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UNDERSTANDING STRUCTURE:
AN APPROACH/AVOIDANCE FRAMEWORK

A DISSERTATION APPROVED FOR THE
DEPARTMENT OF PSYCHOLOGY

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Table of Contents

List of Tables vi
List of Figures vii
Abstract viii
Introduction 1
Study I 12
    Method 13
    Results 15
    Discussion 19
Study II 23
    Method 24
    Results 27
    Discussion 37
Study III 44
    Method 45
    Results 46
    Discussion 48
Study IV 50
    Method 52
    Results 54
    Discussion 57
General Discussion 59
References 72
Tables 76
Figures 83

List of Tables

Table 1: Correlations and Descriptives for Study1Primary Variables 76

Table 2: Factor Loadings from Study I 77

Table 3: Means and Standard Deviations for PNS Factors by Motivational Type 78

Table 4: Correlations and Descriptives for Study 2 Variables 79

Table 5: Beta Values for Regression Utilizing PNS Factors to Predict Study II Outcome Variables 80

Table 6: Approach and Avoidance Differences across Regression Equations in Proposed Mediational Model 81

Table 7: Approach and Avoidance Differences across Regression Equations in Revised Mediational Model 82

List of Figures

Figure 1: The Quadripolar Model of Need Achievement. 83

Figure 2: Cluster analysis of the four quadrants proposed by the Quadripolar Model. 84

Figure 3: Boxplot illustrating PNS Factor 1 (Desire for Structure) mean scores by cluster. 85

Figure 4: Boxplot illustrating PNS Factor 2 (Response to Lack of Structure) mean scores by cluster. 86

Abstract

The current project was designed to present an in-depth exploration of the two Personal Need for Structure factors, utilizing the quadripolar model of approach and avoidance motivation to present a coherent conceptualization of attitudes and behaviors related to the factors. Specifically, we proposed that the DFS factor would be related to overstriving (high approach/high avoidance) while the RLS factor would be related to failure-avoidance (low approach/high avoidance). We conducted a series of four studies designed to examine our hypotheses. Results demonstrated a consistent relationship between RLS and failure-avoidance, as proposed. However, results for the DFS factor were less straightforward. Implications of the findings for future research utilizing the Personal Need for Structure scale are discussed.

Understanding Structure: An Approach/Avoidance Framework

Research in the area of cognitive style began following the conclusion of World War II, prompted by an interest in exploring individual differences that may have contributed to the atrocities committed during the conflict. Specifically, psychologists began to examine the various ways in which individuals differ in their tendencies to stereotype as well as their susceptibility to be influenced by propaganda. Researchers discovered that people have different ways of organizing and integrating information, and that these variations can influence a multitude of behaviors.

One of the first psychologists to discuss individual differences in cognitive style was Adorno and colleagues (1950). Although their *Authoritarian Personality* construct was highly politically motivated, its emphasis on rigid, black-and-white thinking represented an important starting point for the development of later cognitive style measures. Following this influential work, a multitude of other dimensions have been proposed and assessed. An example of one such construct is *Dogmatism*, which was developed to capture the extent to which a person is willing to process, evaluate, and utilize new information (Rokeach, 1960). Drawing upon this foundation, the dimension of *Uncertainty Orientation* was created to address differences in the way individuals respond to uncertainty in their environment (Sorrentino & Short, 1986). A more modern construct that attempts to focus on the structural components underlying cognitive style is *Cognitive Complexity*. This construct includes both a structural component (the complexity of cognitive dimensions) as well as a content dimension (the

relationships between various objects within a given dimension; Streufert & Streufert, 1978).

One modern dimension of cognitive style is *need for structure*, which is defined as individual differences in the complexity of cognitive structures. This construct captures the extent to which people prefer straightforward, distinctive, well-bounded structures, as opposed to structures that are multifaceted, integrated, and complex. In addition, the need for structure construct addresses the desire to maintain and utilize only existing structures rather than integrating new information into an ever-changing system. People who are high in need for structure tend to approach the world with rigid, black-and-white thinking and a strong dependency on their existing cognitive structures. These individuals often shun any information that may prove to be ambiguous or present a challenge to their existing organizational system (Neuberg & Newsom, 1993).

The 12-item Personal Need for Structure Scale (PNS; Neuberg & Newsom, 1993) is often utilized to capture this construct. This scale measures two complimentary factors: the *Desire for Structure (DFS)* and the *Response to Lack of Structure (RLS)*. According to the authors of the scale, the desire for structure factor captures the extent to which individuals seek to establish structure (e.g., "I find that a consistent routine enables me to enjoy my life more"). The second factor, entitled response to lack of structure, measures the manner in which individuals respond to the absence of structure (e.g., "It upsets me to go into a situation without knowing what I can expect from it"). The two factors of the PNS scale are highly correlated (r = .54 to .75; Neuberg & Newsom, 1993), thus,

the scale is typically utilized by collapsing across factors to create a summary PNS score.

While creating aggregate scores from highly correlated subscales is quite common in the psychological literature, this tactic may cause the researcher to overlook interesting and potentially meaningful outcomes. Previous research on Personal Need for Structure and the Big Five personality characteristics, for example, has found that although both conscientiousness and neuroticism are positively related to the overall need for structure scale (r = .25 and .30, respectively), they are each related in different ways. Neuroticism is positively correlated with the RLS factor (r = .32), but not the DFS factor (r = .17, *ns*); while conscientiousness is positively related to DFS (r = .41), but not RLS (r = .09, *ns*; Neuberg & Newsom, 1993). Thus, for highly neurotic individuals, it appears that the motivation to avoid a lack of structure is stronger than the desire to establish structure. In contrast, for highly conscientious individuals, the desire to establish structure appears to be stronger than the response to lack of structure.

In a study conducted by Neuberg and Newsom (1993), a card sort was utilized to assess complexity in a number of domains. In general, individuals high in PNS generated less complicated card sorts, which is consistent with their need for "simple" structure. These findings were further elucidated when the PNS factors were taken into account. An overall PNS effect involving both factors was demonstrated in the non-social domains (e.g., card sorts involving furniture or colors). However, card sorts in the social domains (e.g., card sorts involving the self and the elderly) were significantly negatively correlated only with response to lack of structure. The authors hypothesize that the DFS factor may tap

individuals' tendency to retrieve and utilize previously formed category representations. Because non-social domains readily lend themselves to categorization, both PNS factors were associated with simpler card sorts in these areas. However, social domains are more difficult to categorize. Thus, the authors hypothesize that individuals high in DFS were not able to easily apply a pre-existing structure in this domain and were not inclined to generate a new organizational theme. Individuals high in RLS, however, were more likely to form structures as new information was encountered, imposing structure on previously ambiguous situations. Thus, these individuals were inclined to create structure even in these previously unstructured domains.

Additional research conducted by Cavazos and Campbell (2008)[1] has revealed interesting differences between the DFS and RLS factors. For example, the DFS (but not RLS) factor was related negatively to procrastination and positively to extraversion, conscientiousness, and achievement-oriented and organizational perfectionism. In contrast, the RLS (but not DFS) factor was related negatively to need for cognition, extraversion, and openness to experience, and positively to worry, parental-influence perfectionism, and self-consciousness. Taken together, these results suggest that the Desire for Structure factor may tap relatively positive aspects of structure. Individuals high in DFS display greater conscientiousness, an increased need for achievement, a drive toward organizational perfectionism, and less procrastination; these relationships suggest a pattern of overall "good student" behaviors. In contrast, the Response to Lack of Structure factor may represent negative aspects of structure. Individuals high

[1] Data were collected as part of the referenced study but were not published, as these analyses were not the focus of the primary project.

in RLS display greater worry, neuroticism, and self-consciousness, increased concern for parental expectations, less open-mindedness, and low need for cognition; these relationships suggest an overall pattern of negative, potentially maladaptive behaviors.

An Approach/Avoidance Framework

The previous literature review highlights several specific individual differences that have previously been associated with need for structure. While these differences are important and meaningful, a coherent framework for understanding the factors comprising the Personal Need for Structure scale has yet to be presented. We propose that the Desire for Structure and Response to Lack of Structure factors can be accurately conceptualized utilizing a general distinction between approach and avoidance motivation. Thus, the main purpose of the current project is to present an in-depth exploration of the two Personal Need for Structure factors, utilizing an approach/avoidance motivation framework to present a coherent conceptualization of attitudes and behaviors related to both the Desire for Structure and Response to Lack of Structure factors.

The distinction between approach and avoidance motivation has enjoyed a tremendously long and rich history within the field of psychology. Approach orientation (often conceptualized as the need for achievement) can be defined as a motivation to move toward desirable possibilities, while avoidance orientation (often conceptualized as fear of failure) can be described as a motivation to move away from undesirable possibilities (Elliot & Thrash, 2002). This basic distinction can be seen as a recurring theme, beginning with the ancient Greek philosophers

and spanning multiple centuries to the modern day, and throughout a multitude of disciplines, from philosophy to biology (Elliot, 1999).

According to Atkinson's classical Need Achievement Theory (1957, 1961), achievement behavior is motivated by the basic emotional conflict between the tendency to approach success and the disposition to avoid failure. Atkinson's theory originally conceptualized approach and avoidance as two orthogonal dimensions, resulting in a quadripolar model defined by both need for achievement and fear of failure. This theory allows for four distinct types of motive combinations, including the classic conceptualizations of approach (high need for achievement/low fear of failure) and avoidance (low need for achievement/high fear of failure) motivation, as well as two "hybrid" classifications, comprised of individuals high in both need for achievement *and* fear of failure, as well as individuals low in both motives (Covington & Roberts, 1994; see Figure 1).[2] Subsequent research focusing on the quadripolar model has provided a relatively coherent picture of these four types of motives, especially as related to the area of academic achievement.

Success-Oriented Individuals. Individuals high in need for achievement (approach) and low in fear of failure (avoidance) have been shown to exhibit the most positive overall behavior pattern, potentially due to their relative immunity to the kind of negativity that triggers maladaptive failure-oriented behaviors (such as procrastination, unrealistic perfectionism, etc.; Covington & Roberts, 1994). Research suggests that success-oriented individuals generally display

[2] Although the majority of research in the area of need achievement has abandoned the quadripolar model in favor of a more straightforward bipolar interpretation, some researchers have proposed that treating approach and avoidance as a single continuum oversimplifies the motives and renders interpretation ambiguous (Covington & Roberts, 1994).

personality traits that are considered adaptive and healthy, such as increased self-control, sensitivity to the needs of others, and a tendency to set more realistic learning goals. Further, success-oriented individuals tend to be more outgoing, socially competent, conscientious, and highly tolerant of alternate points of view (Covington & Roberts, 1994). Interestingly, research has demonstrated little to no relationship between the academic test scores of success-oriented individuals and other variables, such as self-estimates of ability. This incompatibility is commonly interpreted as a lack of concern about conventional, extrinsic measures of success (such as test grades) in favor of primarily intrinsic benchmarks of successful learning (Covington & Roberts, 1994).

Overstrivers. Individuals high in both need for success (approach) and fear of failure (avoidance) display a classic approach/avoidance conflict. These individuals share, to varying degrees, the dispositions of both success-oriented and failure-avoiding individuals. For example, overstrivers are typically conscientious, meticulous, and prone to perfectionism, but also suffer from anxiety and unstable self-esteem (Martin, Marsh, & Debus, 2001). As a result, these individuals attempt to defend themselves against failure by succeeding, as any negative outcome serves only to confirm their self-doubts and reinforce their belief that success is tenuous (Martin & Marsh, 2003). Thus, overstrivers are faced with the dilemma of being temporarily reassured by their successes even as they live in fear of their inevitable inability to achieve their self-imposed standards of perfection (Covington & Roberts, 1994).

Although overstrivers typically display adaptive behaviors, particularly in the academic sphere, research has demonstrated that these individuals tend to lack

self-control, are generally intolerant of others, and are plagued with worries about the future. Additionally, overstrivers typically score high on scales designed to tap dispositional anger (Covington & Roberts, 1994). Thus, it appears that "the same fear that drives overstrivers to highly inflexible, rigid, and overly disciplined study also generates resentment and anger toward the self for feeling incompetent, and toward others for making them feel that way" (Covington & Roberts, 1994). Thus, while the overt behavior of overstrivers may be highly adaptive, one should not discount the underlying motive; namely, an intense underlying vulnerability to the threat of potential failure.

Failure-Avoiders. The failure-avoiders are motivated primarily to avoid failure rather than strive for success (high avoidance / low approach). These individuals typically lack confidence, report high levels of anxiety, avoid competition, and are fearful of being exposed as incompetent (Covington & Roberts, 1994). To protect their self-concept, they characteristically engage in pre-emptive strategies to protect themselves from the possibility of negative outcomes. Typically, these protective strategies include maladaptive behaviors such as withdrawing effort, presenting excuses for anticipated future failures, and procrastination (Martin & Marsh, 2003). Ironically, these self-protective mechanisms can actually increase the likelihood of failure. For example, research has demonstrated that the perceived lack of ability (and resulting thoughts of failure) characteristic of failure-avoiders can actually impede the learning process by diverting their attention, resulting in a failure to encode and retrieve information (Covington & Roberts, 1994). Failure-avoiders are further able to protect their self-worth by utilizing manipulative strategies such as defensive

pessimism (setting unreasonably low standards to avoid disappointment) and self-handicapping (generating obstacles that thwart success). These cognitive maneuvers allow failure to be seen as the result of low effort (as opposed to low ability), which is perceived as considerably less damaging to the self-concept (Martin & Marsh, 2003).

Failure-Accepters. Individuals low in both need for achievement and fear of failure can be described as having abandoned attempts to maintain a sense of success through either approach or avoidance behaviors (Covington & Roberts, 1994). These individuals generally appear resigned, passive, and disengaged in the face of challenges (Martin & Marsh, 2003). One prominent theory explaining the apathetic nature of failure-accepters is that these individuals represent unsuccessful failure-avoiders. In other words, failure-accepters may be failure-avoiders who, after being faced with the increasing implausibility of their continued excuses for not meeting expectations, have become resigned to their seemingly inevitable failure (Covington & Roberts, 1994). This resignation can be seen in the consistently low self-ratings of ability obtained by members of this group. Interestingly, failure-accepters do not appear particularly concerned by their self-perceived incompetence; that is, they report lower anxiety, less pride in success, and less shame in failure than the majority of other students. Additionally, previous research has found that these individuals study for exams far less than any of the other groups and utilize ineffectual study habits when they do attempt to prepare (Covington & Roberts, 1994). Thus, a general sense of resignation, helplessness, and ambivalence seem to be the primary characteristics of this group.

Current Project

We propose that the quadripolar model of need achievement can be utilized to present a coherent conceptualization of attitudes and behaviors related to the construct of need for structure. In general, we propose that Personal Need for Structure will be positively related to the two high fear of failure/avoidance dimensions of the quadripolar model. We further predict that the two PNS factors will be related differently to these two dimensions, such that the DFS factor will be related primarily to overstriving (high approach/high avoidance motivation), and the RLS factor will be related to failure-avoidance (low approach/high avoidance motivation).

We propose that, in general, high structure will be associated with the two avoidance, fear-of-failure dimensions of the quadripolar model. Previous research has determined that individuals high in PNS display greater worry, anxiety, fear of making a mistake, and negative affect (i.e., neuroticism) than individuals low in PNS (Neuberg & Newsom, 1993). Additionally, these individuals have been shown to exhibit learned helplessness (Kvimaki, Elovainio, & Nord, 1996) and a primarily external locus of control (Cavazos & Campbell, 2008). These generally negative attitudes and behaviors suggest that highly structured individuals are more likely to adopt avoidance (as opposed to approach) motives.

We predict that the Desire for Structure factor will be predominantly related to attitudes and behaviors that characterize *overstrivers*. Previous research has demonstrated that individuals high in DFS display many of the positive attitude and behavior correlates attributed to members of this motivational group. For example, high DFS has been related to conscientiousness, achievement-

oriented and organizational perfectionism, and less procrastination behaviors (Cavazos & Campbell, 2008), but also to high levels of anxiety and an increased fear of the consequences of making a mistake (Neuberg & Newsom, 1993). Thus, we propose that individuals high in the Desire for Structure factor of Personal Need for Structure are motivated to engage in positive behaviors but do so due to an underlying fear of failure (i.e., an approach/avoidance conflict) - a pattern that overlaps the description of overstrivers presented previously.

Additionally, we propose that the Response to Lack of Structure factor will be related to attitudes and behaviors that characterize *failure-avoiders*. Previous research has demonstrated that individuals high in RLS display many of the personality and behavioral correlates attributed to members of this motivational group, such as higher neuroticism, anxiety, worry, and increased procrastination behaviors (Neuberg & Newsom, 1993; Cavazos & Campbell, 2008). Additionally, both groups have been characterized as being closed-minded, self-conscious, black-and-white thinkers, and are motivated by the fear of making a mistake (Covington & Roberts, 1994; Neuberg & Newsom, 1993). Thus, we propose that individuals high in the Response to Lack of Structure factor of Personal Need for Structure are motivated to engage in negative, self-protective behaviors due to an underlying fear of failure and an absence of approach motivation; a pattern that overlaps the description of failure-avoiders presented previously.

While we acknowledge and include the remaining two groups in our analyses, the current study will focus primarily on the two groups discussed above. In the traditional bipolar approach-avoidance model, success-orientation (high approach/low avoidance) can be conceptualized as the opposite of failure-

avoidance (low approach/high avoidance); thus, predictions concerning the success-oriented group would simply be in the opposite direction from those of the failure-avoidance group (i.e., the proposed positive relationship between RLS and failure-avoidance would be a negative relationship between RLS and success-orientation). Finally, because the failure-accepting group is comprised of amotivational individuals (i.e., low in both approach and avoidance motivation), we have little reason to suspect a strong relationship between this group and dispositional differences in need for structure.

Study I

The primary purpose of Study I was to establish the presence of a relationship between individual differences in Personal Need for Structure and the quadripolar model of approach/avoidance motivation. Specifically, we sought to (1) establish an appropriate proxy with which to measure approach and avoidance motivation; (2) utilize a cluster analysis to identify the presence of the four motivational types proposed by the quadripolar model, and (3) determine the relationship between the two PNS factors and the four motivational types. To achieve these goals, we conducted a survey study consisting of a number of individual difference measures designed to explore our primary hypotheses. Each measure (with the exception of PNS) was chosen because it has been utilized as a measure of approach/avoidance motivation in previous research (Carver, 2001; Heimpel, Elliot, & Wood, 2006). Thus, these measures will contribute to the development of a conceptual foundation on which to base our current analyses.

Based upon previous research, we proposed that desire for structure would be positively associated with the overstriving (high approach/high avoidance)

quadrant of the model, while response to lack of structure would be positively associated with the failure-avoidance (low approach/high avoidance) quadrant of the model.

Method

Participants

A total of 552 undergraduate students participated in this study in exchange for credit toward a course requirement. Due to the anonymous nature of this study, demographic information was not collected from participants.

We then deleted all participants who failed to complete the entire scale(s) for our primary variables (Personal Need for Structure – 8 participants; Behavior Activation/Inhibition Scale - 17 participants; Big Five Inventory – 3 participants; and Positive and Negative Affect Scale – 1 participant). This resulted in a final data set of 523 participants.

Procedure

The study was conducted by administering a survey electronically to students via the Introductory Psychology participant pool. After logging on to the web-based Experiment Management System, participants were asked to indicate informed consent, and were then instructed to complete a series of individual difference measures. The measures were divided into roughly equivalent-sized blocks, and the blocks were presented in random order to prevent potential bias.

Measures

Personal Need for Structure Scale. The Personal Need for Structure Scale (PNS; Neuberg & Newsom, 1993) was included to measure particpants' need for

structure scores. The 12-item PNS scale is comprised of two factors, Desire for Structure (4 items) and Response to Lack of Structure (7 items).[3] Respondents utilize a Likert-type scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*), and items are scored such that higher scores indicate a greater need for structure.

Big Five Inventory. The 44-item Big Five Inventory (BFI; John, Donahue, & Kentle, 1991) was included to measure the basic personality traits of Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism.[4] Respondents utilize a Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) to indicate the extent to which they see themselves as someone who displays the characteristic associated with each item. Separate scores were then calculated for each personality trait.

Positive and Negative Affect Scale. The Positive and Negative Affect Scale (PANAS; Watson, Clark & Tellegen, 1988) was included to assess overall positive and negative affect. The PANAS consists of a list of 20 adjectives (10 positive and 10 negative), and participants are instructed to rate the extent to which they generally feel the given emotion on a 1 (*very slightly or not at all*) to 5 (*extremely*) scale. Separate positive and negative affect scores were then computed for each participant.

Behavioral Activation/Behavioral Inhibition Scale. The Behavioral Activation/Behavioral Inhibition Scale (BAS/BIS; Carver & White, 1994) was included to measure general approach and avoidance temperament. The BIS

[3] Item 5 is typically excluded from analyses due to a known self-presentation bias (Neuberg & Newsom, 1993).

[4] Although we will utilize the entire published scale, we are primarily interested in the extraversion and neuroticism factors, as they have previously been utilized as proxies for approach and avoidance motivation, respectively (Heimpel, Elliot, & Wood, 2006).

consists of a single 7-item scale that measures sensitivity to, and anticipation of, punishment. The BAS consists of three subscales: Drive (the continued pursuit of desired goals – 4 items); Fun-Seeking (a desire to approach potentially rewarding events spontaneously – 4 items); and Reward Responsiveness (positive responses to the anticipation of reward – 5 items). Participants were instructed to respond to each item on a 1 (*strongly agree)* to 4 (*strongly disagree)* Likert scale. Separate BAS and BIS scores were then computed for each participant.

Results

After analyzing the items for missing data (see explanation above), appropriate items were reverse-scored, and composite scale values were created for each variable. The items comprising each measure were checked for adequate internal consistency utilizing Cronbach's alpha (1951), and correlations were computed for the overall data set (see Table 1).

Next, we conducted a principal components analysis (PCA) to determine the basic factor structure underlying the six personality dimensions included in the current study. Previous exploratory and confirmatory factor analytic research has demonstrated that extraversion, positive emotionality, and BAS form a general *approach temperament* factor, while neuroticism, negative temperament, and BIS form a general *avoidance temperament* factor (Elliot & Thrash, 2002), and we expected to replicate these findings in the current study.

Results of the PCA (utilizing varimax rotation) yielded a two factor solution with eigenvalues exceeding unity, which is a common criterion for the retention of components (Stevens, 1996). The first factor was comprised of the three avoidance temperament variables (Neuroticism, PANAS (Negative), and

BIS) and accounted for 41.5% of the variance. The second factor was comprised of the three approach temperament variables (Extraversion, PANAS (Positive), and BAS) and accounted for 24.7% of the variance. All variable loadings exceeded .74 on their primary variable, and none of the secondary loadings exceeded .12 (see Table 2 for the loadings of each factor). Therefore, we can conclude that the current sample replicates previous findings concerning the factor structure underlying our primary temperament variables. Based on these results, then, we will utilize these general factors as a proxy for approach and avoidance motivation throughout the remainder of our studies.

Next, we standardized the approach and avoidance variables and performed a cutoff of ± 1 standard deviation from the mean to define the four motivational types discussed in the quadripolar model.[5] In other words, individuals were designated as high or low on approach and avoidance motivation (utilizing the previously defined factors as proxies) if they scored greater or less than one standard deviation from the mean of the overall factor; the four motivational groups were then defined on the basis of these scores.[6]

Next, the data were examined utilizing a hierarchical cluster analysis. This analysis allows for subsets of similar items to be grouped together by

[5] A disparity exists within the literature regarding the appropriate way to designate the four quadrants of the quadripolar model. For example, Schmalt (2005) has suggested an Achievement Motive Grid that combines elements of the Thematic Apperception Test with a self-report questionnaire, while others utilize proxy measures of approach and avoidance, as discussed previously. Covington and Omelich (1988) put forth a self-report questionnaire designed to measure the four quadrants, but (1) the items are not available in publications; (2) the 36-item scale is broken into nine subscales, with fairly low alphas (.74-.77 for the composite scales); and (3) the scales are utilized in much the same manner as the other proxies, with a median split being applied to the general approach/avoidance measures to define the four quadrants. Given these limitations, we felt it better to utilize well-validated scales that have served as proxies for approach/avoidance motivation in previous research. Rather than utilizing a median split approach, we applied the more stringent ± 1 standard deviation criterion to further enhance the validity of our four groups.

[6] 61 participants met the ± 1 standard deviation criteria for inclusion.

minimizing within-group variation while maximizing between-group variation. To achieve this goal, the cluster analysis creates a series of categories of observations, initially assigning each observation to its own category and finishing with an optimal number of categories, or clusters of observations. For the current study, we performed a hierarchical cluster analysis with average linkage clustering. This type of analysis utilizes the distance between observations, or clusters, to define the presence of groups. Specifically, the average linkage clustering technique utilizes the average distances between all pairs of observations, where members of a pair belong to different groups. This analysis thus provides a statistical examination of the validity of the four distinct motivational categories proposed by the quadripolar model.

Results of the cluster analysis revealed a four-cluster solution of reasonable size, with all participants assigned to a cluster (see Figure 2 for a visual representation of clusters). All variables provided for significant differentiation ($p < .01$ at a minimum) of the four cluster groupings, with a mean distance between observations of 1.73.

The first cluster (24 participants, or 39.34% of the total sample) was characterized by positive values for approach but negative values for avoidance. These participants match the previously discussed criteria for success-orientation.

The second cluster (6 participants, or 9.84% of the total sample) was characterized by negative values for approach and negative values for avoidance. These participants match the previously discussed criteria for failure-accepters.

The third cluster (25 participants, or 40.98% of the total sample) was characterized by negative values for approach but positive values for avoidance. These participants match the previously discussed criteria for failure-avoiders.

The fourth cluster (6 participants, or 9.84% of the total sample) was characterized by positive values for approach and positive values for avoidance. These participants match the previously discussed criteria for overstrivers.

The box plots in Figures 3 and 4 suggest that the average score for the PNS factors may differ across the four clusters. Mean Factor 1 (DFS) scores were highest for individuals in the failure-avoiding and overstriving groups, followed by failure-accepting, with individuals in the success-oriented group scoring the lowest. Mean scores for Factor 2 (RLS) were highest in the failure-avoiding group, followed by the overstriving group, with individuals in the failure-accepting and success-oriented groups scoring lowest (See Table 3 for descriptive statistics for each PNS factor by cluster).

Next, a multiple analysis of variance was conducted in an effort to more formally investigate the relationship between the four clusters of the quadripolar model in relation to the PNS factor scores. The overall MANOVA was significant for both PNS Factor 1 ($F(4, 57) = 268.85$, $p < .001$) and PNS Factor 2 ($F(4, 57) = 258.04$, $p < .001$). The Ryan multiple comparison procedure was then utilized to identify significant differences between the clusters. The mean score for Factor 1 (DFS) was found to be significantly different (i.e., lower) for members of the success-oriented group than members of both the failure-avoiders and the overstrivers. The mean score for Factor 2 (RLS) was found to be significantly different (i.e., lower) for members of the success-oriented group than members of

the overstriver group. Additionally, the Factor 2 mean score was significantly different (i.e., higher) for members of the failure-avoiding group than members of the success-oriented and failure-accepter groups (see Table 3 for group means).

Discussion

The current analysis provides tentative support for our hypotheses. The cluster analysis revealed the presence of four distinct factors, offering support for the quadripolar model. Additionally, the numerical breakdown of participants in each cluster is consistent with the proposed model, in that the two hybrid quadrants contain fewer numbers of participants. In other words, we would expect to find fewer individuals in the overstriving (high approach/high avoidance) and failure-accepting (low approach/low avoidance) groups than the "traditional" success-oriented (high approach/low avoidance) and failure-accepting (low approach/high avoidance) groups; this is precisely what was discovered.

It should be noted, however, that utilizing a ± 1 standard deviation cutoff value decreased our sample size significantly (from 523 to 61 participants). Although we should expect considerably fewer numbers in the high and low ends of the distribution, this decrease in participants poses an obstacle for data analysis. Unfortunately, very few methods for measuring the quadrants currently exist, as the quadripolar model is not commonly used (see Schmalt, 2005 and Covington & Omelich, 1988 for other methods). It should be noted that we obtained significant results from an additional cluster analysis that utilized ± 0.5 standard deviation as the high/low benchmark; however, we elected to retain the more stringent criteria as a decisive test of the presence of the four quadrants within our current data set.

Results of the current analysis suggested that the average score for the PNS factors differed across quadrants. Consistent with our hypotheses, mean desire for structure scores were ordered from highest to lowest based upon the presence of avoidance motivation in the group. In other words, scores were highest in the two avoidance-motivated quadrants (overstrivers and failure-avoiders), lower in the low approach/low avoidance quadrant (failure-accepters), and lowest in the approach-only quadrant (success-oriented). Mean scores between the avoidance quadrants and the approach-only quadrants were significant, suggesting that individuals high in DFS are strongly motivated by avoidance.

Interestingly, mean DFS scores between the two avoidance quadrants were very similar (4.43 for failure-avoiders and 4.58 for overstrivers). We had predicted that high desire for structure would be associated with overstriving (high approach/high avoidance), and while the mean differences were in the proposed direction, this hypothesis was not supported by the current analysis. Thus, the results of the current study demonstrate a significant association between desire for structure and avoidance motivation, but not between the two avoidant subtypes proposed by the quadripolar model.

Results for individuals high in response to lack of structure were similar to those for individuals high in desire for structure. Consistent with our hypotheses, mean scores for response to lack of structure were again ordered such that high scores corresponded with the two avoidance-oriented quadrants (failure-avoiders and overstrivers), while the lowest scores corresponded with the approach-oriented quadrant (success-orientation); mean scores for failure-accepters again

fell in the middle. Results of the MANOVA revealed that mean RLS scores for the failure-avoidant and overstriver groups were significantly higher than that of the success-oriented group. Additionally, mean RLS scores were significantly higher for failure-avoiders than for failure-accepters.

We originally hypothesized that response to lack of structure would be associated with the failure-avoidance quadrant of the model. Again, however, differences in means were not significant between the two avoidance-oriented groups, although mean differences were in the proposed direction (4.62 for failure-avoiders and 4.58 for overstrivers). Thus, the results of the current study demonstrate a significant association between response to lack of structure and avoidance motivation, but not between the two avoidant subtypes proposed by the quadripolar model.

Results of the current study suggest that both desire for structure and response to lack of structure are motivated by avoidance. This finding is in line with our hypotheses and is supported by previous research demonstrating that both high-DFS and high-RLS individuals are prone to anxiety and fear of invalidity (Neuberg & Newsom, 1993). However, contrary to our hypotheses, mean scores for the two PNS factors did not differ significantly across the overstriver and failure-avoider groups. One possibility for this finding is a lack of participants scoring in the "high" and "low" range of approach and avoidance motivation. As was discussed previously, our sample size was reduced to 61 participants when utilizing a ± 1 standard deviation cutoff to define the groups. The overstriver group, for example, was comprised of just six participants. Thus,

it is likely that a larger sample size (and thus, more clearly defined groups) may have yielded the proposed differences between the two PNS factors.

The data suggest that this may be a plausible explanation. Mean differences across groups, although not statistically significant, were in the proposed direction; mean DFS scores were higher for overstrivers than failure-avoiders, and mean RLS scores were higher for failure-avoiders than overstrivers. Additionally, differences in mean scores within each quadrant of the model suggest that high-DFS and high-RLS individuals may possess different motivational profiles. For example, approach-oriented individuals scored higher on desire for structure than response to lack of structure (3.38 versus 2.76, respectively), suggesting that individuals high in DFS may be more prone to approach motivation than individuals high in RLS. Additionally, in line with our hypotheses, failure-avoiders scored higher on response to lack of structure than desire for structure (4.62 versus 4.43, respectively), which suggests that individuals high in RLS may experience less approach motivation than individuals high in DFS. While these are nonsignificant differences in the current data set, it is plausible that a clearer definition of the four motivational types and a larger sample size may reveal additional significant differences between the two PNS factors.

The results of the current study provide an initial, limited indication of the proposed relationship between desire for structure, response to lack of structure, and the four motivational types proposed by the quadripolar model. While the findings from Study I demonstrated a strong link between the two PNS factors and avoidance motivation, differences between the two avoidant-oriented subtypes

were unclear. Therefore, additional research is necessary to further elucidate the nature of these proposed differences. The primary purpose of Study II, therefore, is to examine the ability of the two PNS factors to predict individual differences consistent with the profiles of the four motivational types.

Study II

A large body of research on approach and avoidance motivation has focused on variables pertaining to academic achievement (Elliot & Sheldon, 1997; Martin, Marsh, & Debus, 2001).The primary goal of Study II was to extend this line of research by establishing that the Personal Need for Structure factors predict the use of various strategies commonly discussed in the context of academic achievement. Several of the variables examined in this study have previously been presented as components of the four motive types as outlined in the quadripolar need achievement model (e.g., procrastination, perfectionism, and self-efficacy; Martin & Marsh, 2003). Others, such as the Thought Occurrence Questionnaire, have not previously been examined in relation to our primary variables but appear theoretically relevant. We proposed that each PNS factor would predict the likelihood of engaging in different motivational strategies. Specifically, we hypothesized that the DFS factor would predict attitudes and behaviors that have previously been associated with overstrivers, such as perfectionism and high self-efficacy, while the RLS factor would predict an attitude and behavior pattern characteristic of failure-avoiders, such as fear of invalidity, anxiety, worry, and low self-efficacy.

In addition, we examined a proposed model utilizing the Personal Need for Structure factors as potential mediators of the direct relationship between

approach/avoidance motives and the various outcome measures utilized in this study. Specifically, we proposed that the Desire for Structure factor would significantly mediate the relationship between overstriving (defined as high scores on both approach and avoidance) and outcome variables previously associated with the overstriving group. We further proposed that the Response to Lack of Structure factor would significantly mediate the relationship between failure-avoidance (defined as low scores on approach and high scores on avoidance) and outcome variables previously associated with the failure-avoidance group.

Method

Participants

A total of 552 undergraduate students participated in this study in exchange for credit toward a course requirement. Due to the anonymous nature of this study, demographic information was not collected from participants.

We then deleted all participants who failed to complete the entire scale(s) for our primary variables (Personal Need for Structure – 8 participants; Behavior Activation/Inhibition Scale - 17 participants; Big Five Inventory – 3 participants; and Positive and Negative Affect Scale – 1 participant). This resulted in a final data set of 523 participants.

Procedure

The data for this study were collected concurrently with the data obtained for Study I. The study was administered electronically to students via the Introductory Psychology participant pool. After logging on to the web-based Experiment Management System, participants were asked to indicate informed consent, and were then instructed to complete a series of individual difference

measures. The measures were divided into roughly equivalent-sized blocks, and the blocks were presented in random order to prevent potential bias.

Measures

Personal Need for Structure Scale (Neuberg & Newsom, 1993); discussed previously.

Decisional Procrastination Scale. The five-item decisional procrastination scale (DP; Mann, 1982) was included to assess participants' tendency to procrastinate in making timely decisions. Participants rate their agreement with each of the five items utilizing a Likert-type scale ranging from 1(*strongly disagree*) to 5 (*strongly agree*), and is scored such that higher values indicate greater decisional procrastination.

Self-Efficacy Scale. The self-efficacy scale (SES; Sherer et al., 1982) was utilized as a measure of trait self-efficacy. This 30-item scale taps both general and social self-efficacy. Participants utilize a five-point Likert-type scale ranging from 1 (*disagree* strongly) to 5 (*agree* strongly) to indicate their agreement with each item, and separate general and social self-efficacy scores are computed for each participant.

Multidimensional Perfectionism Scale. The multidimensional perfectionism scale (MPS; Frost, Marten, Lahart, & Rosenblate, 1990) was included to measure trait perfectionism. This 35-item measure taps four[7] dimensions of perfectionism:

[7] Previous research has revealed a discrepancy concerning the number of factors present in this scale. The authors originally intended the scale to contain six distinct factors; however, more recent research has suggested that a four-factor solution is more appropriate (Harvey, Pallant, & Harvey, 2004). Thus, we conducted our own principal components analysis (PCA) to explore the underlying structure of the scale. We utilized two common criteria for determining the number of components: the criterion proposed by Kaiser (1970) to retain eigenvalues greater than 1, and Cattell's (1966) scree test. Both tests revealed that the four factor solution proposed by Harvey, Pallant, and Harvey was more appropriate; thus it was adopted for this study.

Negative Projections (social comparisons and self-doubt about competence); *Achievement Expectations* (high levels of expectations for positive outcomes); *Parental Influences* (parental expectations and reactions); and *Organization* (attitudes towards overall neatness and organization). Respondents utilize a Likert-type scale of 1(*strongly disagree*) to 5 (*strongly agree*) to rate their agreement with each item, and scores on each of the four subscales are calculated separately for each participant.

Personal Fear of Invalidity Scale. The 14-item personal fear of invalidity scale (PFI; Thompson, Naccarato, Parker, & Moskowitz, 1992) was included to assess respondents' levels of fear of invalidity, which can be described as "evaluation apprehension" that is related to the perceived costs of making an inaccurate decision. Each item is rated on a Likert-type scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*), and is scored such that higher values indicate greater fear of invalidity.

State Trait Anxiety Inventory. The state trait anxiety inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) was included to measure both state anxiety (the subjective experience of nervousness, tension, and worry at a given point in time; 20 items) and trait anxiety (a relatively stable tendency to experience situations in a threatening manner; 20 items). Each item is answered on a Likert-type scale ranging from 1 (*not at all*) to 4 (*very much*), and separate state and trait anxiety scores are computed for each participant.

Penn State Worry Questionnaire. The Penn state worry questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkoveck, 1990) was included to measure the tendency to exhibit worry. Participants utilize a five-point Likert-type scale

ranging from 1 (*not at all typical*) to 5 (*very typical*) to indicate how characteristic each of the 16 statements is of them. The composite scale is then scored such that higher values indicate greater worry.

Adult Inventory of Procrastination. The adult inventory of procrastination (AIP; McCown & Johnson, 1989) was included to assess procrastination behaviors resulting from task avoidance. Each of the 15 items are rated on a Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), and the composite scale is scored such that higher values indicate greater procrastination.

Thought Occurrence Questionnaire. The 28-item thought occurrence questionnaire (TOQ; Sarason et al., 1986) was included to measure participants' general tendency to experience intrusive thoughts. The questionnaire is comprised of three factors. Factor 1 (10 items) includes questions designed to tap thoughts of social relations and emotions unrelated to the task. Factor 2 (7 items) is designed to assess thoughts of escape from the task. Finally, Factor 3 (9 items) is designed to assess task-relevant worries. Each of the items are measured on a 1 (never) to 5 (very often) Likert-type scale, and scores for each factor are computed separately for each participant.

Results

After analyzing the items for missing data (see Study I), appropriate items were reverse-scored, and composite scale values were created for each variable. The items comprising each measure were checked for adequate internal consistency utilizing Cronbach's alpha (1951), and correlations were computed for the overall data set (see Table 4).

The data were then analyzed according to the multiple regression methods outlined in Aiken and West (1991). First, we utilized Desire for Structure and Response to Lack of Structure as simultaneous covariates in a multiple regression equation, and we utilized the previously discussed composite scales as simultaneous dependent variables. Second, due to multicollinearity issues, we conducted an independent multiple regression analysis utilizing the total PNS score as a covariate and the same, previously discussed composite scales as simultaneous dependent variables

We hypothesized that DFS (Factor 1) would predict attitudes and behaviors that have previously been associated with overstrivers, such as positive perfectionism (achievement expectations and organization), high self-efficacy, anxiety, worry, and the occurrence of intrusive thoughts. Additionally, we hypothesized that RLS (Factor 2) would predict an attitude and behavior pattern characteristic of failure-avoiders, which includes procrastination, anxiety, worry, negative perfectionism (negative projections and parental influences), low self-efficacy, and the occurrence of intrusive thoughts.

Decisional Procrastination. We utilized the Decisional Procrastination Scale (DP) to capture procrastination in committing to a decision. Regression analyses revealed a significant main effect of Factor 1 ($\beta = -.228$, $p < .001$) and Factor 2 ($\beta = .262$, $p < .001$). The total PNS score was not significant, however; ($\beta = .059$, *ns*).

Self Efficacy. We included the Self-Efficacy Scale (SES) as a measure of self-efficacy. We conducted separate analyses on general and social self-efficacy, as each factor is designed to assess different aspects of self-efficacy.

Results utilizing general self-efficacy as our outcome variable revealed a significant main effect of Factor 1 ($\beta = .339$, $p < .001$), Factor 2 ($\beta = -.393$, $p < .001$), and PNS Total ($\beta = -.090$, $p = .04$).

Analyses utilizing social self-efficacy as our outcome variable revealed a marginally significant main effect of Factor 1 ($\beta = .106$, $p = .06$) and significant main effects of both Factor 2 ($\beta = -.336$, $p < .001$) and PNS Total ($\beta = -.231$, $p < .001$).

Perfectionism. We utilized the Multidimensional Perfectionism Scale (MPS) to capture trait perfectionism across four dimensions (Negative Projections, Achievement Expectations, Parental Influences, and Organization).We conducted separate analyses for each subscale, as each component is designed to tap different aspects of perfectionism.

For the Negative Projections subscale, analyses revealed a significant main effect of both Factor 2 ($\beta = .316$, $p < .001$) and PNS Total ($\beta = .260$, $p < .001$), but not Factor 1 ($\beta = -.045$, *ns*).

For the Achievement Expectations subscale, analyses revealed a significant main effect of both Factor 1 ($\beta = .275$, $p < .001$) and PNS Total ($\beta = .230$, $p < .001$), but not Factor 2 ($\beta = .004$, *ns*).

For the Parental Influences subscale, Factor 1 ($\beta = -.033$, *ns*), Factor 2 ($\beta = .087$, *ns*), and PNS Total ($\beta = .055$, *ns*) all emerged as nonsignificant predictors.

Finally, for the Organization subscale, analyses revealed a main effect of Factor 1 ($\beta = .594$, $p < .001$) and PNS Total ($\beta = .408$, $p < .001$), but not Factor 2 ($\beta = -.086$, *ns*).

Fear of Invalidity. We utilized the Personal Fear of Invalidity Scale (PFI) to capture evaluation apprehension due to the possibility of committing errors. Factor 1 (β = -.130, p = .02), Factor 2 (β = .339, p < .001), and PNS Total (β = .212, p < .001) all emerged as significant predictors of PFI scores.

Anxiety. We utilized the State-Trait Anxiety Inventory (STAI) as a measure of anxiety and internal arousal. We conducted separate analyses for state anxiety and trait anxiety, as each subscale is designed to tap different components of anxiety.

Analyses utilizing state anxiety as our outcome variable revealed significant main effects of Factor 1 (β = -.140, p = .01), Factor 2 (β = .354, p < .001), and PNS Total (β = .217, p < .001).

Analyses utilizing trait anxiety as our outcome variable revealed significant main effects of Factor 1 (β = -.170, p = .001), Factor 2 (β = .446, p < .001), and PNS Total (β = .279, p < .001).

Worry. We utilized the Penn State Worry Questionnaire (PSWQ) to capture the tendency to exhibit worry. Factor 1 was not found to be a significant predictor of worry (β = .033, *ns*), but both Factor 2 (β = .403, p < .001) and PNS total (β = .406, p < .001) emerged as significant predictors.

Procrastination. We utilized the Adult Inventory of Procrastination (AIP) to measure the tendency to engage in task-avoidant procrastination. Results revealed a significant main effect of Factor 1 (β = -.331, p < .001) and PNS Total (β = -.245, p < .001). Factor 2 did not emerge as a significant predictor (β = .030, *ns*).

Intrusive Thoughts. We utilized the Thought Occurrence Questionnaire (TOQ) to measure participants' general tendency to experience intrusive thoughts. We analyzed each of the scale's three factors separately, as they are designed to tap different components of thought intrusion.

The first TOQ scale factor (F1) includes questions designed to tap thoughts of social relations and emotions unrelated to the task. PNS Factor 1 did not emerge as a significant predictor of this component of the TOQ ($\beta = -.058$, *ns*), but PNS Factor 2 ($\beta = .248$, $p < .001$) and PNS Total ($\beta = .185$, $p < .001$) were found to significantly predict TOQ F1 scores.

The second TOQ scale factor (F2) is designed to assess thoughts of escape from the task. Both PNS Factor 1 ($\beta = -.198$, $p < .001$) and Factor 2 ($\beta = .262$, $p < .001$) emerged as significant predictors of this TOQ factor. The PNS Total score did not significantly predict scores on this factor ($\beta = .083$, *ns*).

The third TOQ scale factor (F3) assesses task-relevant worries. PNS Factor 1 did not significantly predict scores on this factor ($\beta = -.054$, *ns*). However, both PNS Factor 2 ($\beta = .282$, $p < .001$) and PNS Total ($\beta = .221$, $p < .001$) emerged as significant predictors.

We next conducted a series of mediational analyses to examine the applicability of our proposed model. Specifically, the Desire for Structure factor was tested as a mediator of the relationship between overstriving and several outcome variables associated with overstriving, while the Response to Lack of Structure factor was examined as a mediator of the relationship between failure-avoidance and several outcome variables associated with failure-avoidance.

According to Baron and Kenny (1986), three conditions must be satisfied to establish mediation effects. First, the predictor variable must be a significant predictor of the proposed mediator variable. Second, the mediator variable must be a significant predictor of the outcome variable(s). Finally, when the relationship between the predictor variable and the mediator variable, as well as the relationship between the mediator variable and the outcome variable, are controlled, the previous significant relationship between the predictor and outcome variable must either be weakened or no longer exist.

To establish the applicability of our mediational model, therefore, we first needed to demonstrate that the predictor variable (approach/avoidance motivation) is a significant predictor of the proposed mediator variable (the PNS factors); this relationship was examined utilizing multivariate regression. The second criterion for mediation, that the mediator variable significantly predicts the outcome variable(s), was determined by the multivariate regression procedure discussed earlier in this study. The third criterion for establishing mediation, then, involved conducting a series of regression equations to determine whether the relationship between the predictor variable (approach/avoidance motivation) and the various outcome variables was diminished when the mediator was included in the model. We hypothesized that the adoption of approach *and* avoidance goals (i.e., overstriving) leads to an increased desire for structure, which then predicts the likelihood of various attitude and behavioral outcomes associated with the overstriving subtype. Similarly, we sought to establish that the adoption of exclusively avoidance goals (i.e., failure-avoidance) leads to an increased response

to lack of structure, which then predicts the likelihood of various attitude and behavioral outcomes associated with the failure-avoiding subtype.

The causal order of the proposed model was determined on the basis of two lines of research. First, a multitude of previous studies have proposed that the approach/avoidance distinction represents a fundamental, affective sensitivity that is present in early childhood and relatively stable throughout the lifespan (Carver, 2001; Elliot & Covington, 2001; Elliot & Thrash, 2002); therefore, it seems logical to propose this variable as the first causal step in the hypothesized model. Second, variations of this model have previously been examined in the achievement motivation literature. For example, Elliot and Sheldon (1997) found that perceived competence mediates the relationship between approach/avoidance motivation and perceptions of personal adjustment and well-being over the course of a semester. Additionally, Heimpel, Elliot, and Wood (2006) determined that self-esteem mediates the relationship between approach/avoidance motivation and the generation of approach/avoidance personal goals. Thus, previous research has demonstrated the utility of the causal order of variables proposed in the current model.

In accordance with the mediational model, we first established a relationship between the predictor variable and the outcome variable(s). For this purpose, we first conducted a multivariate regression utilizing approach and avoidance as covariates predicting the outcome variables from the regression analysis conducted previously. All variables predicted by DFS were also significantly predicted by approach and were thus utilized in the model. All variables predicted by RLS were also predicted by avoidance (see Table 5 for beta

weights), with the exception of Penn State Worry Questionnaire and the Thought Occurrence Questionnaire (Factors 1 and 3). All other variables were utilized in the model.

Next, we sought to establish a relationship between the predictor and mediator variables by conducting two separate regression analyses. The first regression equation utilized overstriving[8] as the predictor variable and DFS as the outcome variable, while the second regression equation utilized avoidance as the predictor variable and RLS as the outcome variable. The regression equation utilizing overstriving to predict DFS was nonsignificant ($\beta = -.294$, *ns*), thus failing to support the proposed mediational model utilizing these variables. However, due to the findings from the regression analysis discussed above, a regression equation utilizing approach alone to predict DFS was conducted and found to be significant ($\beta = -.077$, $p = .04$). Therefore, we conducted the remaining mediational analyses utilizing approach (not overstriving) as our predictor variable for this model. The second regression equation revealed a significant association between the avoidance variable and RLS ($\beta = .334$, $p < .001$), which allowed us to continue with the second model as hypothesized.

The second step toward establishing mediation is to demonstrate that the mediator variable significantly predicts the outcome variable(s). For this purpose, we utilized the significant outcome variables from the multivariate regression analysis discussed previously. For DFS, the significant variables were State-Trait Anxiety Inventory (State and Trait), Thought Occurrence Questionnaire (F2),

[8] The overstriving variable was created by forming a composite of high approach and avoidance (utilizing the proxies discussed in Study I). We defined "high" as ±0.5 std. deviation from the mean of the approach and avoidance variables. This was done to maximize the validity of the variable while retaining as many participants as possible. Fifty-three participants were retained in the current sample.

Personal Fear of Invalidity, Adult Inventory of Procrastination, Decisional Procrastination, General Self-Efficacy, Achievement Expectations, and Organization. For RLS, the significant variables were State-Trait Anxiety Inventory (State and Trait), Personal Fear of Invalidity, Decisional Procrastination, General Self-Efficacy, Social Self-Efficacy, Thought Occurrence (F2) and Negative Projections.[9]

The third step toward establishing mediation involved determining whether the relationship between the predictor variable and the various outcome variables is diminished when the mediator is included in the model. To accomplish this, two multivariate analyses were conducted. The first equation utilized both approach and DFS as simultaneous covariates predicting the outcome variables discussed previously. The second equation utilized both avoidance and RLS as simultaneous covariates predicting the outcome variables discussed previously.

With one exception, including DFS and RLS in the model(s) did not substantially affect the relationship between the predictor and the outcome variables as we had hypothesized. The relationship between avoidance and organization was significantly mediated by RLS. Otherwise, beta values remained largely unchanged when the mediator was added into the model; thus, the proposed mediational model was not supported (see Table 6 for differences in beta weights across both regression equations).

Interestingly, however, including the approach variable in the model controlling for DFS strongly affected the original relationship between DFS and

[9] Although RLS significantly predicted scores on the Penn State Worry Questionnaire and the Thought Occurrence Questionnaire (Factors 1 and 3), we omitted these scales from analysis because avoidance was not found to be a significant predictor of these variables. All other variables were utilized in the model.

several outcome variables utilized in the mediational model; the same was discovered for avoidance and RLS (see Table 7 for differences in beta weights across both regression equations). For the equations utilizing DFS and approach as simultaneous predictors, four of the nine significant relationships between DFS and the outcome variables were reduced to nonsignificance, indicating full mediation (State-Trait Anxiety (State and Trait), Thought Occurrence (F2), and Personal Fear of Invalidity); two other relationships (General Self-Efficacy and Decisional Procrastination) displayed reduced beta weights, suggesting partial mediation. For the equation utilizing RLS and avoidance as simultaneous predictors, all significant relationships between RLS and the outcome variables except two (Social Self-Efficacy and Penn State Worry Questionnaire) were reduced to nonsignificance (and the beta weights for the remaining significant equations were greatly reduced, indicating partial mediation). Thus, it appears that reversing the directionality of the mediational model (i.e., utilizing DFS and RLS as the predictor variables and approach and avoidance as the mediators) is statistically supported.

While this model runs contrary to our theoretical predictions, it is not opposed to our basic premise that the PNS factors are associated with different quadrants of the quadripolar model. That is, the modified mediational model suggests that approach mediates the relationship between DFS and several outcome variables associated with success-orientation, and avoidance mediates the relationship between RLS and several outcome variables associated with failure-avoidance. While the order of mediation is not consistent with our original hypotheses, it appears to be a plausible avenue to explore in future research.

Discussion

We hypothesized that the DFS factor (Factor 1) would predict attitudes and behaviors that have previously been associated with overstrivers, such as positive perfectionism (achievement expectations and organization), high self-efficacy, and anxiety (Martin, Marsh, & Debus, 2001). Results of the regression analysis revealed that DFS was significantly *negatively* related to decisional procrastination, fear of invalidity, both state and trait anxiety, general procrastination, and intrusive thoughts relating to task escape. Desire for structure was found to be significantly *positively* related to general self-efficacy, social self-efficacy, and the achievement expectations and organization subscales of the MPS. Finally, no significant relationship was found between DFS and the negative projections and parental influences subscales of the MPS, worry, intrusive thoughts relating to social relations and task-irrelevant emotions, and intrusive thoughts relating to task-relevant worries.

These findings partially support our hypotheses concerning the relationship between DFS and overstrivers. Because the overstriver is a hybrid classification of high approach and high avoidance, we must consider both motivational types in our analysis. As predicted, high desire for structure was positively associated with many approach-oriented attitudes and behaviors, such as self-efficacy, organization, and achievement expectations (positive perfectionism). Contrary to our hypotheses, however, DFS was *negatively* associated with variables pertaining to avoidance, such as fear of invalidity and anxiety, and was unrelated to others, such as worry and negative projections (negative perfectionism). These omissions are critical to the profile of overstrivers

because it is the underlying anxiety, worry, and fear of failure that propel these individuals into success-oriented attitudes and behaviors (Covington & Roberts, 1994). According to our findings, then, it appears that high-DFS individuals more closely match the profile expected of success-orientation (high approach/low avoidance) than overstriving.

In relation to academic achievement, individuals high in approach motivation, or success-orientation, "are likely to be relatively immune to the kinds of stress that triggers defensive, failure-oriented strategies such as procrastination and unrealistically high goal setting" (Covington & Roberts, 1994). Thus, success-oriented individuals are often seen as the "ideal" type, displaying generally adaptive and healthy behaviors. However, it is important to note that overstrivers may outperform success-oriented individuals on academic achievement. Lacking a fear of failure, individuals high in success-orientation are not necessarily concerned with grades, test scores, or other accepted benchmarks of academic success (Covington & Roberts, 1994). Overstrivers, on the other hand, orient strongly to such measures as they provide an objective indicator of success or failure. Thus, while avoidance strategies may be less than ideal, approach motivation does not necessarily promote high academic achievement.

We hypothesized that the response to lack of structure factor (Factor 2) would predict an attitude and behavior pattern characteristic of failure-avoiders, which includes procrastination, anxiety, worry, and low self-efficacy (Martin & Marsh, 2004). Results of the regression analysis revealed that RLS was significantly *negatively* associated with general and social self-efficacy, and *positively* related to decisional procrastination, the negative projections subscale of

the MPS, fear of invalidity, both state and trait anxiety, worry, intrusive thoughts relating to social relations and task-irrelevant emotions, task escape, and task-relevant worries. Finally, RLS was not significantly related to the achievement expectations, parental influences, and organization subscales of the MPS or general procrastination.

These findings strongly support our hypotheses concerning the relationship between RLS and failure-avoiders. The profile of individuals high in response to lack of structure closely resembles that of individuals high in avoidance motivation. These individuals experience anxiety, worry, and a fear of failure coupled with a lack of self-efficacy. These negative beliefs result in suboptimal behaviors, such as procrastination and the experience of intrusive thoughts. Additional research has demonstrated that failure-avoiders are likely to utilize self-handicapping mechanisms, such as defensive pessimism and learned helplessness, to lessen the impact of failure (Martin & Marsh, 2003).

Results of the current study also reveal that individuals high in RLS have difficulty concentrating on task performance due to a recurrence of intrusive thoughts. Previous research conducted by Covington and Roberts (1994) demonstrated that failure-avoiders often lack attention due to the occurrence of failure-related worries and doubts about one's abilities. Similarly, the current study revealed a strong positive association between RLS and all three factors of the Thought Occurrence Scale (Sarason et al., 1986), which measures participants' general tendency to experience intrusive thoughts. These findings (a) further solidify a link between RLS and failure-avoidance; and (b) support previous

findings concerning the deleterious effect of invasive thoughts during task performance.

It appears, then, that failure-avoiders suffer from a lack of self-efficacy coupled with a fear of failure, which creates significant anxiety and worry when faced with a potential challenge. Unable to fully concentrate on the task at hand due to intrusive thoughts and recurring worry, these individuals seek to minimize the impact of failure by utilizing self-handicapping strategies. The current study suggests that several variables associated with failure-avoidance are also predicted by high response to lack of structure. Thus, the relationships discovered in this study offer further support for our original hypothesis that the RLS factor is associated with failure-avoidance.

Results of the regression analyses revealed that PNS Total was significantly *negatively* associated with general and social self-efficacy and general procrastination. PNS Total was further found to be significantly *positively* related to the negative projections, achievement expectations, and organization subscales of the MPS, fear of invalidity, state and trait anxiety, worry, and intrusive thoughts related to social relations and task-unrelated emotions, and to task-relevant worries. Finally, PNS Total was found to be unrelated to decisional procrastination, the parental influences subscale of the MPS scale, and intrusive thoughts related to task escape.

These findings are especially interesting in light of the known relationship between Personal Need for Structure and several outcome variables utilized in the current study. For example, previous research has demonstrated that PNS is associated with fear of invalidity (Thompson, Naccarato, Parker, & Moskowitz,

1992), anxiety (Neuberg & Newsom, 1993), and worry (Cavazos & Campbell, 2008). However, these findings appear to be driven exclusively by PNS Factor 2 (Response to Lack of Structure), as the *opposite* relationship was found between each of these variables and PNS Factor 1 (Desire for Structure). In fact, with very few exceptions, the two PNS factors predicted each of our outcome variables in opposite directions (see Table 5 for a summary of beta values). These associations reveal that, in general, DFS predicts positive, approach-oriented variables, while RLS predicts negative, avoidance-oriented variables. Further, the total PNS values appear to be largely driven by RLS, as it commonly emerged as the strongest predictor. This finding may suggest a more in-depth evaluation and re-interpretation of the PNS scale and its published relationships; however, such a task is outside the scope of the current project.

The current study also examined a model utilizing the PNS factors as potential mediators of the direct relationship between approach/avoidance motivation and several outcome variables. The model utilizing DFS as the mediator between overstriving and the outcome variables discussed previously was not supported by the data, as the first condition for mediation (a relationship between the predictor variable and the mediator) was not met. However, it is important to note that we utilized a composite variable of high approach/high avoidance to create the overstriving variable for the purposes of regression; this is not an ideal procedure. Thus, it may be that the proposed model failed due to a lack of adequate measurement, and not necessarily a flaw in the theory itself.

We then examined an alternate model utilizing approach as the predictor and DFS as the mediator; we also examined the model utilizing avoidance as the

predictor and RLS as the mediator. Neither model yielded evidence of mediation as the beta values were largely unchanged when controlling for the addition of the mediator to the model. Thus, our original hypotheses concerning the validity of a mediational model were not supported by the data.

Interestingly, however, the reverse model (utilizing the PNS factors as predictors and approach/avoidance as the mediators) yielded several successful mediational relationships. The findings of the current study suggest that approach motivation mediates the relationship between DFS and outcome variables relating to success-orientation, while avoidance motivation mediates the relationship between RLS and outcome variables relating to failure-avoidance. Specifically, approach was found to fully mediate the relationship between DFS and anxiety (both state and trait), fear of invalidity, thought occurrence, and procrastination, and to partially mediate the relationship between DFS and both general self-efficacy and decisional procrastination. Avoidance was found to fully mediate the relationship between RLS and anxiety (both state and trait), thought occurrence, fear of invalidity, general self-efficacy, decisional procrastination, and negative projections, and partially mediate the relationship between RLS and both social self-efficacy and the Penn State Worry Questionnaire.

The implied causal order of the originally proposed mediational model was based upon previous research indicating that approach and avoidance represent fundamental affective sensitivities that are likely present from a young age (Carver, 2001; Elliot & Covington, 2001; Elliot & Thrash, 2002). Additionally, similar models utilizing approach and avoidance motivation as predictor variables have been examined in previous literature (Elliot & Sheldon, 1997; Heimpel,

Elliot, & Wood, 2006). Thus, the proposal that the two PNS factors mediate the relationship between approach/avoidance motivation and our outcome variables seemed highly plausible. However, the current data strongly suggest otherwise. Although the relationships suggested by the alternate model are not contrary to our original hypotheses (i.e., a relationship between the PNS factors and approach/avoidance motivation), the causal order implied by the model is more challenging to substantiate.

Although mediational analyses typically assume a temporal structure, it is important to point out that the current case may be considered an exception. Because we did not examine causation by conducting a direct manipulation of our variables, and because all measures included in the mediational analysis were collected simultaneously, there is no cause to assume the implication of a strict temporal order. Therefore, the variables utilized in the mediational analysis may be viewed as equivalent outcome measures rather than components of a causal model. Because of this, then, it is plausible to accept the mediational model suggested by the data, although it departs from our original hypotheses.

If the assumption that DFS *causes* approach motivation and RLS *causes* avoidance motivation is removed from consideration, the model suggested by the data can be more easily explained. We originally hypothesized that approach and avoidance motivation could be utilized to better elucidate the differences between the two factors of the Personal Need for Structure scale, and the findings of the mediational model offer evidence to support our claim. The results of the mediational analyses suggest that the relationships demonstrated between DFS and RLS and our outcome variables are strongly driven by approach and

avoidance motivation. In other words, the diminished (or eliminated) significance of DFS and RLS in the presence of approach and avoidance suggests that the two motivational types are the underlying components of these relationships, which is in line with our original hypotheses.

Although the current research offers initial support in the exploration of our stated hypotheses, additional research utilizing more objective behavioral indicators is needed to further support our predictions. To further explore the hypothesized relationship between the PNS factors and the quadripolar model, then, Study III examined our primary variables utilizing a goal generation task.

Study III

The primary aim of Study III was to explore the role of Personal Need for Structure in predicting the spontaneous generation of personal goals. Research has demonstrated that personal goals can be classified as either approach (moving toward a positive outcome or state; e.g., "I want to get straight A's this semester") or avoidant (moving away from a negative outcome or state; e.g., "I want to keep from failing any classes this semester"). The tendency to generate approach and avoidance goals has been associated with various individual differences, such as self-esteem (Hiempel, Elliot, & Wood, 2006) and anxiety (Dickson, 2006).

We utilized a previously validated goal generation task (Elliot & Sheldon, 1997; Elliot & Friedman, 2007) to examine the relationship between the PNS factors and the types of goals that are spontaneously generated by participants. Previous research utilizing this goal generation task has determined that individuals high in approach motivation (as measured by extraversion and BAS sensitivity) tend to generate approach goals, while individuals high in avoidance

motivation (as measured by neuroticism and BIS sensitivity) tend to generate avoidance goals (Heimpel, Elliot, & Wood, 2006). Thus, we would expect failure-avoiders to generate primarily avoidant goals and success-oriented individuals to generate primarily approach goals. Further, we would expect overstrivers to generate a mix of both approach and avoidant goals, since they are characterized by both high approach *and* high avoidance. We originally hypothesized that the Desire for Structure factor of the PNS scale would be associated with overstrivers (see Study 1); based on this relationship, we would expect individuals high in DFS to generate both approach and avoidant goals. Further, because we proposed that the Response to Lack of Structure factor of the PNS scale would be associated with failure-avoiders, we would expect individuals high in RLS to generate predominantly avoidant goals.

Method

Participants

A total of 485 undergraduate students participated in this study in exchange for credit toward a course requirement. Due to the anonymous nature of this study, demographic information was not collected from participants.

We deleted all participants who (1) failed to complete the entire Personal Need for Structure scale (29 participants); or (2) failed to complete the entire Personal Goals Elicitation Procedure (described below; 27 participants). This resulted in a final data set of 429 participants.

Procedure

Participants completed Study III in group sessions of up to 10 participants. Upon entering the laboratory, participants first completed an informed consent

form. Next, participants were presented with a questionnaire packet consisting of individual difference measures[10] and the Personal Goals Elicitation Procedure (see below). Presentation of these measures was counterbalanced for each group of participants. Participants were given as much time as was necessary to complete these measures. When finished, participants were debriefed and dismissed.

Measures

Personal Need for Structure Scale (Neuberg & Newsom, 1993); discussed previously.

Personal Goals Elicitation Procedure. The personal goals elicitation procedure (PGEP; Elliot & Sheldon, 1997) was included as an idiographic measure of participants' goals. In this task, participants are given information regarding goals and goal generation, and are then asked to freely generate their own list of eight personal achievement goals that they are currently pursuing. Responses were coded for approach/avoidance motivation following the specific coding rubric provided by Eliott & Friedman (2007).

Results

After analyzing the items for missing data, appropriate items were reverse-scored, and composite scale values were created for PNS Total and the two scale factors (DFS and RLS).

Next, two raters independently coded each goal generated from the Personal Goals Elicitation Procedure as either approach or avoidance according to the scheme outlined in Elliot and Friedman (2007). Interrater reliability was high; $\alpha = .96$ for positive goals and $\alpha = .97$ for negative goals. The number of approach

[10] Data for studies III and IV were collected simultaneously.

goals and avoidance goals generated by each participant were then utilized as the outcome measures for this task. Each participant received separate approach and avoidance scores.

Regression procedures were then conducted to determine the relationship between the DFS and RLS factors and the spontaneously generated approach/avoidance goals. We utilized DFS and RLS simultaneously as covariates in a multivariate regression equation predicting the tendency to generate approach and avoidance goals (as measured by the PGEP). As in the previous studies, we also conducted a separate regression analysis utilizing PNS Total as the covariate, while maintaining the same outcome variables.

We originally hypothesized that the DFS factor would be associated primarily with high approach and high avoidance (the overstrivers); we therefore expected the regression analysis to reveal that high-DFS individuals are likely to generate both approach and avoidance goals in fairly equal number. We further proposed that the RLS factor would be associated with low approach and high avoidance (failure-avoiders); we therefore expected the regression analysis to reveal that high-RLS individuals are likely to generate predominantly avoidant goals.

Results of the multivariate regression equation revealed that Factor 1 (DFS) did not emerge as a significant predictor, although the trend was toward the prediction of approach goals ($\beta = .017$, $p = .07$). Factor 2 (RLS) emerged as a marginally significant predictor, with the trend in the hypothesized direction toward predominantly avoidant goals ($\beta = -.018$, $p = .06$). A separate regression

equation utilizing PNS Total to predict approach and avoidance goal generation was not significant ($\beta = .004$, *ns*).

Discussion

The findings of Study III suggested a trend toward supporting our hypotheses. We predicted that individuals high in desire for structure would not display a tendency to spontaneously generate one type of goal over the other; in other words, they would generate positive and negative goals with equal frequency. Although results revealed a tendency for high-DFS individuals to generate more positive than negative goals, this difference was not significant. This finding indicates that high-DFS individuals generated approach as well as avoidance goals, which supports our original prediction.

We further predicted that individuals high in response to lack of structure would spontaneously generate more negative goals. Although the findings were only marginally significant, individuals high in RLS did, in fact, generate negative goals with greater frequency than positive goals.

We originally hypothesized that the Desire for Structure factor would be associated with the overstriver quadrant of the quadripolar model. According to the tenets of the model, overstrivers display elements of both failure-avoidance and success-orientation in their thoughts and actions, often vacillating between motivational strategies as the demands of the situation warrant (Covington & Roberts, 1994). In relation to goal generation, then, we would expect overstrivers to generate a mix of both approach and avoidant goals, depending upon the specific domain targeted by each goal. Overstrivers tend to have high, but unstable, self-esteem (Covington & Roberts, 1994); thus, it seems plausible that

these individuals may tend to generate approach tasks in domains in which they feel confident in their competence and mastery. However, because these individuals still exhibit a fear of failure, they may tend to generate avoidant goals in less secure domains.

The findings of the current study suggest that individuals high in DFS tend to generate both approach and avoidant goals, which is consistent with the overstriver quadrant of the quadripolar model. Because participants were free to generate goals in whatever domains they wished, it is likely that perceived competence differed across domains, thus resulting in the observed mix of positive and negative goals. Interestingly, however, results of the regression analysis revealed a tendency for high-DFS individuals to generate approach (relative to avoidant) goals with greater frequency (although, again, this difference was nonsignificant). This trend is in agreement with the findings of Study II, which demonstrated that DFS was related to higher self-efficacy and achievement expectations and lower fear of invalidity and anxiety. It seems likely that these generally positive attributes contributed to the generation of more approach (relative to avoidant) goals in this study. This finding is consistent with previous research on overstrivers, which has demonstrated that these individuals share attributes of both approach and avoidance in varying degrees and combinations (Covington & Roberts, 1994).

We originally hypothesized that the Response to Lack of Structure factor would be associated with the failure-avoidant quadrant of the quadripolar model. According to the model, individuals high in failure-avoidance generally harbor significant doubts regarding their competence, and expend a great deal of

cognitive energy thinking about their perceived shortcomings (Covington & Roberts, 1994). These individuals typically utilize self-handicapping strategies, such as learned helplessness and defensive pessimism, to protect their self-worth in the face of potential failure (Martin & Marsh, 2003). Individuals who generate predominantly avoidant goals typically display a higher fear of failure, lower self-esteem, and less satisfaction with progress toward their goals (Elliot & Sheldon, 1997).

Results of the current study suggest that individuals high in PNS Factor 2 (RLS) generate predominantly avoidant goals. This is consistent with the findings from Study II, which indicated a relationship between RLS and higher fear of invalidity, anxiety (both state and trait), and worry, and lower self-efficacy. Based on these findings, it seems plausible that high-RLS individuals generate predominantly avoidant goals to protect the self against failure. Their lack of self-confidence and tendency toward worry and anxiety may therefore promote the use of avoidant strategies as a basic coping mechanism.

The findings from this study offer tentative support for our primary hypotheses by demonstrating that the goals generated by individuals differ on the basis of the PNS factors, and that these differences correspond theoretically to differences between groups as proposed by the quadripolar model. However, it is necessary to determine the applicability of our proposed relationship across a variety of domains. Study IV, therefore, will examine our hypotheses in relation to several tasks designed to tap the processing of emotional stimuli.

Study IV

The primary aim of Study IV was to explore the role of Personal Need for Structure in predicting the preferential processing of emotional stimuli. Previous research has demonstrated that the processing of emotional cues is influenced by certain personality traits, motivational states, and goals (Rusting, 1998; Maner & Gerend, 2006). For example, Derryberry and Reed (1994) demonstrated that individuals high in approach motivation displayed a bias toward positive cues in a visual-detection task, while a bias toward negative cues was found for those high in avoidance motivation. Gomez and Gomez (2002) determined that behavioral activation system sensitivity was associated with a bias toward positive words, while the opposite was found for behavioral inhibition system sensitivity. Additionally, this bias has been found in relation to the processing of ambiguous stimuli. Strachman and Gable (2006) found that individuals high in avoidance goals remembered more negative information and interpreted ambiguous cues more negatively than individuals high in approach motivation, while individuals high in approach goals tended to process neutral information more positively. Taken together, this body of research suggests that individuals high in approach motivation display a tendency toward the processing of positive emotional stimuli, while individuals high in avoidance motivation tend to preferentially process negative emotional stimuli.

Study IV sought to extend these findings by proposing a link between the PNS factors and the processing of positive and negative information. We utilized three previously validated laboratory tasks to examine our hypotheses: a Word Fragment Completion Task (Rusting & Larsen, 1998), a Free Recall Task (Rusting, 1999), and a Story Completion Task (Rusting, 1999). We previously

hypothesized that desire for structure would be associated with overstriving (high approach/high avoidance); we thus anticipated that these individuals would process positive and negative information relatively equally. We previously hypothesized that response to lack of structure would be associated with failure-avoidance (low approach/high avoidance); we thus anticipated that these individuals would display a significant preference toward the processing of negative stimuli.

Method

Participants

A total of 485 undergraduate students participated in this study in exchange for credit toward a course requirement. Due to the anonymous nature of this study, demographic information was not collected from participants.

We deleted all participants who failed to complete the entire Personal Need for Structure scale (29 participants). This resulted in a final data set of 456 participants.

Procedure

Participants completed Study IV concurrently with Study III. Upon entering the laboratory, participants first completed an informed consent form. Next, participants were presented with a questionnaire packet consisting of individual difference measures and the three laboratory tasks (see measures below). Measures were presented in counterbalanced order for each set of participants. When finished, participants were debriefed and dismissed.

Measures

Personal Need for Structure Scale (Neuberg & Newsom, 1993); discussed previously.

Word Fragment Completion Task. The word fragment completion task (WFC; Rusting & Larsen, 1998) consists of 32 ambiguous words in which some letters are missing. Participants were instructed to complete the words by filling in the blanks representing the missing letters; 16 of the words can be completed as either positive or neutral (i.e., "e_a_ed" can be completed as either elated or erased), while the remaining 16 words can be completed as either negative or neutral (i.e., "ang_ _" can be completed as either anger or angle). Responses were then coded as positive, negative, or neutral (based on a coding scheme provided by the authors), and a summary score for each stimuli type was calculated.

Free Recall Task. The free recall task (FR; Rusting, 1999) utilizes a list of 36 words (12 positive, 12 negative, and 12 neutral) as stimuli. Participants were first given four minutes to rate the pleasantness/unpleasantness of each word on a 1 (*very unpleasant*) to 5 (*very pleasant*) Likert-type scale. Immediately following these ratings, participants were given three minutes to recall as many words as possible from the original list. Positive, negative, and neutral recall scores were then computed by adding the number of correctly recalled words from each valence category.

Story Completion Task. The story completion task (SC; Rusting, 1999) consists of a base sentence (e.g., *Linda is looking out at the sunset…*); participants are then given five minutes to complete the rest of the story, including the thoughts and feelings of any characters in the story. Two story bases were given, one with a male character and one with a female character. Two independent judges then

rated the emotional content of each story on both positive (1 = *not at all positive*, 5 = *extremely positive*) and negative (1 = *not at all negative*, 5 = *extremely negative*) scales, according to a coding scheme provided by the author. Participants then received an overall score for positive and negative content of both stories.

Results

After analyzing the items for missing data, appropriate scale items were reverse-scored, and composite scale values were created for PNS Total, Factor 1 (DFS), and Factor 2 (RLS).

The word fragment completion task was scored by adding the number of positive, negative, and neutral words completed. Each participant received three scores: positive, negative, and neutral.

The free recall task was scored by adding the number of positive, negative, and neutral words remembered correctly during the recall portion of the task. Again, each participant received three scores: positive, negative, and neutral.

Finally, the story completion task was scored by two independent raters who were ignorant of both the participants' scores on the personality variables and the overall hypotheses of the study. Following the scoring scheme of Rusting, 1999, the raters utilized a 5-point Likert-type scale to rate the overall positivity of the story, with 1 = *not at all positive* (story mentions no pleasant events, ideas, or emotions) to 5 = *extremely positive* (story discusses extremely positive events, ideas, or emotions). Negative emotional content was rated on the same 5-point scale, with 1 = *not at all negative* (story mentions no unpleasant events, ideas, or emotions) to 5 = *extremely negative* (story discusses extremely unpleasant events, ideas, or emotions). This scoring method allows for an accurate

representation of stories that include both positive and negative emotional content. Average ratings across the two stories were then computed, which provided each participant with an overall positivity and negativity rating. Interrater reliability was acceptable for these items (α = .86 for positivity and .83 for negativity).

Finally, regression procedures were conducted to determine the relationship between the DFS and RLS factors and the stimuli processing tasks. We utilized DFS and RLS simultaneously as covariates in a multiple regression equation predicting the tendency toward positivity, neutrality, and/or negativity for each task. As was done previously, we also conducted a separate regression analysis utilizing PNS (total) as the covariate, while maintaining the same outcome variables.

We hypothesized that the DFS factor is associated with overstriving (high approach *and* high avoidance); we therefore expected the regression analyses to reveal that high-DFS individuals are not likely to exhibit a strong bias toward either type of emotional information processing. We previously hypothesized that the RLS factor would be associated with failure-avoidance (low approach and high avoidance); we therefore expected the regression analyses to reveal that high-RLS individuals are likely to respond to these tasks with a strong bias toward enhanced negativity.

A regression equation utilizing the three word fragment completion variables (positive, neutral, and negative) as outcome variables and the two PNS factors as covariates revealed a significant association between Factor 1 (DFS) and positive fragment completion (β = .012, p = .04) but not neutral or negative

fragment completion (β = .000, *ns*, and β = .001, *ns*, respectively). A significant relationship was revealed between Factor 2 (RLS) and negative fragment completion (β = .012, p = .04), but not positive or neutral fragment completion (β = -.009, *ns*, and β = -.009, *ns*, respectively). A second regression equation utilizing PNS Total as the predictor variable revealed a significant association with negative fragment completion (β = .014, p = .02), but not positive or neutral fragment completion (β = .001, *ns*, and β = -.010, *ns*, respectively).

A regression equation utilizing the three recall scores (positive, negative, and neutral) as outcome variables and the two PNS factors as covariates revealed a significant association between Factor 1 (DFS) and positive recall scores (β = .210, p = .03) but not negative or neutral recall scores (β = .034, *ns* and β = -.007, *ns*, respectively). Factor 2 (RLS) did not emerge as a significant predictor for any recall score variables (β = .013, *ns*, for positive scores, β = .105, *ns*, for negative scores, and β = -.038, *ns*, for neutral scores). A second regression equation utilizing PNS Total as the predictor variable revealed a significant relationship between PNS and positive recall scores (β = .205, p = .04); however, no other relationship was significant (β = .142, *ns*, for negative scores and β = -.046, *ns*, for neutral scores).

A regression equation utilizing the story completion task (positive and negative) as the outcome variables and the PNS factors as covariates revealed a significant association between Factor 1 scores and positive story completion (β = .133, p = .04), but not negative story completion (β = -.05, ns). In contrast, Factor 2 emerged as a significant predictor of negative story completion (β = .130, p =

.05) but not positive story completion (β = -.088, *ns*). A second regression equation utilizing PNS Total as the predictor variable revealed no significant associations for either positive or negative story completion (β = .029, *ns*, and β = .090, *ns*, respectfully).

Discussion

Across the three emotional stimuli tasks, individuals high in desire for structure were found to display a significant preference for processing positive (relative to neutral or negative) stimuli. High-DFS individuals generated more positive words in the fragment completion task, recalled more positive words in the recall task, and wrote more positive stories in the story completion task. This finding is contrary to our original hypotheses, which proposed no significant differences in the processing of emotional stimuli for this group.

Although these findings do not support our original hypothesis, it is important to remember that the overstriving group is a "hybrid" of high approach and high avoidance (two motivational types that are widely considered to be diametrically opposed). As such, overstrivers can demonstrate elements of both approach and avoidance motivation in varying degrees and in different combinations (Covington & Roberts, 1994). Thus, a priori predictions about the behavior of such a group should be considered somewhat tenuous.

Given the findings of Study II regarding high-DFS individuals, a bias toward the processing of positive stimuli is not surprising. Contrary to predictions, desire for structure was associated primarily with attitudes and behaviors that characterize success-oriented individuals rather than overstrivers. In other words, high-DFS individuals fit the profile of individuals high in

approach and low in avoidance, rather than those high in both motivations. For example, DFS was negatively associated with fear of invalidity and anxiety (state and trait), and unrelated to worry – all hallmarks of an avoidant orientation. Therefore, it is not unexpected to find a bias toward the processing of positive emotional stimuli. While the results of this study are consistent with our previous findings, it is contrary to our basic, initial hypothesis regarding the relationship between DFS and approach/avoidance motivation. The potential implications of this discrepancy will be discussed in greater detail in the General Discussion section.

Our hypotheses for individuals high in response to lack of structure were confirmed across the three emotional stimuli tasks. Individuals high in RLS generated more negative words in the fragment completion task and wrote more negative stories in the story completion task. Additionally, although the relationship between RLS and the word recall task was nonsignificant, the beta value for negative words was larger than that of neutral or positive words, indicating that the trend was in the predicted direction. Thus, the results of this study offer further confirmation of the relationship between response to lack of structure and failure-avoidance.

The findings of this study suggest that individuals who are the most afraid of the negative consequences of failure are often also the most sensitive to the presence of negative stimuli. The present study utilized three tasks tapping different aspects of stimuli processing – a word fragment completion task, a recall task, and a neutral, open-ended story generation task. The relationship between RLS and the negative processing of emotional stimuli demonstrated in this study

offers further evidence to support our hypothesis that RLS is associated with the failure-avoidance subgroup of the quadripolar model.

General Discussion

The current research proposed that the two factors of the Personal Need for Structure scale can be accurately conceptualized utilizing the distinction between approach and avoidance motivation as proposed by the quadripolar need achievement model (Covington & Roberts, 1994). Specifically, we predicted that the Desire for Structure factor would be predominantly related to attitudes and behaviors that characterize *overstrivers*, while the Response to Lack of Structure factor would be related to attitudes and behaviors that characterize *failure-avoiders*.

We conducted four studies designed to test our primary hypotheses. In Study I, we utilized proxy indicators of approach/avoidance motivation to determine the relationship between the PNS factors and the four motivational types proposed in the quadripolar model. Study II extended these results by examining the relationship between the PNS factors and a number of attitude and behavioral strategies that have previously been presented as components of the four motive types. In Study III, we explored the role of the PNS factors in predicting the spontaneous generation of approach and avoidance goals utilizing a previously validated goal generation task (Elliot & Sheldon, 1997). Finally, Study IV extended these findings by exploring the role of Personal Need for Structure in predicting the preferential processing of emotional stimuli.

The cluster analysis conducted in Study I offered initial support for the presence of the four groups that comprise the quadripolar model. Consistent with

our hypotheses, additional results revealed that mean DFS and RLS scores were highest in the two avoidant-oriented groups (failure-avoiders and overstrivers), thus suggesting that the PNS factors are driven primarily by avoidant motivation. Although our hypotheses regarding the relationship between DFS and overstriving and RLS and failure-avoiding were not supported in Study I, the trends suggested by the data were in the predicted direction. Given the difficulty in measuring the four groups, the study offered tentative support for our hypotheses.

Study II examined a proposed relationship between the PNS factors and the use of various strategies commonly discussed in the context of academic achievement. We proposed that DFS would be associated with the achievement profile of overstrivers, which includes elements of both approach and avoidance orientation. Results revealed that high desire for structure was positively associated with many approach-oriented attitudes and behaviors, such as self-efficacy, organization, and positive perfectionism, but was negatively associated with or unrelated to avoidant attitudes and behaviors, such as fear of invalidity, worry, and anxiety. Thus, in contrast to our hypotheses, high-DFS individuals fit the profile of success-orientation rather than overstriving.

We proposed that RLS would be associated with the achievement profile of failure-avoiders, which is comprised exclusively of avoidant strategies. Results revealed that high response to lack of structure was positively associated with many markers of failure-avoidance, such as anxiety, worry, and fear of invalidity, and negatively associated with or unrelated to markers of approach motivation,

such as self-efficacy and perfectionism. Thus, in line with our hypotheses, high-RLS individuals fit the profile of failure-avoidance.

Additionally, Study II examined several potential mediational models utilizing the PNS factors and approach/avoidance motivation to predict the various outcome measures associated with academic achievement utilized in this study. Results revealed that approach motivation fully mediates the relationship between DFS and outcome variables such as anxiety, fear of invalidity, thought occurrence, and procrastination. Additionally, avoidance motivation fully mediates the relationship between RLS and outcome variables such as fear of invalidity, self-efficacy, and anxiety.

Interestingly, approach motivation emerged as a full mediator only for the variables predicted negatively by DFS (anxiety, fear of invalidity, thought occurrence, and procrastination), and not those predicted positively by DFS. In other words, the approach variable mediated the negative relationship between desire for structure and variables associated with avoidance motivation, but not the positive relationship between desire for structure and variables associated with approach motivation. The elimination of the negative relationship between DFS and variables associated with avoidance motivation in the presence of the approach variable suggests that this relationship is driven primarily by approach motivation.

In the case of Response to Lack of Structure, the findings are much more straightforward. The avoidance variable fully mediated the relationship between RLS and all but two of our outcome variables (and these were partially mediated). The eliminated (or diminished) significance of response to lack of structure in the

presence of the avoidance variable suggests that avoidance is the underlying component of this relationship. This is consistent with our primary hypothesis, which proposed that the factors of the Personal Need for Structure scale could be further understood utilizing an approach/avoidance conceptualization. Specifically, it lends support to our proposal that the RLS factor would be associated with the failure-avoidant (low approach/high avoidance) quadrant of the quadripolar model.

Taken together, the results of Study II offer tentative support for the relationship between the PNS factors and the quadripolar model. Although we had initially proposed that desire for structure would be associated with the overstriving quadrant, results of the current study suggest that DFS predicts an approach-oriented profile closer to that expected of success-oriented individuals. It appears plausible that, because of the "hybrid" nature of overstriving, certain aspects of avoidance motivation simply did not appear in the current study. Alternately, perhaps desire for structure is more suited toward exclusively approach motivation than was previously proposed.

Study III was conducted to examine our primary variables in relation to a more behavior-oriented goal generation task. We hypothesized that individuals high in DFS would generate both approach and avoidant goals due to their proposed overstriving orientation. We further hypothesized that individuals high in RLS would generate predominantly avoidant goals, in line with the profile of failure-avoidance.

Results of Study III suggested a trend toward supporting our hypotheses. Individuals high in DFS did not display a significant tendency to generate either

approach or avoidant goals, which supported our original hypothesis. However, the trend pointed toward the generation of more positive (as opposed to negative) goals. As was discussed previously, this may be because of differences in perceived competence across domains, thus resulting in the generation of an uneven number of approach and avoidant goals. However, these findings are also in line with the results of Study II, which suggested that the profile of high-DFS individuals was more similar to success-oriented individuals than overstrivers. Given these findings, then, it is not surprising that individuals high in desire for structure generated more approach than avoidant goals.

Results for the RLS factor, although only marginally significant, were considerably more straightforward and in line with predictions. Individuals high in response to lack of structure generated predominantly avoidant goals, a finding that matches the profile expected of failure-avoiders. Thus, the results of Study III further support our hypotheses regarding the relationship between RLS and failure-avoidance.

Study IV sought to examine the role of our primary variables in predicting the preferential processing of emotional stimuli. We proposed that individuals high in DFS would not display a preference for processing either positive or negative information due to their proposed hybrid motivational orientation. We further hypothesized that individuals high in RLS would demonstrate a preference for processing negative (over positive) emotional stimuli, in line with their hypothesized avoidant orientation.

Results of this study demonstrated that, across the three emotional stimuli tasks, individuals high in desire for structure displayed a significant preference for

processing positive (relative to neutral or negative) stimuli. Again, this finding contradicts our original hypotheses concerning the relationship between DFS and overstriving, as this motivational group should be comprised of both approach and avoidance motivation. However, these results are consistent with the findings from Study II and III, which demonstrated a tentative association between DFS and the theoretical profile of success-oriented individuals.

Our hypotheses for individuals high in response to lack of structure were confirmed across the three emotional stimuli tasks. High-RLS individuals generated more negative words in the fragment completion task, wrote more negative stories in the story completion task, and (although not significant) recalled more negative words in the word recall task. Thus, the results of this study offer further confirmation of the relationship between response to lack of structure and failure-avoidance.

The main purpose of the current project was to present an in-depth exploration of the two Personal Need for Structure factors, utilizing an approach/avoidance motivation framework to present a coherent conceptualization of attitudes and behaviors related to both the Desire for Structure and Response to Lack of Structure factors. Specifically, we proposed that the DFS factor would be related to the overstriving quadrant of the quadripolar model, while the RLS factor would be related to the failure-avoidance quadrant. Taken together, the four studies discussed in the current project provide initial support for our hypotheses.

The relationship between Desire for Structure and approach/avoidance motivation proved to be more complicated than was originally proposed. The

cluster analysis conducted in Study I demonstrated that DFS scores were higher in the two avoidant-oriented quadrants (overstriving and failure-avoidance), as proposed. Contrary to our hypotheses, however, the two avoidant-oriented quadrants did not differ on the basis of DFS scores. Study III showed that high-DFS individuals are likely to generate both approach and avoidant goals, which is consistent with the pattern expected by overstrivers. However, the results from Study II suggest that DFS is related to attitudes consistent with success-orientation only (as opposed to overstriving). Finally, Study IV demonstrated that high-DFS individuals display a bias toward the processing of positive (as opposed to negative) emotional stimuli; a finding that is again consistent with success-orientation. Thus, it is unclear based on the current studies whether desire for structure relates to the overstriving quadrant (high approach/high avoidance) or the success-oriented quadrant (high approach/low avoidance).

There are several possible interpretations for these findings. First, it is plausible that the negative, fear of failure component inherent in overstrivers simply did not emerge in Studies II and IV. Previous research on overstrivers has suggested that, rather than balancing motivations equally, overstrivers share attributes of both approach and avoidance in varying degrees and combinations (Covington & Roberts, 1994). Thus, it is possible that the tasks utilized in the current research brought forth more approach-oriented attributes in our participants. Furthermore, the current study was not designed to induce stress or anxiety; therefore, participants may not have been inclined to experience avoidance motivation. It is plausible, then, that high-DFS individuals experience both approach and avoidance motivation as was predicted; however, the dominant

motivation is situationally determined and thus did not emerge equally across all four studies.

This interpretation is consistent with the findings of the current study, which suggested that DFS was associated with both approach and avoidance motivation in turn. This explanation also makes sense in terms of previous research on the Personal Need for Structure scale, which demonstrated that desire for structure is related to conscientiousness, achievement-oriented and organizational perfectionism, and less procrastination behaviors (Cavazos & Campbell, 2008), but also to high levels of anxiety and an increased fear of the consequences of making a mistake (Neuberg & Newsom, 1993). In light of this interpretation, future research should implement a paradigm designed to induce both approach and avoidance motivation in order to examine this possibility directly.

Across all four studies, the results demonstrated a clear relationship between the Response to Lack of Structure factor and failure-avoidance, as hypothesized. In each study, high RLS scores were associated positively with avoidance and negatively with approach motivation, which fits the profile expected of failure-avoiders. Response to Lack of Structure was associated with the two avoidance-oriented quadrants of the cluster analysis and was found to predict attitudes consistent with the academic achievement profile of failure-avoiders. Additionally, the mediational model discussed in Study II suggests that avoidance motivation may be the underlying component of the relationship between RLS and outcome variables related to academic achievement. Further, high-RLS individuals were found to generate predominantly avoidant goals and

display a bias toward processing negative emotional stimuli. As a whole, then, the studies reported in the current project offer support for the proposed relationship between response to lack of structure and failure-avoidance.

In addition to the findings concerning DFS, RLS, and approach/avoidance motivation, it is important to note that the current project has implications for the Personal Need for Structure scale as a whole. As was discussed in Study II, the two PNS factors predicted the academic achievement outcome variables in opposite directions, with DFS predicting approach-oriented measures and RLS predicting avoidance-oriented measures. This lack of consistency between factors is a potential problem for the validity of the PNS scale. As can be seen in Table 5, beta weights for predictions utilizing the total PNS score were often weaker versions of those obtained for Factor 2, Response to Lack of Structure. In other cases, the opposing DFS and RLS predictions canceled each other, resulting in a nonsignificant finding for PNS Total. Although a full analysis of the statistical properties of the scale is outside the scope of the current project, the results discussed here suggest caution in the interpretation of findings utilizing the total scale, as the PNS scale may not adequately operationalize the need for structure construct.

We believe that this line of research is meaningful in a number of ways. First, as was previously discussed, a coherent framework for understanding the factors comprising the Personal Need for Structure scale is lacking in the literature. The current project addresses this gap by proposing that the Desire for Structure and Response to Lack of Structure factors can be accurately conceptualized utilizing a general distinction between approach and avoidance

motivation. Thus, the current research provides a deeper and more substantive understanding of this cognitive style variable.

Second, the current project extends the need achievement literature by proposing a new antecedent variable that operates within the existing quadripolar model. Previous research has utilized a variety of individual difference variables, from self-esteem to test anxiety, to describe and explain the approach/avoidance motive, but, to our knowledge, Personal Need for Structure has not previously been considered. We believe that including the PNS factors in the model provides a new viewpoint with which to examine the approach/avoidance literature, and as such, represents an important theoretical extension of the literature.

Future research may focus on a wide variety of applications for the proposed model. For example, several studies have reported a significant relationship between approach/avoidance motives and academically-oriented outcome variables, such as grades, subjective well-being, and the tendency to drop out of school (Elliot & Sheldon, 1997; Martin, Marsh, & Debus, 2003). Examining the PNS factors in relation to these variables may aid in our understanding of these academic factors by revealing previously overlooked associations.

Although it is often assumed that avoidance orientation is undesirable in the context of academic achievement, research shows that this may not be homogeneously true. For example, research conducted by Martin and Marsh (2003) demonstrated that individuals high in both approach and avoidance motivation (the overstrivers) utilized fear of failure as a catalyst to achieve higher levels of academic success. According to the authors, however, avoidance motivation has unique downfalls. Overstrivers often display unstable self-esteem

and are particularly sensitive to rejection feedback. Additionally, these individuals are at risk for developing maladaptive avoidant-oriented behaviors, such as learned helplessness and defensive pessimism. Martin and Marsh refer to this as "the cascading model of failure avoidance," in which individuals progress from overstriving to failure-avoidant, and from failure-avoidant to failure-accepting (2003). When overstrivers receive consistently negative feedback, their fear of failure and unstable sense of self-esteem prompts them to doubt their abilities, thus resulting in increasing failure-avoidance (which is manifested through strategies such as defensive pessimism). If the failure feedback continues, these individuals begin to resign themselves to failure, thus moving to the failure-accepting quadrant of the model. This quadrant is characterized by strategies such as self-handicapping, which are designed to disengage the individual from both fear of failure and striving toward success. Thus, while a fear of failure may propel individuals toward achievement, it can be dangerous when paired with consistent failure feedback.

The relationships proposed in the current research suggest that the cascading model of failure-avoidance may be applicable to highly structured individuals as well. Given the proposed relationship between desire for structure and overstriving, it is plausible that high-DFS individuals will likely be driven to succeed in the academic environment. Motivated by a fear of failure, these individuals will likely utilize their desire for structure in ways that facilitate success. However, these individuals may also be particularly sensitive to failure feedback, such as poor test grades or criticism from an instructor. According to the cascading model, these individuals may lose their desire to succeed in favor of

an increased focus on failure avoidance. Rather than providing motivation, then, need for structure may begin to emerge as a maladaptive tool in failure-avoiders. For example, these individuals may display tendencies typical of individuals high in response to lack of structure, such as engaging in black-and-white thinking (e.g., "I am an absolute failure in everything I do") and ignoring evidence that challenges their existing structures (e.g., the receipt of positive feedback on an assignment). By utilizing strategies designed to avoid failure, these individuals may enter into a self-fulfilling prophecy in which their fears are substantiated. Finally, once these individuals enter into the failure-accepting stage, they have (according to the model) become resigned to inevitable failure. It is plausible that these individuals often withdraw from the college environment, as they are convinced of their inability to succeed. Future research examining the cascading model of failure-avoidance in relation to the need for structure may therefore provide useful information for intervention programs designed to halt or reverse the proposed breakdown of academic achievement.

Other future research should explore need for structure in relation to the other two quadrants of the quadripolar model (success orientation and failure-acceptance). Although success-orientation was discussed in terms of a potential relationship with DFS, the possibility was not directly explored in the current research. It should be noted that we did not make a priori hypotheses regarding these two quadrants because previous research suggested that the PNS factors would be associated exclusively with the avoidant-oriented groups. Therefore, we had little reason to propose a relationship between PNS and the other two quadrants at this time, and for the sake of parsimony, they were excluded from the

current project. In the future, however, it will be important to establish the nature of any potential relationships between the two personal need for structure factors and the quadrants not discussed here.

In conclusion, we believe that the Desire for Structure and Response to Lack of Structure factors of the Personal Need for Structure scale have been further elucidated by the application of an approach/avoidance distinction. We have conducted four studies designed to explore the relationship between the two PNS factors and the two avoidance-oriented motivational types proposed in the quadripolar model (Covington & Roberts, 1994). We believe that this new conceptualization represents a significant contribution to the existing literature. Additionally, the foundation presented in the current work will allow for the future elucidation of a number of interesting and meaningful research avenues.

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Table 1

Correlations and Descriptives for Study1 Primary Variables

	M (SD)	*Alpha*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
1. PNS	3.76 (0.75)	0.83	1	.83**	.94**	-.13**	.14**	.37**	-.25**	-.19**	.43**
2. PNS(F1)	3.90 (0.89)	0.71		1	.58**	.00	.00	.18**	-.13*	-.14**	.25**
3. PNS(F2)	3.67 (0.81)	0.77			1	-.19**	.20**	.43**	-.29**	-.20**	.47**
4. PANAS(P)	3.47 (0.63)	0.84				1	-.23**	-.36**	.43**	.42**	-.14**
5. PANAS(N)	2.09 (0.70)	0.88					1	.61**	-.21**	-.10*	.34**
6. BFI(N)	2.85 (0.75)	0.81						1	-.28**	-.10*	.62**
7. BFI(E)	3.33 (0.52)	0.78							1	.42**	-.16**
8. BAS	3.08 (0.40)	0.84								1	.07
9. BIS	2.91 (0.48)	0.75									1

Note. PNS = Personal Need for Structure; PNS(F1) = Personal Need for Structure (Factor 1); PNS(F2) = Personal Need for Structure (Factor 2); PANAS(P) = Positive and Negative Affect Survey (Positive); PANAS(N) = Positive and Negative Affect Survey (Negative); BFI(N) = Big Five Inventory (Neuroticism); BFI(E) = Big Five Inventory (Extraversion); BAS = Behavioral Activation Scale; BIS = Behavioral Inhibition Scale.
* $p < .05$; ** $p < .01$.

Table 2

Factor Loadings from Study I

	Factor	
Variable	Avoidance Temperament	Approach Temperament
Extraversion	-.12	**.74**
BAS	.12	**.83**
PANAS (Positive)	-.23	**.74**
Neuroticism	**.88**	-.22
BIS	**.82**	.07
PANAS (Negative)	**.74**	-.19

Note. Primary factor loadings are in boldface. BAS = Behavioral Activation Scale; BIS = Behavioral Inhibition Scale; PANAS = Positive and Negative Affect Scale.

Table 3

Means and Standard Deviations for PNS Factors by Motivational Type

	Motivational Type							
	Success-Oriented		Failure-Accepters		Failure-Avoiders		Overstrivers	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
PNSF1	3.38	(0.98)	3.75	(0.89)	4.43	(0.99)	4.58	(0.65)
PNSF2	2.76	(1.01)	3.36	(1.14)	4.62	(0.88)	4.58	(0.32)

Table 4

Correlations and Descriptives for Study 2 Variables

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*
1. PNS Tot	1	.83**	.94**	.22**	.29**	.39**	.19**	.08	.20**	.22**	-.25**	.05	-.07	-.23**	.25**	.22	.06	.42**
2. PNS(F1)		1	.59**	.07	.11*	.26**	.10*	-.05	.10*	.08	-.32**	-.08	.12**	-.09*	.13**	.26**	.02	.54**
3. PNS(F2)			1	.27**	.35**	.41**	.21**	.15**	.23**	.27**	-.17**	.12**	-.19**	-.28**	.29**	.15**	.07	.26**
4. STAI(S)				1	.76**	.47**	.40**	.57**	.41**	.38**	.21**	.35**	-.51**	-.31**	.51**	-.01	.26**	-.04
5. STAI(T)					1	.56**	.50**	.65**	.53**	.54**	.23**	.50**	-.57**	-.41**	.61**	.06	.31**	-.03
6. PSWQ						1	.41**	.36**	.37**	.44**	.03	.26**	-.26**	-.19**	.41**	.20**	.20**	.19**
7. TOQ(F1)							1	.45**	.62**	.39**	.03	.27**	-.19**	-.07	.41**	.17**	.16**	.09*
8. TOQ(F2)								1	.52**	.34**	.25**	.39**	-.49**	-.26**	.51**	.03	.34**	-.09*
9. TOQ(F3)									1	.46**	.11*	.34**	-.29**	-.11*	.52**	.22**	.24**	.07
10. PFI										1	.20**	.61**	-.41**	-.31**	.42**	.13**	.15**	.03
11. AIP											1	.30**	-.42**	-.14**	.11*	-.24**	.08	-.36**
12. DP												1	-.55**	-.29**	.35**	-.07	.12*	-.13*
13. SES(Gen)													1	.39**	-.34**	.35**	-.17**	.27**
14. SES(Soc)														1	-.28**	.06	-.13**	.06
15. MPS(NP)															1	.44**	.54**	.10*
16. MPS(AE)																1	.30**	.39**
17. MPS(PI)																	1	.08
18. MPS(O)																		1

* Significant at $p < .05$; ** significant at $p < .01$.

Table 5

Beta Values for Regression Utilizing PNS Factors to Predict Study II Outcome Variables

	DFS	RLS	PNS Total
State-Trait Anxiety Inventory (State)	-.140**	.354**	.217**
State-Trait Anxiety Inventory (Trait)	-.170**	.446**	.279**
Penn State Worry Questionnaire	.033	.403**	.406**
Thought Occurrence Questionnaire (F1)	-.058	.248**	.185**
Thought Occurrence Questionnaire (F2)	-.198**	.262**	.083
Thought Occurrence Questionnaire (F3)	-.054	.282**	.221**
Personal Fear of Invalidity	-.130*	.339**	.212**
Adult Inventory of Procrastination	-.331**	.030	-.245**
Decisional Procrastination	-.228**	.262**	.059
Self-Efficacy (General)	.339**	-.393**	-.090*
Self-Efficacy (Social)	.103	-.336**	-.231**
Negative Projections	-.045	.316**	.260**
Achievement Expectations	.275**	.004	.230**
Parental Influences	-.033	.087	.055
Organization	.594**	-.086	.408**

* Significant at $p < .05$; ** significant at $p < .01$.

Table 6

Approach and Avoidance Differences across Regression Equations in Proposed Mediational Model

	Avoidance		Approach	
	Regression 1	Regression 2	Regression 1	Regression 2
State-Trait Anxiety Inventory - Trait	.761**	.746**	-.309**	-.304**
State-Trait Anxiety Inventory - State	.636**	.632**	-.310**	-.306**
Thought Occurrence (F1)	.547**	.554**	*ns*	*ns*
Thought Occurrence (F2)	.511**	.543**	-.199**	-.204**
Thought Occurrence (F3)	.515**	.497**	*ns*	*ns*
Personal Fear of Invalidity	.549**	.531**	-.183**	-.179**
Adult Inventory of Procrastination	*ns*	.169**	-.169**	-.195**
General Self-Efficacy	-.383**	-.364**	.457**	.469**
Social Self-Efficacy	-.285**	-.206**	.508**	.504**
Penn State Worry Questionnaire	.632**	.554**	*ns*	*ns*
Decisional Procrastination	.383**	.397**	-.255**	-.263**
Achievement Expectations	.247**	.218**	.319**	.343**
Parental Influences	.250**	.268**	*ns*	*ns*
Negative Projections	.559**	.531**	-.150**	-.140**
Organization	.143**	.046	.161**	.205**

Note. Regression 1 utilizes avoidance/approach as the sole predictor variable; Regression 2 utilizes (avoidance and RLS) and (approach and DFS) as simultaneous predictor variables. * Significant at $p < .05$. ** Significant at $p < .01$.

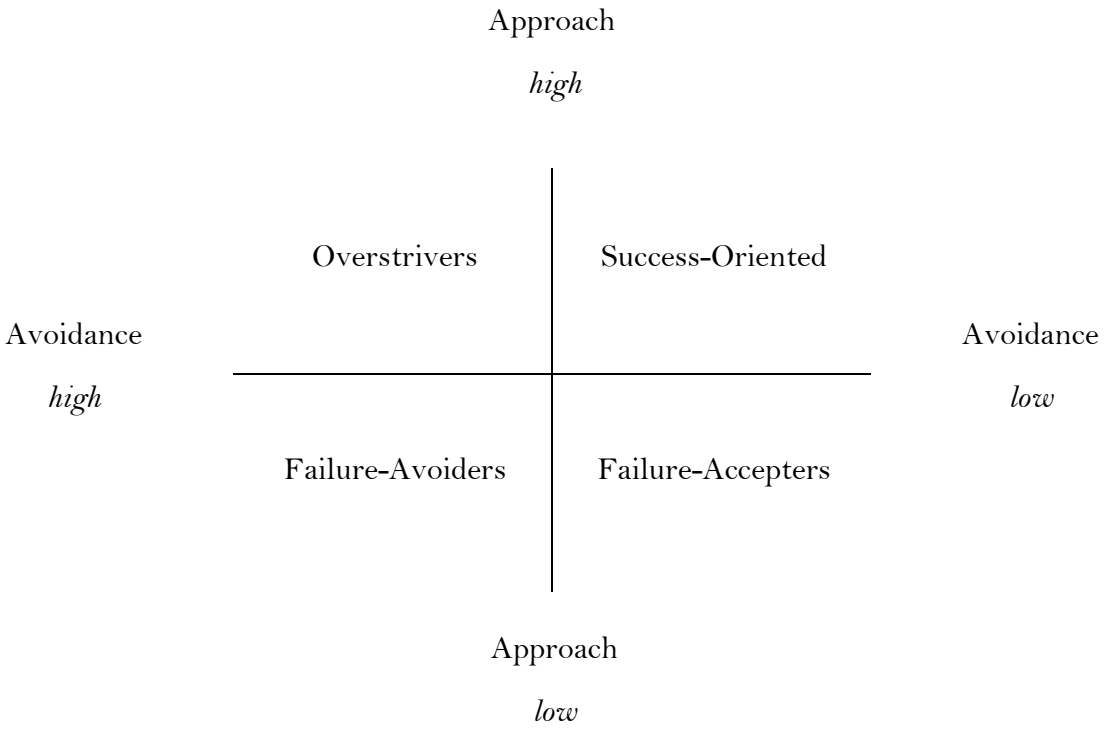
Table 7

Approach and Avoidance Differences across Regression Equations in Revised Mediational Model

	DFS		RLS	
	Regression 1	Regression 2	Regression 1	Regression 2
State-Trait Anxiety Inventory -Trait	-.170**	*ns*	.446**	*ns*
State-Trait Anxiety Inventory - State	-.140**	*ns*	.354**	*ns*
Thought Occurrence (F1)	*ns*	.094*	.248**	*ns*
Thought Occurrence (F2)	-.198**	*ns*	.262**	*ns*
Thought Occurrence (F3)	*ns*	.114*	.282**	*ns*
Personal Fear of Invalidity	-.130*	*ns*	.339**	*ns*
Adult Inventory of Procrastination	-.331**	-.330**	*ns*	-.231**
General Self-Efficacy	.339**	.146**	-.393**	*ns*
Social Self-Efficacy	*ns*	*ns*	-.336**	-.190**
Penn State Worry Questionnaire	*ns*	.266**	.403**	.191**
Decisional Procrastination	-.228**	-.095*	.262**	*ns*
Achievement Expectations	.275**	.305**	*ns*	*ns*
Parental Influences	*ns*	*ns*	*ns*	*ns*
Negative Projections	*ns*	.129**	.316**	*ns*
Organization	.594**	.560**	*ns*	.236**

Note. Regression 1 utilizes DFS and RLS as the sole predictor variables; Regression 2 utilizes (approach and DFS) and (avoidance and RLS) as simultaneous predictor variables. * Significant at $p < .05$. ** Significant at $p < .01$.

Figure 1. The Quadripolar Model of Need Achievement.[11]



[11] Covington, M. V., & Roberts, B. W. (1994). Self-worth and college achievement: Motivational and personality correlates. In *Student motivation, cognition, and learning: Essays in honor of Wilbert J. McKeachie*. Pintrich, Paul R.; Brown, Donald R.; Weinstein, Claire Ellen (Eds.). Hillsdale, NJ: Lawrence Erlbaum Associates, pp. 157-187.

Figure 2. Cluster analysis of the four quadrants proposed by the Quadripolar Model.

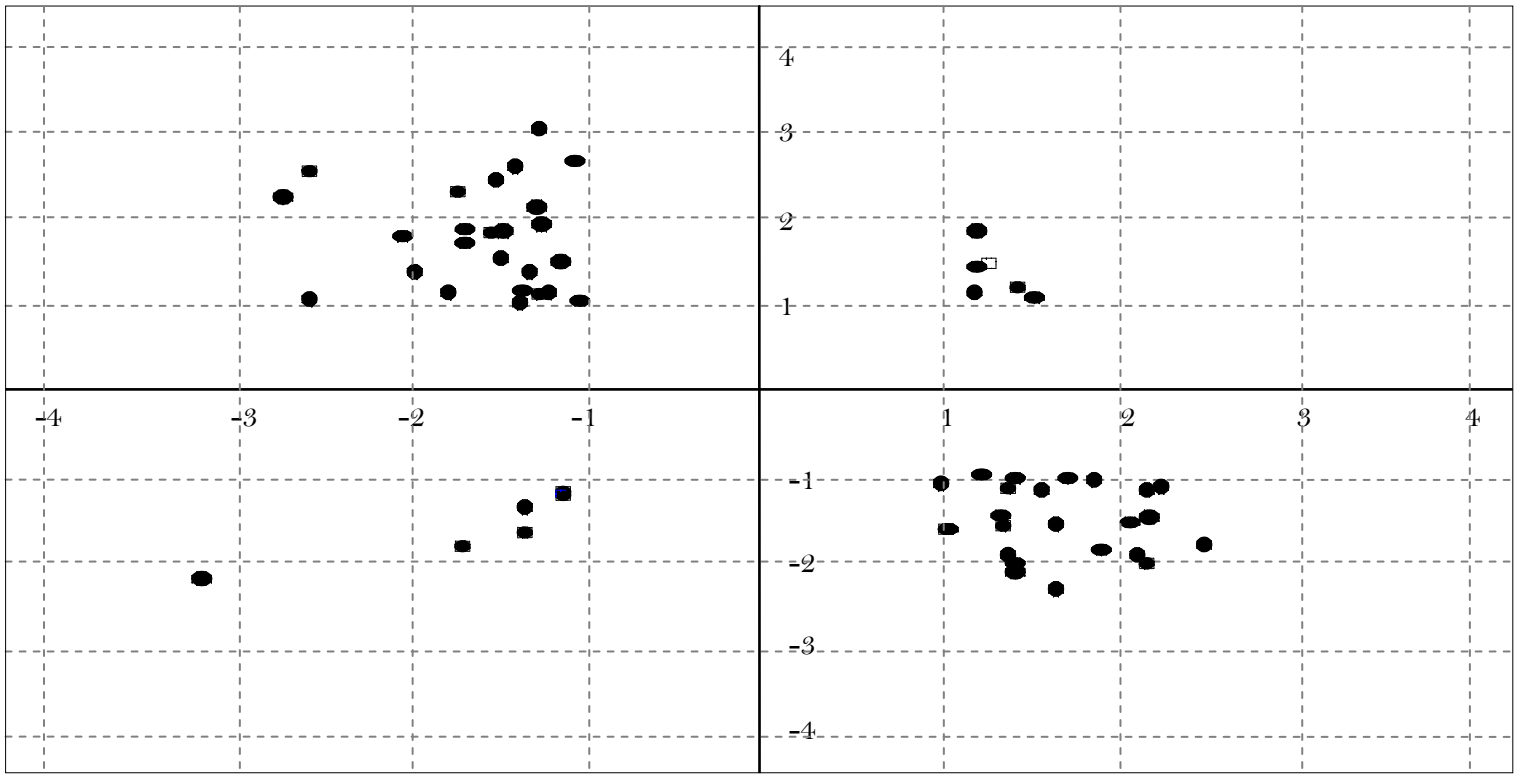


Figure 3. Boxplot illustrating PNS Factor 1 (Desire for Structure) mean scores by cluster.

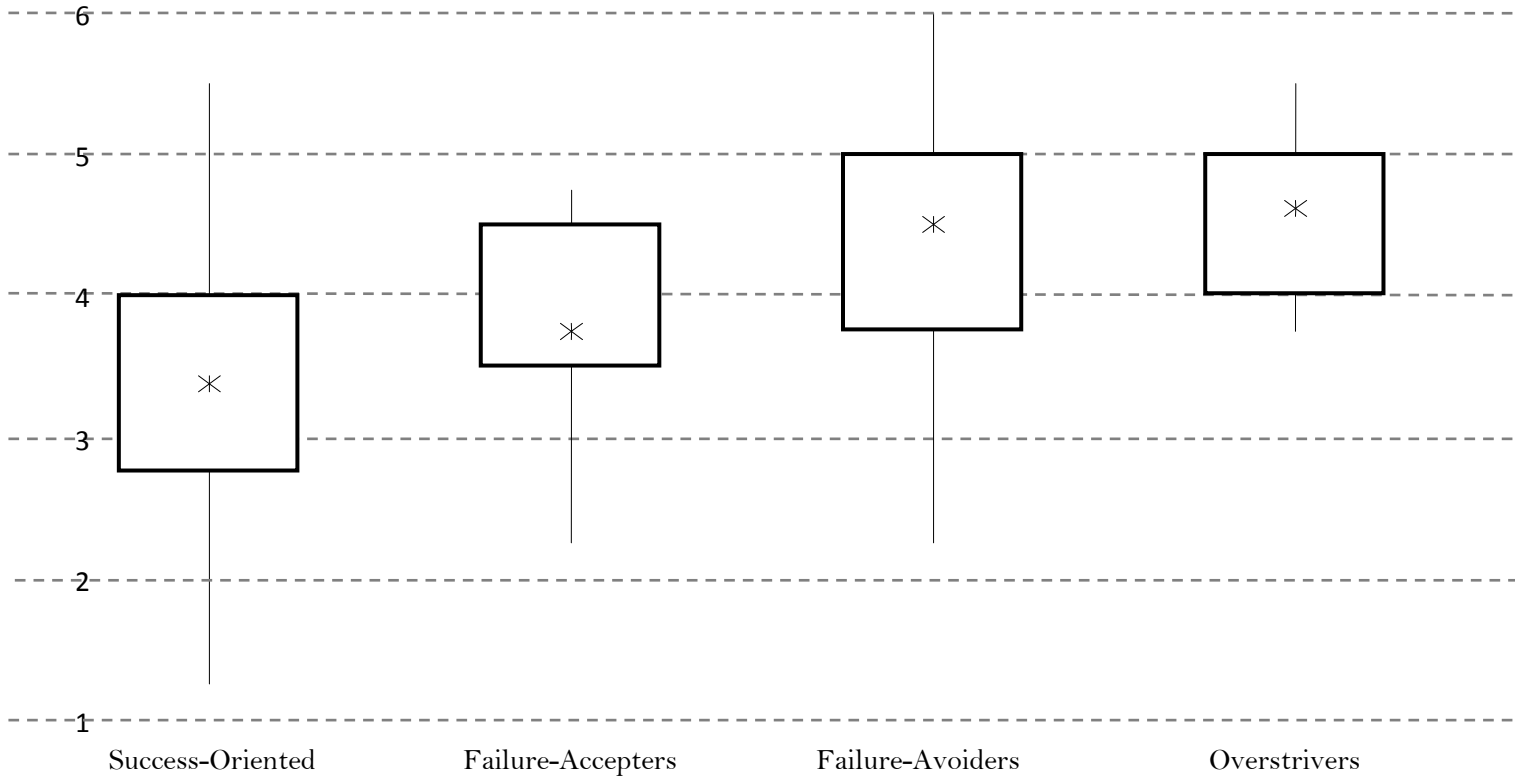


Figure 4. Boxplot illustrating PNS Factor 2 (Response to Lack of Structure) mean scores by cluster.

