attributional style, a high score represents an attributional style high in internality, globality, and stability (range: 36 to 252). The ASQ can also be scored to give composite negative and composite positive scores representing separate explanatory styles for negative and positive events (range: 18-126). Furthermore, scores for each dimension: locus, stability, and globality can be obtained (range: 6-42). Peterson et. al. (1982) report the internal consistencies of the Locus, Stability, and Globality Scales to range from .44 to .69. Reported internal consistency for composite negative and positive score are .72 and .75, respectively. Research has found that an individual's attributional style is relatively stable over time (Peterson, Semmel, von Baeyer, Abramson, Metalsky, & Seligman, 1982).

Life Orientation Test-Revised. The revised LOT-R (Scheier, Carver, & Bridges, 1994) is a 10-item scale designed to measure dispositional optimism. Participants are asked to indicate agreement on a 5-point Likert-like scale. Sample items are "In uncertain times, I usually expect the best." and "If something can go wrong for me, it will." Reported Cronbach's alpha for the scale is .78, and test-retest correlations range from .56 to .79 in time intervals spanning 4 months to 28 months. Evidence of convergent and discriminate validity has been compiled with respect to a number of other personality variables (see Scheier, Carver, & Bridges, 1994).

Procedure

Subjects were given alternate forms of the packet as they entered the testing room. Consent forms were signed. Standardized instructions were read, and subjects were asked to complete all questions. The students were allowed to leave the testing room upon completion of the questionnaires.

Results

Chi square and t-test analyses were used to assess whether the groups receiving Packet A or B differed on demographic variables. No significant differences were found for gender, university classification, age, ethnicity, size of hometown, father's education, mother's education, applying for financial aid, ACT score, or High School GPA.

Mean scores and standard deviations were calculated for the LOT-R and ASQ subscores for participants using Packet A or B. Refer to Table 2 for these data.

Insert Table 2 About Here

T-tests were used to assess whether the groups receiving Packet A or B differed on the LOT-R score and ASQ subscores. A significant difference was found only for the ASQ stable negative subscore ($t = -2.83, p < .01$).

For all ASQ variables, two-tail t-tests were used to assess differences between mean scores for participants who chose either the more risky or less risky options. For the gain frame of low probability paradigms, of the twenty-four possible tests, only one significant difference was found. A significant difference was found for the Kahneman and Tversky paradigm of gambling with gaining money for the ASQ internal positive subscore ($t = 2.27, p < .05, N = 90$; risky: $M = 31.37, SD = 5.97$; less risky: $M = 33.84, SD = 3.64$). Participants who chose the less risky option had higher ASQ internal positive subscores. For the loss frame of low probability paradigms, of the twenty-four possible tests, three significant differences were found. Significant differences were found for the adapted paradigm of gambling with losing points in a class for the ASQ subscores of: a) stable negative ($t = 2.26, p < .05, N = 92$; risky: $M = 22.94, SD = 5.97$; less risky = $33.84, SD = 3.64$); b) global negative ($t = 3.32, p < .01, N = 92$; risky: $M = 19.00, SD = 5.05$; less risky: $M = 24.17, SD = 5.77$); and c) composite negative ($t = -2.19, p < .05, N = 92$; risky: $M = 70.00, SD = 9.43$; less risky: $M = 76.01, SD = 10.06$). Participants who chose the less risky option had higher ASQ stable negative scores, higher global negative scores, and higher composite negative scores. For the gain frame of high probability, of the twenty-four possible tests, one significant difference was found. A significant difference was found for the adapted paradigm of gambling to raise a grade in a class for the ASQ stable positive subscore ($t = -2.54, p < .05, N = 90$; risky: $M = 33.76, SD = 4.38$; less risky: $31.38, SD = 4.39$).

Participants who chose the less risky option had lower ASQ stable positive scores. For the loss frame of high probability, of the twenty-four possible tests, one significant difference was found. A significant difference was found for the adapted paradigm of gambling to lose contraceptive effectiveness for the ASQ global negative subscore ($t = 2.27, p < .05$; risky: $M = 21.70, SD = 6.00$; less risky: $M = 24.48, SD = 5.73$).

Participants who chose the less risky option had higher global negative scores.

Hypothesis 1a predicted the optimistic explanatory style mean score would differ for those participants who chose a more risky option as compared to those who chose a less risky option. Given the few significant differences found, this hypothesis was not supported. However, a pattern emerges regarding pessimistic explanatory style: participants who choose the less risky option in the content adapted loss paradigms had higher ASQ negative scores.

One tail t-tests were used to assess if there were LOT-R mean score differences between participants who chose the more risky or less risky options on low or high probability paradigms. No significant differences were found on the gain or loss frame for the low probability paradigms or on the gain frame for the high probability paradigm. Of the three possible loss paradigms in high-probability situations, one significant difference was found. A significant difference was found for the adapted paradigm of gambling to lose contraceptive effectiveness ($t = -1.84, p < .05, N = 94$; risky: $M = 17.05, SD = 3.02$; less risky: $M = 15.54, SD = 4.49$). Participants choosing the more risky option had a higher level of dispositional optimism. Thus, hypothesis 1b, which predicted that dispositional optimism would be higher for those choosing more risky options was supported only for a content-adapted gain in high probability paradigm.

Within packet-group participants were divided into quartiles on LOT-R and ASQ subscores. For purposes of these analyses, only the upper and lower quartiles analyses were examined. Pearson chi-square analyses were used to assess differences between optimists and pessimists on the disjunction paradigms. No significant differences were found in situations of low conflict; only one of nine differences was found to be significant in situations of high conflict. Of those participants who opted to delay a decision, a significantly greater percentage (77%) exhibited a pessimistic internal attributional style for negative events as compared to 23% exhibiting an optimistic style ($X^2 = 5.06, p < .05, N = 43$). Hypothesis 2a predicted that a larger percentage of pessimists (as compared to optimists) would choose to delay in situations of high or low conflict. Given only one of 18 comparisons yielded significance, this hypothesis was not supported. However, the one significant finding was in the predicted direction - that pessimists would opt to delay.

One-tail t-tests were used to assess if the LOT-R and ASQ positive subscores were higher and ASQ negative subscores lower for those choosing to delay buying a product in situations of high or low conflict as compared to those choosing not to delay. No significant differences in LOT-R scores or ASQ scores were found for low conflict paradigms. No significant differences were found for the LOT-R score for the high conflict paradigm. Of the eight possible tests examining ASQ subscore differences for those choosing to buy or delay buying in a paradigm of high conflict, one significant difference was found, that for the ASQ internal negative ($t = 1.94, p < .05, N = 92$). Those participants choosing to delay had a higher level of internal attribution for negative events ($M = 28.05, SD = 5.56$) as compared to those choosing to buy ($M = 25.54, SD$

= 5.10). Hypothesis 2b predicted that those choosing to delay would have lower dispositional optimism and a lower optimistic attributional style as compared to those choosing to buy. Given only one of 18 comparisons yielded significance, this hypothesis was not supported. However, the one significant finding was consistent with the prediction: rather than a low optimism score, pessimists opted to delay.

One-tail t-tests were used to assess if the LOT-R score and ASQ positive subscores were higher and ASQ negative subscores lower for those participants choosing enriched options versus impoverished options in situations of acceptance, and rejecting enriched options versus impoverished options in situations of rejection. For the acceptance frames, of four possible tests with the LOT-R, two significant differences were found. The LOT-R score was significantly higher for those choosing the enriched option on a paradigm of a gamble with money ($t = 2.17, p < .05, N = 184$; enriched: $M = 15.95, SD = 3.96$; impoverished: $M = 14.26, SD = 3.23$) and on a paradigm with health choice in food ($t = 1.71, p < .05, N = 90$; enriched: $M = 15.62, SD = 4.57$; impoverished: $M = 14.06, SD = 3.23$).

For the acceptance frames, of the 32 possible tests with ASQ subscores six significant differences were found. For the paradigm of granting a parent child custody, compared to those who chose the impoverished option, participants who chose the enriched option had a higher mean ASQ stable positive subscore ($t = -2.15, p < .05; N = 89$; enriched: $M = 33.34, SD = 4.06$, impoverished: $M = 31.31, SD = 4.86$) and composite positive score ($t = -1.81, p < .05$; enriched: $M = 98.62, SD = 11.17$, impoverished: $M = 94.36, SD = 10.95$). For the paradigm with health choice in food, four significant differences were found. Compared to those choosing the impoverished option

participants choosing the enriched option had a higher ASQ internal score ($t = 1.78$, $p < .05$; $N = 89$; enriched: $M = 26.95$, $SD = 5.90$; impoverished: $M = 24.69$, $SD = 5.50$); a higher ASQ stable negative score ($t = 2.43$, $p < .05$, $N = 89$; enriched = $M = 24.37$, $SD = 3.81$; impoverished: 22.28 , $SD = 4.04$), a higher ASQ composite negative score ($t = 2.32$, $p < .05$; $N = 89$; enriched: $M = 74.33$, $SD = 9.99$; impoverished: $M = 69.13$, $SD = 10.51$), and a higher internal positive score ($t = 2.15$, $p < .05$, $N = 89$; enriched: 33.28 , $SD = 5.20$, impoverished: $M = 30.84$, $SD = 5.00$).

Findings on the acceptance frames do in part support Hypothesis 3a. Those choosing enriched options have higher mean dispositional optimism and higher optimistic explanatory style than those selecting impoverished options.

For the rejection frames, of the four possible tests with the LOT, one significant difference was found. For Shafir's paradigm of rejecting an enriched or impoverished gamble with money, compared to those rejecting an impoverished option, participants rejecting the enriched option had a higher mean LOT-R score ($t = -1.97$, $p < .05$; $N = 183$; enriched: $M = 16.11$, $SD = 3.82$, impoverished: $M = 14.88$, $SD = 4.50$). For the rejection frames, of the 32 possible tests with ASQ subscores, three significant differences were found. In a paradigm of denying a parent custody of a child, compared to those rejecting an impoverished option, participants rejecting an enriched option had higher ASQ global negative scores ($t = -1.92$, $p < .05$; enriched: $M = 24.29$, $SD = 5.78$; impoverished: $M = 21.88$, $SD = 5.99$). In a paradigm of scholastic planning, compared to those rejecting the enriched option participants rejecting the impoverished option had higher ASQ global negative scores ($t = 1.91$, $p < .05$, $N = 91$; enriched: $M = 21.82$, $D = 6.33$; impoverished: $M = 24.25$, $SD = 5.60$) and a lower internal positive score ($t = -2.03$, $p < .05$) (enriched:

$M = 34.69$, $SD = 4.96$; impoverished: $M = 32.73$, $SD = 4.15$). In general, for the negative frames, hypothesis 3a was not supported.

Pearson Product Moment correlations were used to examine relationships between the LOT-R and ASQ subscores. The LOT-R was not significantly correlated with any ASQ subscores for negative events. In contrast, it was positively correlated with all ASQ subscores for positive events: internal positive, stable positive, global positive, and composite positive. Refer to Table 3 for a summary of these correlations.

Insert Table 3 About Here

Discussion

The major focus of this study was to determine whether dispositional optimism or optimistic attributional style influenced decision making patterns. Based on the literature, predictions were made regarding whether these variables would discriminate between individuals who made such errors and those who did not.

Kahneman and Tversky's (1979) model of decision-making demonstrates that in situations of low probability (e.g., .1% versus 100%) subjects are more risk seeking in gain situations and risk avoidant in loss situations. In situations of high probability (e.g., 50% versus 100%), subjects will take risks when they are facing a sure loss situation and avoid risks when facing a sure gain situation. Given the data relating both dispositional optimism and optimistic attributional style and deciding to engage in particular behaviors (e.g., health promoting behavior) and the contemporary assumption that decision making

proceeds risk-taking (Beyth-Marom et. al., 1989), it was predicted that these two variables would discriminate participant's decisions on Kahneman and Tversky's paradigms of gain and loss in situations of low and high probability.

Hypothesis 1a predicted optimistic attributional style mean score differences between those subjects who chose the more risky option and those who choose the less risky option; the direction of the difference was not predicted. Given the low number of significant findings, the hypothesis was generally unsupported. However, examining the significant tests does reveal some interesting patterns.

Five of the six significant findings documented to a pattern that people with an optimistic attributional style take less risks. This pattern is consistent with Pichler's study which also found that in situations of loss in low probability that an optimistic attributional style is correlated with avoiding risk. This is not consistent with dispositional optimism literature which has found that optimists seek out more, not less, risk (Goodman et. al., 1992). One possible explanation for this is that an optimistic attributional style is different than dispositional optimism.

Five of the six significant findings were for adapted paradigms. Such a finding is consistent with Green et. al.'s (1996) finding that decision making patterns are significantly different for content adapted paradigms as compared to the original paradigms, when those content adapted paradigms are assumed to be more salient to participants. One possible explanation for this finding is that individual differences such as one's attributional style play a more influential role in situations with greater salience than in more neutral situations.

Another interesting pattern was observed in results for the gain/loss paradigms. For gain paradigms, significant results were found only for the positive ASQ subscores. In contrast, for the loss paradigms, significant results were found only for the negative ASQ subscores. This is not surprising that loss events were associated with negative attributional scores and gain events were associated with positive attributional scores. A loss event; a gain frame is a positive event. It is possible that a negative or positive event may actually prime the respective attributional style. Thus, making the style more salient and influential in decision making for such events. Future research would be needed to explore this possibility.

Hypothesis 1b predicted higher dispositional optimism for those participants who choose the more risky option as compared to those who choose the less risky option. In examining decision-making in the same gain and loss paradigms examined for the ASQ scores, significant LOT-R mean score differences were found for only one paradigm: an adapted paradigm of a high probability loss decision concerning contraceptive. Participants choosing the more risky option had higher levels of optimism. Interestingly, the only finding was a paradigm of contraceptive choice. It is noted that Goodman (1992) found optimists take more risk in contraceptive choice.

The present study demonstrated relationships between only positive (not negative) ASQ subscores and the LOT-R. Given such relationships, it is not surprising that LOT-R gain/loss findings were not consistent with parallel ASQ findings. For the ASQ most of the findings for these paradigms were for the negative subscores. Thus, significant findings would not be expected for the LOT-R and negative events and negative subscores.

It is noted that in paradigms of gain or loss in situations of high or low probability, a greater number of tests were significant for attributional style than dispositional optimism. This may be a function of three possible factors. One, attributional style may inherently be more sensitive due to the subcomponents of the test (i.e., eight subscores as opposed to one sum total score). Two, attributional style may be more influential in decision making than overall optimism. Three, the nature of the ASQ requires responding to specific situations produced by the participant (as opposed to responding to generalized questions as with the LOT-R). This may produce a more personalized and salient measure of optimism/pessimism.

According to classic models of decision-making, the introduction of more options should not result in people choosing a previously undesirable option. However, Kahneman and Tversky have demonstrated that, in situations of high conflict, subjects will choose a previously unpreferred option of delaying to buy. Given that Goodman and colleagues (1992) found that dispositional optimism was related to seeking out more information in at-risk adolescent females, it was predicted that optimism, both dispositional and attributional style, would be related to Kahneman and Tversky's paradigm of choosing to buy or delay buying in situations of high and low conflict.

Analyses completed compared LOT-R and ASQ mean scores for the entire sample as well as compared paradigm responses for the highest and lowest LOT and ASQ quartile groups. No major differences were found using the quartiles versus the entire sample. Thus, discussion to follow generally refers to both sets of results.

LOT-R scores did not discriminate delaying choices. Furthermore, there was only one significant finding for the ASQ. In situations of high conflict, those choosing to delay

had a higher ASQ internal negative score. In examining the quartile split, it is noted that of those choosing to delay, 80% were in the pessimist ASQ group.

It is important to focus upon the fact that the one significant finding was for the situation of high conflict. Shafir designed these delayed choice paradigms to demonstrate that decision making becomes contrary in situations of high conflict. Thus, in retrospect, predictions should have been made regarding only nine analyses rather than 18, the LOT-R score and the eight ASQ subscores differences in the paradigm of high conflict.

Nevertheless, with only one significant finding it is difficult to explain these results. There are four possible explanations for why only the ASQ internal score was found significant. One, some people believe that in a situation of buying or delaying, that they have control; they feel they can change this high conflict by becoming more active information seekers. In situations of high conflict, such people more often choose to delay feeling that they can gain more control by seeking out more information. Two, a person with a higher negative internal attributional style may view more options as simply not good enough, so they need to seek out more information in hopes of seeking something better. Three, while less clear, this finding may be related to research demonstrating that depressed people have a more realistic interpretation of the environment (Alloy & Abramson, 1979) thus, such individuals seek out more information in light of considering all the options realistically. Four, as little variance was demonstrated in the sample for the ASQ and LOT-R, these measures were not good tests of the hypothesis.

Given the power of a person's cognitive style, dispositional optimism and attributional style may work as a frame. For individuals making decisions in situations of

acceptance, it was predicted that dispositional optimism and optimistic attributional style would be positively correlated with choosing an enriched option; in situations of rejection, it was predicated that these variables would be negatively correlated with rejecting the impoverished option.

With only nine significant findings out of 64 tests with the ASQ these hypotheses were generally not supported. Examination of significant versus non-significant tests did not reveal any clear patterns. Of the six significant tests within the acceptance paradigms, half of the findings were for negative ASQ scales and the other half for positive ASQ scale. Similarly for the three significant tests in the rejection paradigm analyses, there was a split between significance for negative or positive events. It is noted that one paradigm did produce four significant findings, a paradigm targeting a food health choice. However, examination of the significant tests still did not reveal a clear pattern of positive or negative events attributional style.

Unlike paradigms designed to test the assumptions of Prospect Theory, these paradigms designed to test reason-based theory lack basis for predictions of risk-taking. Reason-based theory may be less able to predict risk-taking behaviors. Perhaps this is the reason no patterns of decision-making related to ASQ were found.

Examination of LOT-R mean differences showed partial support in the acceptance frame. Of four possible tests, two were significant: one paradigm dealing with a gamble of money and another dealing with a health food choice. In both paradigms the enriched option was associated with a higher level of dispositional optimism. Interestingly, examination of the four rejection frame paradigms showed a contrary pattern. Participants rejection paradigms, the one significant tests showed that those rejecting the

enriched option had a higher level of mean dispositional optimism. For only one of these paradigms, a gamble of money, was the difference significant. This was one of the two paradigms for which significance was found for the acceptance frames. Thus, it would appear that framing and dispositional optimism play a crucial interaction in influencing decisions. Framing of a problem may serve to highlight certain types of information in the environment. When presented with a positive frame, optimists will emphasize positive attributes of the enriched option and, thus, choose the impoverished option. In turn, a negative frame would prompt optimists to emphasize the negative aspects of the enriched option thus leading to rejection of the previously chosen option. A similar but alternative explanation is that pessimism maybe a self-defeating cognitive style which

Due to the similar behavioral foci and parallel findings on psychological and physical well-being, recent literature assumes dispositional optimism/pessimism and attributional style are related constructs. Optimism is equated with a tendency to attribute negative events to causes that are unstable, specific, and external. Pessimism is equated with a tendency to attribute negative outcomes to causes that are stable, global, and internal (Scheier & Carver, 1993). Given these assumptions and observations, it was hypothesized that the LOT-R and ASQ would be positively correlated. Analyses revealed significant positive correlations between the LOT-R and all ASQ positive subscores. No significant correlations were found between the LOT-R and any of the ASQ negative subscores. Thus, dispositional optimism was correlated with attributional style for positive events but not negative events.

Results help to confirm the relation between these two measures but are inconsistent with current use of the constructs as synonymous and interchangeable.

Researchers (Seligman, 1992; Schier & Carver, 1992) have stated that optimism-pessimism should be associated with the negative and positive scales of the ASQ. If the LOT-R is truly a measure of optimism and pessimism then optimism/pessimism is only associated with attributional style for positive events. An alternative theory (Marshall et. al., 1992) assumes that optimism and pessimism are two separate dimensions rather than two ends of a continuum. Given this theory, the assumption could be made that the LOT-R only measures optimism not pessimism. The present study's findings are consistent with existing literature hypothesizing that dispositional optimism and attributional style are related. However, findings show that these two constructs may have a different relation than hypothesized and demonstrate that the theory of optimism and pessimism as a single construct needs to be reevaluated.

Interpretation of results in the present study must be viewed in light of four limitations. First, there was an unexpected association between group assignment and mean score on the ASQ stable negative subscore. There are two possible explanations for this finding: a) assignment to a group did not result in complete randomization of the sample, b) the paradigms, LOT-R, and ASQ were not counterbalanced and the ASQ always followed the paradigms. The group which had the lower negative score was the group which received the negative frames of the paradigms. Thus, the persistent exposure to hypothetical negative situations may have temporarily influenced the cognitive style of the subject, persuading them to think in a more negative fashion.

Second, this population was relatively homogenous on a number of the independent variables. Such homogeneity was evident in the analyses of quartile splits where no differences were found between quartile split analyses and the whole sample.

This lack of variance may help to explain the low number of significant findings. It is possible that the LOT-R and ASQ measures are simply not sensitive enough to predict decision making patterns. Perhaps, dispositional optimism and attributional style only become predictive of decision making in situations of extreme optimism or pessimism.

A third limitation to consider is the dichotomous nature of the decision-making paradigms. The paradigms may not be sufficiently sensitive to reflect complex real-life decision-making. This model does however, mirror contemporary microanalysis of decision-making.

Fourth, results should be considered in light of findings that the LOT-R and ASQ positive subscores are highly correlated but not for ASQ negative subscores. One would not expect parallel results for the LOT-R and the ASQ negative subscores. Conversely, one would expect that when significant findings are demonstrated for the LOT-R similar findings would be found for the ASQ positive subscores.

Further examination into the relationship of dispositional optimism and attributional style seems necessary in light of the results. Given evidence linking these two constructs to real life decisions, coping style, and emotional adjustment, studies exploring the unique influence of each of these on decision-making would be of interest. Perhaps use of a decision-making model that is more sensitive to different decision-making styles can help to further explain the patterns revealed in this study.

Further investigation into the possible mediating/moderating effects of the ASQ and LOT-R variables is needed and may help to explain the parallel findings of these two measures to other variables. It may be helpful to replicate this part of the study, and include measure of self-efficacy, hope, and depression. Repeatedly, these three

constructs have been shown to have high correlations or parallel findings with optimism and attributional style. A study examining all five constructs time may help to interpret the relevant preexisting literature.

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Table 1

Summary of Seligman's Optimistic and Pessimistic Attributional Styles.

	Stability	Globality	Locus of Control
Optimistic:			
Positive Events	Permanent	Global	Internal
Negative Events	Transient	Specific	External
Pessimistic:			
Positive Events	Transient	Specific	External
Negative Events	Permanent	Global	Internal

Table 2

Means and Standard Deviations by Group for Life Orientation Test-Revised (LOT-R) and Attributional Style Questionnaire (ASQ) subscores

	Group			
	Packet A		Packet B	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
LOT-R	15.07	4.19	16.18	3.99
ASQ				
<u>Negative Subscores</u>				
Internal	26.13	5.83	26.11	5.29
Stable *	23.62	4.00	25.59	5.27
Global	22.70	6.28	23.27	5.96
Composite	72.46	10.43	74.97	10.17
<u>Positive Subscores</u>				
Internal	32.41	5.24	33.32	4.84
Stable	32.39	4.51	33.48	4.53
Global	31.68	5.23	31.41	5.06
Composite	96.48	11.21	98.21	11.99

* $p < .05$

Table 3

Correlations for Life Orientation Test-Revised (LOT-R) and Attributional Style Questionnaire.

ASQ Subscore	LOT-R
Negative Subscores	
Internal	-0.0341
Stable	0.0174
Global	0.1096
Composite	-0.0750
Positive Subscores	
Internal	0.2330 **
Stable	0.2763 ***
Global	0.1559 *
Composite	0.2782 ***

* $p < .05$
 ** $p < .01$
 *** $p < .001$

VITA

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Master of Science

Thesis: STRUCTURAL INFLUENCES IN DECISION MAKING PROCESSES:
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OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
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IRB#: AS-96-006

Proposal Title: STRUCTURAL INFLUENCES IN THE DECISION MAKING
PROCESS: THE ROLE OF EXPLANATORY STYLE AND DISPOSITIONAL
OPTIMISM

Principal Investigator(s): Vicki Green, Benjamin H.K. Balderson

Reviewed and Processed as: Full Board

Approval Status Recommended by Reviewer(s): Approved

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Date: October 30, 1995