THE DRIVE OF PERFECTIONISM BEHIND MAXIMIZATION

By

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To my Mom and Dad, I hope my work realize their dreams which were destroyed by the political oppression at that time; to my mentors: Drs. Kenneth Rice, Peter Sherrard, James Morgan, and David Suchman, each of them has taught me the dynamics and beauty of the human being, and supported my adventure to the enriching and unknown.

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Past research identified maximization as a trait-like decision-making style associated with negative psychological consequences. Based on a large college student sample, Study 1 of the current research used the core conceptualization of maximization and Confirmatory Factorial Analyses to address the concerns in the previous maximization scale by Schwartz et al. (2002). The outcome was a refined unidimensional maximization measurement, the Maximization Behavior Scale (MBS). Based on the MBS, Study 2 results revealed that perfectionism dimension *high personal standards* (HS) and perceived *discrepancy* between one's standards and actual performance (DIS) both correlate positively with maximization orientation. In addition, the relationships between maximization and psychological well-being are explained partly (or completely in the case of depression) by DIS, and are suppressed by HS. Other findings related to maximizations are also reported and discussed.

CHAPTER 1
INTRODUCTION

Our lives involve making numerous choices, ranging from small choices, such as deciding which TV channel to watch and what type of food one wants for dinner, to big life style matters such as determining a career and a relationship partner. Our characteristic choice-making style is likely to impact the choices we make and shape our life outcomes. One such decision-making method, maximization, has attracted growing research interest in recent years. Maximization, an individuals' tendency to get the best choice out of the situation rather than settle for a "good enough" choice, is viewed as a decision-making trait that is more predominant in some individuals' choice-making behaviors than others, regardless of the decision context. Schwartz, Ward, Monterosso, Lyubomirsky, White and Lehman (2002) found support for the existence of such a maximization trait measured by their Maximization Scale (MS). Individuals who scored high on this scale were labeled as maximizers and tended to optimize their choices consistently across different life domains. In addition, they associated the maximization tendency with negative psychological outcomes such as depression and life dissatisfaction. Additional inferences have since been drawn by other researchers (e.g., Iyengar, Wells, & Schwartz, 2006; Bergman, Nyland, & Burns, 2007) and presented in major media (Schwartz, 2004a). In fact, Schwartz (2004a) stated in the journal *Scientific American* that maximization may be the "recipe for unhappiness" (p. 72) and that the abundance of choices in the modern society is probably responsible for the epidemic of depression in American population.

Despite the significant amount of research and the strong inferences based on the Maximization Scale (Schwartz et al., 2002), the psychometric properties of this scale were less than satisfactory. Two recent studies, Nenkov, Morrin, Ward, Schwartz and Hulland (2008) and Diab, Gillespie and Highhouse (2008), have demonstrated different paths to improving the

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maximization measurement and hence re-evaluating the connection between unhappiness and the maximization. Meanwhile, it remains unclear what the underlying mechanisms linking maximization with unhappiness are. If, as Schwartz (2004a) argued, that maximization behaviors were responsible for psychological suffering, then Schwartz's (2004a) suggestion on reducing maximization and limiting number of choices may provide help for unhappiness. If the alternative is true, that maximization is rather a display of other personality traits, and the latter determine the outcome of unhappiness, reduction in maximization is likely to fail as an intervention strategy. The current research therefore aimed to address the above issues in maximization research.

CHAPTER 2
LITERATURE REVIEW

What Is Maximization?

To further research on maximization and clarify some existing confusion, it is essential to have a viable definition of maximization that is supported by theories and captured by measurement. Drawing from the rational decision-making model by von Neumann and Morgenstern (1944), Schwartz et al. (2002) defined maximization as a decision-making approach with the goal of obtaining the best available choice in a given situation, rather than just setting a threshold of just accepting a "good enough" choice. The other end of the continuum, when individuals aim for a choice "good enough," is defined as "satisficing." Individuals who maximize make efforts to expand their option pool and collect as much information as possible. They carefully weigh the costs and benefits of each option and then determine the choice most likely to result in the maximum benefits available. Similarly, Diab et al. (2008) described maximizing as a process involving "spending more resources in an effort to make incrementally better decisions" (p.365); a final decision is often reached when individuals are certain that they are getting the best out of the situation. In sum, maximization as a decision-making process involves a range of activities in information collection and evaluation, with the goal of optimizing the final choice outcome.

Past literature has supported either maximizing or satisficing as valuable choice-making methods. For instance, in rational choice theory, maximization is considered the rational decision-making method which allows the most economical gains for individuals (von Neumann & Morgenstern, 1944). The limitation of this model is that it fails to take into consideration the cost of information collecting and processing during the choice evaluation, which can be rather high in actual application. In some cases, it may not be even plausible to find out all relevant

information about the available options. Even if the information accessibility is not an issue, the amount of information processing needed for maximization may turn out to be too demanding for human beings in some cases (Payne, 1982; Payne, Bettman, & Johnson, 1993). Recognizing the complexity of the environment and the limitation of human cognitive processing, Simon (1955, 1956) proposed that human beings in fact "satisfice" in choice-making instead of maximize. The satisficing approach may cost us the best option available, but gives us a relatively satisfactory choice and saves our energy and resources in seeking for the "best" choice.

As both of these decision-making processes have arguable values and limitations in theory, it is of interest to observe their utilization in real life human behaviors and the choice outcomes. Schwartz et al. (2002) started this line of research by identifying individuals who show characteristically high levels of maximization tendency across various decision-making contexts, i.e., maximizers. Individuals on the opposite end of the continuum are labeled as satisficers. In other words, they proposed the maximization dimension as a personality trait factor. Indeed, respondents to the maximization scale they constructed showed a consistent tendency to maximize in a variety of life situations tapped by different measurement items, such as surfing all TV channels before determining which one to watch and trying out several relationships before deciding which one to pursue. However, some of their measurement items also described behaviors and attitudes of having high standards and indecisiveness. These additional components are likely deviations from the core definition of maximization and obscure the interpretation of the high sum scores. This raised the question as whether the operation definition of maximization is better captured by including several other potentially related phenomena as a multidimensional construct or by focusing on its core definition as a unidimensional construct.

Diab et al. (2008) supported the unidimensional approach, arguing that maximization attribute is in theory a single dimension construct and the inclusion of additional factors leads to low validity of the measurement. The current research takes a similar standing and proposes to address maximization from its core conceptualization as a decision-making process that involves certain behavior patterns such as purposeful exploration of the option pool and striving to get the best out of the situation. This approach considers traits like having high standards and being indecisive as peripheral to the core definition of maximization. For instance, individuals may seek to maximize their benefits in relation to a given situation as a rational decision method without there being the possibility of achieving the high standards. Perhaps, a stock-trader looks for the optimal combination of investments based on the market availability rather than wait until they believe the stocks might be at their historic highs or lows. Indecisiveness is a phenomenon distinct from maximization, although the attempt to maximize one's decision can delay the arrival of a final decision and cause decision difficulty. Indecisiveness involves factors such as information deficit, valuation difficulty, and outcome uncertainty (Rassin, 2007). Apparently, those factors may or may not be present in maximization. Maximizers may possess good knowledge and clear judgment of some options but are stuck in the expectation for better alternatives not yet present. Therefore, it may not be appropriate to include these constructs in the operational definition of maximization.

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Measurement of Maximization

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The assumption of the unidimensionality of the maximization construct requires a unidimensional measurement. The initial Maximization Scale (MS) developed by Schwartz et al. (2002; see Appendix A, Items 1-13) contained three factors: Factor 1 consisted of such behavioral examples of maximization as being open to better jobs, songs on the radio, television shows, and relationships (6 items: 2, 3, 4, 5, 9, 13). Factor 2 involved other behavior examples of

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maximization concerning primarily shopping behaviors (4 items: 6, 7, 8, 10), and Factor 3 involved having high standards (3 items: 1, 11, 12)[1]. In a closer examination, only Factor 1 items were closely tied with the core conceptualization of maximization. Three of the Factor 2 items contained a component of decision difficulty or indecisiveness. For example, Item 6 was, "I often find it difficult to shop for a gift for a friend." The other item in Factor 2 (Item 10) involved a preference for ranking lists. Two of the Factor 3 items, "No matter what I do, I have the highest standards for myself," and "I never settle for second best," are very similar to the high personal standards items in some perfectionism measures such as, "I set very high standards for myself," and "I expect the best from myself" (Slaney et al., 2001). Furthermore, the underlying assumption that people would translate their high standards from their personal domains to their choices in various occasions seems premature. For instance, Shea, Slaney and Rice (2006) found that having high standards towards oneself is only partially correlated with having high standards for relationship partners.

The multiple dimensions of the MS and apparent overlap with other constructs have called into question whether the MS measures what it has claimed to measure. Diab et al. (2008) have challenged the empirical validity of the MS because MS scores exhibited stronger correlations with variables such as avoidance and neuroticism than with the majority of maximization variables such as behavior reports and situational dilemmas. In conclusion, Diab et al. (2008, p. 367) stated that MS is "a broad band-width measure" that taps a number of attitudes and traits rather than focuses on a single construct. Nenkov et al. (2008) derived three dimensions from the

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[1]One of the three items that loaded on "having high standards" (loading was .51) also cross-loaded on "regret" (loading was .36). The item reads, "Whenever I'm faced with a choice, I try to imagine what all the other possibilities are, even ones that aren't present at the moment." Schwartz et al. (2002) determined that this item belonged to the "having high standards" dimension after 10 out 11 of their informants judged it to be about maximizing rather than "regret", the latter factor existed in the initial exploratory factorial analysis as a fourth factor but was later excluded from the Maximization Scale.

shortened versions, namely Alternative Search, Decision Difficulty, and High Standards. Among them, Alternative Search consists of the items from the initial identified Factor 1 maximization behaviors, Decision Difficulty consists of those from Factor 2 maximization behaviors, and High Standards consists of those from Factor 3 having high standards. They reported differential patterns of correlations between the three dimensions and other related psychological variables. High Standards in particular often exhibited the opposite direction of correlations compared with the directions of effects with the other two dimensions. This finding again called attention to the distinctions among those dimensions.

Probably related to the above validity concerns, scores from the MS appear to have relatively low internal consistency reliability (Cronbach's αs ranged from .60 to .73 in Schwartz et al., 2002). In addition, half of the MS items have corrected item-total correlations below the conventional .25 level (Diab et al., 2008). The presence of the above psychometric concerns are probably not surprising, given the fact that during measurement development, the factorial structure for the MS was tested by exploratory factorial analysis (EFA) and has never been independently and more rigorously verified by any other approach, such as for example, a Confirmatory Factorial Analysis (CFA). CFA is commonly known as a much more parsimonious method in testing factorial structure than EFA (for a review, see Marsh, Hau, Balla, & Grayson, 1998). Given the high degree to which researchers have used the MS for maximization measurement in the past several years, it is clear that a more detailed and statistically rigorous examination of the MS should be conducted, one aimed at confirming it measurement structure and potentially improve the measurement if warranted.

Maximization and Psychological Well-being

Recall that the two major theoretical models argue the opposite in terms of the consequences of maximization. The rational choice theory camp emphasizes the external gains

of maximization, which may lead to psychological benefits in some cases. In contrast, the satisficing model supporters claim that maximization starts with unrealistic goals and leads to unproductive efforts and excessive cognitive overload. Past research has lent support to the satisficing model and suggested that maximization leads to negative outcomes in psychological well-being. For example, Iyengar et al. (2006) found that job-seeking college graduates secured jobs with 20% higher salaries if they were high in maximizing tendencies than if they were low. However, despite their salary gains, the maximizing graduates reported *less* satisfaction with their job offers than their satisficing counterparts, and had suffered higher levels of negative affect during the job-search process. Parker, de Bruin, and Fischhoff (2007) examined several specific life domains and concluded maximizers were likely to run into troubles and ended up with unfavorable life outcomes, such as ruining clothes in the laundry, having a check bounce, having a mortgage or loan foreclosed, and being in jail overnight. In a broader sense of psychological outcomes, Schwartz et al. (2002) reported that the maximization orientation was related with overwhelmingly negative psychological experiences, including high depression, low dispositional happiness, low dispositional optimism, low life satisfaction, and low self-esteem.

Despite the accumulated evidence on the negative psychological implications of maximization, no causal directions have been defined and the mechanisms behind such relationships are yet to be determined. Some researchers speculated that maximization is the cause leading to unhappiness, by paths such as cognitive overload. For example, Iyengar and Lepper (2000) demonstrated that in making jam or chocolate purchasing choice, a small choice pool (6 options) tended to produce more purchasing decisions and higher consumer satisfaction than would a large choice pool (24 or 30 options). Given that maximizers are apt to consider more, and potentially better, choices (Schwartz et al., 2002), it is possible that they end up

suffering from the increasing pool of choices, presumably by the incurred information overload regarding the choices. However, one may argue that the scenario of consumer choice over trivial items with relative little distinction (differences of flavors) as in Iyengar and Lepper (2000) is hardly generalizable to the real life choices we face, such as job options.

In addition to cognitive overload due to abundance of choices, Schwartz et al. (2002) identified regret as a partial mediator for the relationship between maximization and unhappiness. The term *regret* here represents a range of psychological experiences including the tendency to be preoccupied by imaginary choices or newly emerging choices after the choice has already been made and the likelihood to be disappointed over the gap between the potential options and their reality choice. They suggested that maximizers often experience regret in relation to choice-making situations; the regret in turn leads to unhappiness and depression, partly by undermining individuals' sense of gratification through making good choices and keeping them from engaging in dissonance reduction and other adaptations to their choices. However, this explanation does not provide much additional information in understanding the function of maximization due to the significant conceptual overlap between maximization and regret. Developed initially to be part of the maximization construct, *regret* can also be interpreted as a special case of maximization, that is, maximization efforts when the maximization goal is apparently inaccessible, similar to extreme high levels of maximization tendency when the gains no longer overweigh the costs. By definition, such behaviors of regret are doomed to dissatisfaction, thus its association with unhappiness. On the other hand, regret may not account for the function of maximization when optimization goals are possible.

Overall, the above attempts in explaining the association between maximization and unhappiness shed some light on the function of maximization yet left an important question

unanswered – what are the mechanisms leading to individuals' continuous maximization efforts, if such efforts repeatedly lead to disappointment and misery? This is particularly curious, given the fact that maximizers are individuals who strive to get the optimal outcome in the first place. Perhaps the explanations lie in other personality factors which lead to both maximization and unhappiness. In other words, there may be some *confounding* factors which produce the connection between maximization and unhappiness, and maximization itself does not necessarily generate unhappiness. The current research proposed perfectionism as a potential confounding variable. Another possibility not addressed in past research is that maximization may not be completely debilitating. Rather, maximization below a certain degree may be associated with increasing benefits and affordable costs. Only when it reaches a certain threshold might the costs begin to outweigh the benefits. This hypothesis moves beyond a simple linear relationship between maximization and psychological well-being and incorporates both the rational choice and satisficing models. The current paper proposed a quadratic model to test this possibility.

Maximization and Perfectionism

Although the literature on perfectionism has not reached a complete consensus on its definition, it is commonly conceived as "a personality style characterized by striving for flawlessness and setting of excessively high standards for performance…" (Stoeber & Otto, 2006, p. 295). Besides the traditionally recognized maladaptive/dysfunctional aspects, perfectionism also contains adaptive/functional dimensions (e.g., Frost, Heimberg, Holt, Mattia, & Neubauer, 1993, Terry-Short, Owens, Slade, & Dewey, 1995, Slaney, Rice, & Ashby, 2002). For instance, Slaney and colleagues (2002) suggest that perfectionism can be motivating and functional when individuals perceive a close match between their actual performance and their high personal standards. On the other hand, perfectionism is psychologically detrimental when individuals perceive a large gap between their high standards/expectations and actual

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performance. In both cases, striving to meet high standards, approaching perfection and reducing degrees of imperfection may underlie their search strategies for better life choices.

Schwartz et al. (2002) made an early attempt to correlate perfectionism and maximization. Their findings provided initial support for the expected connection, yet failed to give a complete picture of perfectionism and its role in maximization, primarily because they measured perfectionism as a single dimensional variable rather than as a multi-dimensional construct. Specifically, they only used the Self-oriented Perfectionism subscale from the original Multidimensional Perfectionism Scale (MPS, Hewitt & Flett, 1990, 1991) and omitted the other two subscales capturing the interpersonal dimensions of perfectionism. Furthermore, this Self-oriented Perfectionism scale, and by association, Schwartz et al. (2002), made no distinction between adaptive and maladaptive dimensions of perfectionism. The value of such a distinction has been supported by recent extensive reviews of the perfectionism literature (Stoeber & Otto, 2006; but also see Shafran, Cooper, & Fairburn, 2002 on *clinical perfectionism*). It is thus difficult to connect the findings of Schwartz et al. (2002) with some other related studies on perfectionism.

In fact, Bergman and colleagues (2007) provided empirical evidence that the connection between perfectionism and maximization cannot be simply captured in negative or pathological terms. They employed a measurement of perfectionism distinguishing two types of perfectionism labeled as "positive" and "negative" perfectionism (Positive and Negative Perfectionism Scale, PNP, Terry-Short et al., 1995). This measure was constructed based on the conceptualization that both positive and negative perfectionism involves high standards, as consistent with other commonly used perfectionism scales, yet uniquely defined positive perfectionism as related to fulfillment of high standards and the incurred positive reinforcement. They defined negative

perfectionism as related to failure of meeting high standards and the resulted negative reinforcement, including negative emotions. This research evidenced a significant association between perfectionistic and maximizing tendencies, with a larger effect size between maximization and negative perfectionism than that between maximization and positive perfectionism. In other words, perfectionism contributed to the degree of maximization in relation to individuals' long-term experiences of success or failure in meeting their high standards. Individuals who have frequent experiences of success and satisfaction from fulfilling their high expectations maximize at a moderate level but forgo maximizing before such tendency reaches an extremely high level. Perhaps, the experiences of satisfaction allow them to be relatively less anxious about occasional unmet expectations and be more responsive to the incurred cost of continuing to search. In contrast, those who frequently fall short of their expectations appeared to maximize at a higher degree, probably driven by both the disappointment that the choices at hand are rarely good enough and the anxiety that further maximization would reduce their distance from the desired goals. Saying this differently, having high standards is likely the initial drive and the frequent experiences of gaps between one's standards and reality lead to additional pressures for maximizing. Although this latter assumption appears to be a logical interpretation of the findings by Bergman et al. (2007), such a conclusion could not be drawn due to the limitations in both conceptualization and validity problems associated with the PNP. In particular, item content of the PNP taps one other confounding factor besides the perfectionism trait – life experiences of failures and successes. The factor structure of the PNP has also been inconsistent across studies (e.g., see Haase & Prapavessis, 2003). Bergman et al. (2007) thus suggested that alternative perfectionism scales may be helpful to further illuminate the relationship between maximization and perfectionism.

The goal of the current study was to address the association between perfectionism and maximization in a more valid and informative way than has been accomplished in past research. In particular, I used a well-validated perfectionism measurement, the Almost Perfect Scale-Revised (APS-R, Slaney et al., 2001), which allows detailed examination of not only the possession of high standards (measured by the HS dimension of APS-R) but also the perceived discrepancy between one's standards and actual performance (measured by the DIS dimension of APS-R). This scale also contains a third dimension Order, which captures individuals' needs for neatness and structure. It is conceptually not closely related to maximization and hence not within the focus of the current investigation. I proposed that perfectionism, in this case represented by the HS and DIS dimensions, should be one personality factor determining individuals' tendency to maximize. The rationale is that people may often optimize their options as much as possible in service of, or in the pursuit of, personal perfection. Especially when they perceive a large gap between their expectation and reality, they may expect optimized alternatives would help narrow that gap. I also test whether the contributions of HS and DIS to maximization are independent from each other, or if an interaction between HS and DIS leads to higher maximization more than the simple addition of their individual contributions.

Past literature has established that perfectionism as a personality trait is associated with individuals' psychological well-being (for a review, see Stoeber & Otto, 2006). In particular, HS and DIS were both identified to have individual contributions to happiness/depression in opposite direction (e.g., Mobley, Slaney, & Rice, 2005). If indeed, perfectionism is a drive behind maximization, it is possible that perfectionism also explains the unhappiness of maximizers. In other words, I speculate that maximization does not necessarily cause depression, neither does depression cause maximization. Rather, maximization and depression are related

through the common perfectionism confounds of HS and DIS. In particular, given the maladaptive function of DIS, it is likely that DIS predisposes one to depression and leads to maximization strategies. Given the adaptive functions of HS, it is likely that HS would function in an opposite way to DIS, and probably serves as a protective factor that predisposes one to happiness or buffers one to upset from adverse consequences of maximization. In sum, I hypothesize that both HS and DIS contribute to maximization tendency and they have distinct confounding effects on the association between maximization and psychological well-being.

Maximization and Need for Cognition

Need for cognition is a construct describing individuals' proclivity to process information and enjoy thinking (for a review, see Cacioppo, Petty, Feinstein, & Jarvis, 1996). Individuals high in needs for cognition find effortful cognitive activity intrinsically rewarding. Although there are exceptions, such as individuals who use heuristic decision-making or rely on other people's opinion to maximize, in many cases maximization increases the amount of cognitive activities in information processing. It is possible that maximizers also tend to be high in the need for cognition and find additional enjoyment in the cognitive involvement of the decision-making process. If that is the case, the difference in need for cognition can offer an additional explanation for the differences between maximizers and satisficers, in that the cognitive burden for satisficers may not be as great a burden for maximizers. Maximizers may even engage in maximization for the sake of cognitive activities in addition to anticipating the gains from the final outcome. In contrast, satisficers may disengage from further choice-making process and settle for a good enough option due to their aversion towards the additional demands of the cognitive activities. This potential connection between maximization and need for cognition has received some indirect support from the past literature. For instance, individuals high in need for cognition tend to acquire high amounts of information before making their buying choices

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(Inman, McAlister, & Hoyer, 1990), and they often appear indecisive in the face of decision-making (Petty & Jarvis, 1996; Webster & Kruglanski, 1994). Both phenomena had been associated with maximization (e.g., Schwartz et al., 2002).

Some other theories and research studies suggest that individuals' maximization orientation may have little association with their need for cognition. As previously discussed, maximization does not necessitate high engagement in independent thinking; the latter is only characteristic of high need for cognition individuals. Iyengar et al. (2006) reported that maximizers tend to rely on opinions and recommendations from family, peers, professional services, and experts. Schwartz et al. (2002) found that maximizers often refer to more heuristics processes of decision-making and external information resources, such as social comparison. Similarly, Parker et al. (2007) observed maximizers as dependent on others when making decisions, engaging in spontaneous decision making, and ending up with worse life outcomes. None of these patterns were associated with need for cognition, which is usually considered a functional trait (Cacioppo et al., 1996).

Taken together, previous theories and research have lent tentative support to both distinction and connection between maximization and need for cognition. Up to date, only one study directly tested the relationship between the two constructs and the results were mixed (Neknov et al., 2008). One out of the three versions of maximization measurement revealed an association between maximization and need for cognition; such associations lie in the dimensions Decision Difficulty and High Standards, but not in the dimension Alternative Research. Recall that Alternative Research was the dimension containing maximization behaviors items more closely tied to the core construct and the other two dimensions are conceptually peripheral.

Demographic Factors Related to Individual Differences in Maximization

Although not the primary focus of the current study, the relationships between maximization tendency and demographic factors are also of interest. In particular, two demographic factors are relevant to the study of maximization: gender and ethnicity/cultural background. In terms of gender differences, previous findings have been mixed and inconclusive. Schwartz et al. (2002) found a significantly higher tendency toward maximization among men than women in three samples but not in the other four samples. Factors such as the different population composition of the samples did not seem to offer explanations for this pattern of inconsistency. In the current study, I proposed to use a refined scale to clarify the existence of gender differences in maximization.

The implication of cultural differences in maximization has been proposed but is only at a preliminary stage of research to date. Schwartz (2004a) proposed that the mainstream culture of American society is particularly favorable towards maximization due to the ideological significance of economics and rational-choice theory, which suggests that maximization is the method to reach rational and optimal choices. Consistent with this assumption, Rozin, Fischler, and Shield (2006) found that, compared with their European counterparts, U.S. individuals are more likely to prefer large numbers of choices, such as flavors of ice cream or choices of dishes at an upscale restaurant. If the values of rational-decision making and the practice of maximization are indeed culture-dependent phenomena, it is possible that maximization tendency is more pervasive among certain cultural groups than others. It is also possible that individuals belonging to social groups with long-term limitation of choices may be more likely to strive for optimality than individuals who often experience abundance and accessibility of options within their social group. In the current study, I will explore these potential cultural differences by comparing the maximization scores among four relatively substantial ethnic and

cultural groups in the U.S.: White/European Americans, Black/African American, Hispanic/Latino, and Asian/South Pacific Islander. Although little directional hypothesis can be drawn from the existing literature, I proposed that the ethnic minority groups may exhibit a higher maximization tendency than the group of White/European Americans. The rationale is that individuals may tend to make strong optimizing efforts if they struggle with survival and perceive their choices as highly limited, which is a condition likely more true to the ethnic minority groups than White/European Americans in the U.S. society.

Research Questions and Hypotheses

In sum, in the current research I refine the measurement of maximization based on its unidimensional conceptualization. I also examine the relationship between maximization with perfectionism and test perfectionism as a potential explanation for the implication of maximization on psychological well-being. I conducted two studies to serve these research goals. In Study 1, I test the original maximization measurement along with newly developed items and compare the fit and other psychometric properties of several measurement models. The goal was to identify a valid and reliable model of measurement with its content closely tied to the central conceptualization of maximization and having little overlap with other constructs. Confirmatory Factorial Analysis (CFA) and other psychometric evaluation procedures were performed to assess the adequacy of several competing models and determine a final best model. The final model was also cross-validated with the data from Study 2.

In Study 2, I investigate the relationships between maximization and several variables: perfectionism, need for cognition, and psychological well-being. For perfectionism, I expected that both high personal standards (HS) and large discrepancy (DIS) should be associated with high maximization tendencies. I also tested the interaction of HS and DIS but have no directional hypothesis for it. An associated but different question is whether individuals with a combination

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of high of HS and DIS, i.e., maladaptive perfectionists (Rice & Ashby, 2007), are more likely to maximize than individuals who have high HS but low DIS (adaptive perfectionists) and those who have low HS (non-perfectionists). The dimension Order is included as part of the APS-R scale but no hypothesis was proposed in regard.

Psychological well-being was evaluated using three variables: dispositional happiness, depression, and life satisfaction, consistent with measures employed by Schwartz et al. (2002). I test the association between maximization and psychological well-being first with a linear model and then a quadratic model. If the findings support the negative implications of maximization, as consistent with Schwartz et al. (2001), I hypothesize that HS and DIS should both confound these associations in distinctive ways. In particular, HS should suppress such associations to the point that, if HS effects are controlled, the remaining variation in maximization would show a stronger relationship with psychological well-being. In contrast, DIS may confound the relationships between maximization and the psychological well-being variables that if DIS is partialled, maximization may no longer associate with psychological well-being.

No directional hypotheses were proposed for the other relationships examined in the current study: the association between maximization and need for cognition, and gender and ethnic/cultural differences in maximization.

CHAPTER 3
METHODS

Study 1

Participants and Procedures

A total of 2046 participants were recruited from the general psychology participation pool

of a large university campus in the southeastern U.S. The questionnaire took 5 to 10 minutes to

complete and was administered as part of an online prescreening survey for multiple studies (see

Appendix A for the questionnaire; there was no individual consent form for this survey). Data

from 33 participants were excluded from the subsequent analyses due to at least one piece of

missing data. The two most missed answers were ethnicity and age: 20 and 15 cases were

unanswered for the two questions respectively. This reduced the sample size to 2003

participants, a number that exceeded both Tabachnick and Fidell's (2007) "recommended" $N =$

300 and Comrey and Lee's (1992) recommendation for an "excellent" sample size ($N = 1,000$)

and was sufficient to detect the factor loadings of the scale items.

Maximization tendency scores were examined for assumptions supporting multivariate

analysis. Based on Field's (2005) recommendations on the normality of large samples (200 or

more), I examined the shape of the histograms and the skewness and kurtosis values of the each

item score distribution. Most of the maximization scores appeared negatively skewed and spread

out, indicating likely departures from normality. The histograms of each variable distribution

showed no significant univariate outliers. Tests of multivariate outliers (Mahalanobis distance),

on the other hand, identified 10 cases of significant outliers, $\chi^2 (24) = 42.98$, $p < .001$. Closer

observations of the outlying cases suggested that their response patterns tended to include both

extremely high and low values, which would be inconsistent with normal expected patterns. It is

possible that those respondents either did not pay close attention to the questions or they simply

had atypical personality patterns. The 10 cases were excluded and the remaining 2003 cases were retained as the final analysis sample.

In this sample, 1375 participants were women and 628 were men. Their ages ranged from 17 to 25 years, $M = 18.77$ ($SD = 1.17$). Slightly more than half of the sample were White/European American (56.8%, $N = 1137$); the remaining ethnic composition was: 14.9% Black/African American ($N = 299$), 14.5% Hispanic/Latino ($N = 291$), 8.0% Asian/South Pacific Islander ($N = 160$), 4.2% Biracial/Multiethnic ($N = 85$), 0.4% Arab/Middle Eastern ($N = 9$), 0.2% Native American ($N = 5$), and 0.8% "other" ($N = 17$). The majority (93.7%) reported that English was their primary language.

Measures

Development of new maximization items

I developed 6 new maximization items to provide additional item choices that reflected the core definition of maximization as presented in the literature review. Two of the items address the attitudes and thoughts related to the maximization tendency yet were underrepresented in the original maximization scale: "I always keep my options open so I will not miss the next best choice available in life;" and "Even if I see a choice I really like, I have a hard time to make the decision if I do not have a chance to check out other possible options." One item offers a behavioral description of maximization in additional to the scenarios in the original MS: "When going to a new restaurant, I find myself reading the complete menu before narrowing down on what I want to eat". The other three new items are revisions of three items from the original maximization scale (Items 6, 7 & 8). The revisions were made so that these items would describe maximization without confounding maximization with the construct of indecisiveness. For example, Item 6 originally was phrased: "I often find it difficult to shop for a gift for a friend."

That item was reworded to be: "I try to do an extensive search when I look for a gift for a close friend."

In sum, all six new items were written to better capture the core concept of "making the best out of a situation" and "optimizing the outcome" in choice-making (see Appendix A, Items 19-24). Similar to the original MS, participants express their agreement on a 1 (*strongly disagree*) to 7 (*strongly agree*) Likert-type scale. In order to improve the items' readability and content validity, items were reviewed by one Ph.D.-level psychologist and three experienced undergraduate and graduate research assistants. Reviewers were provided with the definition of maximization and asked to comment on how well the items "capture the idea of maximization and the idea only (i.e., doesn't confound with other constructs)."The reviewers independently evaluated each item and were in complete agreement that the finalized new items were conceptually relevant in describing "maximization."

Maximization scale

The original Maximization Scale (Schwartz et al., 2002) is a 13-item measure. Participants respond to the items using a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). A sample item is: "Whenever I'm faced with a choice, I try to imagine what all the other possibilities are, even ones that aren't present at the moment." According to Schwartz et al. (2002), items loaded on three factors in a principal-components factor analysis (PCA): two factors were behavior examples of maximizing and one factor represented having high standards. Internal reliability coefficients (Cronbach's *αs)* ranged from .60 to .73 in different samples (Schwartz et al., 2002). Scores for the individual items were averaged to create a composite maximizing score, with a higher score representing greater tendency to optimize one's final choice. The maximization scores in the Schwartz et al. samples ranged from 1.15 to 6.62, with a mean of 3.88 (*SD* was not reported) and a median of 3.85. Schwartz et al. (2002) identified those

who scored among the top third on the Maximization Scale on the maximization scores as "maximizers" and those who scored among the bottom third as "satisficers." The maximizers' group mean was 5.26 ($SD = 0.50$), whereas the satisficers' group mean was 3.49 ($SD = 0.43$).

Regret scale

Used initially as part of the Maximization scale and later as a closely related concept (Schwartz et al. 2002), the Regret Scale were administered together with the Maximization scale for the sake of replication. Similar to the Maximization scale, respondents indicate to what extent they agree with the statement from 1 (*strongly disagree*) to 7 (*strongly agree*). The Regret Scale contained 5 items and its scores obtained from the four college student samples in Schwartz's study have reached acceptable internal reliability (Cronbach's αs range between .67 to .78). A sample item is, "If I make a choice and it turns out well, I still feel like something of a failure if I find out that another choice would have turned out better." In Schwartz et al. (2002), participants' Regret scores correlated significantly with their Maximization scores (rs ranged from .36 to .61, ps < .001, in six independent samples, four of which were samples of college students).

Study 2

The major goals of Study 2 were: 1) to cross-validate the newly constructed MBS; 2) to examine the association between MBS and two personality traits: perfectionism and need for cognition; and 3) to test the effects of perfectionism (HS and DIS dimensions) on the psychological implications of maximization.

Participants and Procedures

A total of 447 students from the same southeastern university were recruited to participate in this study. The students were recruited using the same psychology participation research pool procedures as in Study 1 but because the study was conducted during a different semester, the

pool of students was different for this study. The study was conducted online (see Appendix B for the online consent form and Appendix C for the questionnaire). In order to counterbalance the potential order effects of the measures, two versions of the questionnaire were used with alternated orders of the measures. Participants freely chose to sign up for either but only one of the two surveys; the numbers of participation slots opened were monitored in a weekly basis in the efforts to keep equal number of participants for each version. I excluded data from participants who declined to answer more than 5 survey items, approximately 5% of the survey ($N = 6$), and retained those who declined to answer 1 to 5 questions ($N = 27$).

This data collection as well as that in Study 1 was both conducted on the Internet. On one hand, research on methodology such as Gosling, Vazire, Srivastava, and John (2003) supported Internet data collection and found Internet findings are consistent with findings from traditional methods, such as the paper-and-pencil method. On the other hand, due to the relatively easy accessibility of online questionnaires in comparison to paper-and-pencil method, Gosling et al. (2003) alerted researchers for possibilities of nonresponsiveness (unmotivated or noninterpretable responses.) One marker of nonresponsiveness is long strings of identical responses, as recommended by Johnson (2001). In the current study, five participants responded in a matter consistent to the above description throughout the survey (such as the choice of "neutral" or the choice at one extreme end of the scale, including the reverse-coded items), except for the demographics. I thus decided to eliminate their data from the analysis.

This final sample retained 97.54% of the original sample, or 436 participants (257 women, 178 men, and one identified as "queer"). Their age ranged from 18 to 30 years, with mean = 19.36 ($SD = 1.31$). More than half of the sample were White/European American (59.6%, $N = $

260); the rest of the ethnic composition was[1]: 11.7% Black/African American ($N = 51$), 11.7% Hispanic/Latino/Mexican American ($N = 51$), 9.2% Asian/Asian-American ($N = 40$), 4.6% Multicultural/Mixed Race ($N = 20$), 1.4% Pacific Islander ($N = 6$), .7% Middle Eastern ($N = 3$), .5% Native American ($N = 2$), and .6% chose "other" ($N = 3$, include 1 no specification, 1 Pilipino, and 1 Egyptian). The majority (53.1%) were freshman with diverse majors (11% of the sample majored in psychology). Similar numbers of participants participated in each version of the study: 231 participants completed Version 1 and 205 completed Version 2.

Measures

Perfectionism

The Almost Perfect Scale-Revised (APS-R, Slaney, et al., 2001) contains 23 items designed to measure adaptive and maladaptive dimensions of perfectionism. The subscales are: High Standards (HS, 7 items), Discrepancy (DIS, 12 items), and Order (4 items). HS represents an individual's level of expectations related to his/her performance. A sample item is: "I have high standards for my performance at work or at school." DIS represents "the perception that one consistently fails to meet the high standards one has set for oneself." (Slaney et al., 2002, p. 69). A sample item is "I rarely live up to my high standards." Order represents individuals' preferences for order and organization. A sample item is "I am an orderly person." Participants respond to the items using a 7-point Likert scale ranging from 1 = *Strongly Disagree* to 7 = *Strongly Agree*. Higher scores across each subscale correspond with higher levels of each dimension.

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[1]In Study 2, the cultural/ethnic categories provided as answer options were adapted following recent cultural sensitive categories. They are slightly different from the categories provided in Study 1, which was determined by the administrators of the overall screening procedure, not the author.

The structure and independence of the three subscales have been supported by exploratory and confirmatory factor analyses (Slaney et al., 2002). Cronbach's coefficient αs were .92 for DIS, .85 for HS, and .86 for Order (Slaney, et al., 2001). Scores from the subscales relate in expected directions with other measures of perfectionism and with measures of psychological adjustment, such that HS is adaptive or benign, DIS is maladaptive, and Order is often neutral (Rice & Slaney, 2002; Slaney, et al., 2001; Suddarth & Slaney, 2001). The combination of high scores on DIS and HS tend to distinguish maladaptive perfectionists from the other groups (Grzegorek, Slaney, Franze, & Rice, 2004; Rice & Slaney, 2002).

Need for cognition

The Need for Cognition Scale (NCS) was first developed as a 34-item measure by Cacioppo and Petty (1982). A short form of the NCS was subsequently developed by Cacioppo, Petty, and Kao (1984) on the basis of re-analyses of data from the original Cacioppo and Petty (1982) study, and a replication and extension involving 527 undergraduates. Reliability and factor analyses confirmed that the 18-item NCS was highly correlated with the original 34-item NCS ($r = .95$, $p < .001$), possessed high internal consistency (Cronbach's $a = .90$), and was characterized by one dominant factor (accounting for 37% of the variance). The 18-item short form has shown high internal consistency results, typically Cronbach's as > .85, in other studies (e.g., Berzonsky & Sullivan, 1992; Kernis, Grannemann, & Barclay, 1992; Miller, Omens, & Delvadia, 1991). Sadowski and Gulgoz (1992) reported a test-retest correlation of .88 *(p < .001)* over a 7-week period in their study of 71 undergraduates using the 18-item NCS. Convergent validity of the measurement was demonstrated in that participants with higher NCS scores tended to reported lower scores on dogmatism (Cacioppo & Petty, 1982; Fletcher, Danikwies, Fernandez, Peterson, & Reeder, 1986), closed-mindedness (Petty & Jarvis, 1996; Webster &

Kruglanski, 1994), the tendency to ignore, avoid, or distort new information (Venkatraman,

Marlino, Kardes, & Sklar, 1990), and attention to social comparison cues (Miller et al., 1991).

Depression

The Beck Depression Inventory Short Form (BDI-SF; Beck & Beck, 1972) is the 13-item

short form of the commonly used Beck Depression Inventory (BDI, Beck, Ward, Mendelson,

Mock, & Erbaugh, 1961; Beck, 1967). In responding to 13 individual depression symptoms

related domains from emotions to social and work adjustment, participants choose from a list of

four statements based on which one accurately describes the way they feel at the present day

(multiple choices are allowed). Each choice of statement was assigned a corresponding score

from 0 to 3, with higher score indicating higher level of depression. For example, in the first

dimension "Sadness", participants may choose from 3 = "I am so sad or unhappy that I can't

stand it," 2 = "I am blue or sad all the time and I can't snap out of it," 1 = "I feel sad or blue."

and 0 = "I do not feel sad." Beck, Rial, and Rickels (1974) and Gould (1982) found high

correlations between the short form and the original version of BDI. The psychometric property

of BDI-SF has also been adequately validated among college age population (Gould, 1982) as

well as clinical (e.g., Beck & Beck, 1972) and large community samples (e.g., Knight, 1984). For

example, Knight (1984) reported that the scale internal consistency Cronbach's α was .81. Gould

(1982) reported the mean score was 5.67 (SD = 5.1) among males and 4.70 among females (SD =

3.1). Gould (1982) also reported adequate convergent validity of BDI-SF in that participants with

high BDI-SF scores also reported higher scores on the Zung Self-rating Depression scale (Zung,

1973), the UCLA Loneliness Scale (Russell, Peplau, & Ferguson, 1978), and lower scores on

Rosenberg Self-esteem Scale (Rosenberg, 1965). In Schwartz et al. (2002), BDI depression

scores correlated significantly with the original Maximization scores consistently across samples

(rs ranged from .24 to .44, ps < .01).

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Subjective happiness

The Subjective Happiness Scale (SHS; Lyubomirsky & Lepper, 1999) is a 4-item scale. Participants respond to a 7-point Likert scale, higher scores representing greater happiness. A sample item is "in general, I consider myself…," 1 = *not a very happy person*, 7 = *a very happy person*. Lyubomirsky and Lepper (1999) found support for a single factor loading during their scale development. Good to excellent internal consistency across samples of varying ages, occupations, and cultures (*α*s ranged from .79 to .94) was also reported. Test-retest reliability was reasonably high, ranged from .55 to .90 (*M* = .72) in different samples, with the time lags between testing sessions ranged from 3 weeks to 1 year. Reasonable convergent validity was demonstrated in that participants with higher SHS scores are more likely to report higher self-esteem, higher optimism, and less depression. The mean scores in Lyubomirsky and Lepper (1999) range from 4.63 (*SD* = 1.72) to 5.07 (*SD* = 1.14) in several samples of U.S. college students. In Schwartz et al. (2002), the SHS scores correlated with the original Maximization scores consistently across samples but not always at a statistically significant level scale (*r*s ranging from -.10 to -.28).

Life satisfaction

The Satisfaction with Life Scale (SWLS, Diener, Emmons, Larsen, & Griffin, 1985) is a 5-item scale widely used in psychology studies. Participants respond to items using a 7-point Likert scale, with higher scores representing greater life satisfaction. A sample item is: "In most ways my life is close to ideal." 1 = *Strongly Disagree*, 7 = *Strongly Agree*. In Diener et al. (1985), this measure showed reasonable single-factor structure, internal consistency coefficient *α* was .87, and two-month test-retest reliability was .82 among a sample of college students. It also demonstrated reasonable convergent validity such that participants with high scores on this measure are more likely to report high scores on several other widely used subjective well-being

scales, higher self-esteem and lower neuroticism. The mean SWLS score in Diener et al. (1985) was 23.5 ($SD = 6.43$). In Schwartz et al. (2002), the SWLS scores correlated significantly with the original Maximization scores ($r = -.27$, $p < .01$).

CHAPTER 4
RESULTS

Study 1

Confirmatory Factor Analyses.

The PRELIS/LISREL 8.54 (Jöreskog & Sörbom, 2003) program was used to generate a polychoric correlation matrix for the Confirmatory Factor Analyses (CFAs). Polychoric correlations are recommended when analyzing item-level data because the distributional properties of item data are more likely to be ordinal and skewed than continuous and normally distributed (Nunnally & Bernstein, 1994). Polychoric correlations are estimates of what the correlations among variables would be if the variables were continuous and normally distributed (Nunnally & Bernstein, 1994, p. 127). Maximum likelihood estimation was used as the estimation method for the CFAs.

To evaluate model fit, I followed recommendations to report the chi-square statistic with degrees of freedom and significance level, the goodness-of-fit index (GFI; Bentler, 1983; Jöreskog & Sörbom, 1997), the comparative fit index (CFI; e.g., Kline, 2005; Worthington & Whittaker, 2006), the standardized root-mean-square residual (SRMR), and the root mean square error of approximation (RMSEA) with 90% confidence interval (CI). Although chi-square is expected to be small and nonsignificant according to the typical recommended criteria for adequate model, chi-square value is affected by sample size and such criteria can hence lead to overrejection of adequate models when sample size is large enough (for a review, see Marsh, Balla, & McDonald, 1988). Therefore, I applied no specific acceptance criteria for chi-square and used it only as a reference point in comparing competing models. There are compiling discussions in methodology on cutoff criteria of various fit indexes to evaluate model fit. In terms of specific acceptable v the GFI and CFI should be close to or greater than .90 (Quintana

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& Maxwell, 1999; Weston & Gore, 2006). The SRMR less than or equal to .08 indicates a good

fitting model (Hu & Bentler, 1999). The RMSEA may be .05 or less if a close fit, or at least .05

to .08 if a fair fit. Hu and Bentler (1999) recommended joint consideration of the SRMR and

RMSEA, as the best approach for managing Type I and Type II errors; the combination of an

SRMR of .10 or less with an RMSEA of .06 or less resulted in the least number of Type I and II

errors in determining adequacy of a model.

The first CFA contained the 18 original maximization and regret items loading on four

factors: Maximization Behavior I (6 items), Maximization Behavior II (4 items), Having High

Standards (3 items), and Regret (5 items). The relationships between the four factors were

constrained to be orthogonal. This model was supported by PCA with varimax rotation in

Schwartz et al. (2002). After deletion of the outliers, the variable scores are still not normally

distributed, Mardia's coefficient = 58.02, normalized estimate = 48.39. A more robust chi-

square, Satorra-Bentler Scaled χ^2 (S-B χ^2, Satorra & Bentler, 2001) was used in order to address

the concerns raised by the violation of multivariate normality. As shown in Table 4-1

(uncorrelated factors model), the results did not support this model. The fit indexes were poor

and there were additional concerns with the identification of the model. The S-B χ^2 difference

(Satorra & Bentler, 2001) was 743.40, $df = 6$, $p < .01$, which supports the conclusion that the

correlated factors model is a significant improvement of the uncorrelated factors model.

Next, I tested the same 18 items and 4 factors, but allowed the factors to correlate. As

shown in Table 4-1 (correlated factors model), this model is a significant improvement over the

orthogonal model. All the fit indexes improved, and there was a significant chi-square difference

between the correlated factors model and the uncorrelated factors model. In addition to

substantial improvement in model fit, the correlations between the factors (rs ranged from .19 to

.50) suggest that the original orthogonal assumption is not an accurate reflection of the relationship between the factors. Note that although the correlated factors model indicates a reasonable fit, it still has space to improve.

I proposed earlier that it is theoretically more sound to adopt a unidimensional approach in maximization measure construction than a multidimensional approach. Therefore, the next set of CFAs was conducted on several competing models, with items constrained to load on one single maximization factor. The first single factor model I tested used all the original 13 items of MS. As shown in Table 4-2, the fit was fair based on GFI but poor according to CFI, SRMR and RMSEA. It appeared that the 13 items indeed measured multiple constructs beyond maximization, consistent with Diab et al.'s (2008) conclusion. This finding provided empirical support for a new model to capture the consistent and unidimensional construct of maximization.

The next model tested consisted of only the 6 maximization behavior items as indicators of a single dimensional measure. Items selected were those that loaded on Factor 1 (Maximization Behaviors) in Schwartz et al. (2002) and displayed no conceptual overlap with other constructs such as indecisiveness and having high standards. All the fit indexes supported this model. The internal reliability of the 6-item model Cronbach's α was.60, lower than the traditionally cutoff value of .70. However, Schmitt (1996) argued that the major concern regarding low reliability is that it might attenuate the detected relationships between the measured construct and other constructs. If such attenuation is not a concern or can be corrected, a measure with other desirable properties yet a low reliability may still be valuable.

Having argued that the 6-item model is acceptable as maximization measurement, I still seek for possibilities of improving the measure. Because measures with small numbers of items are more likely to suffer low reliability than those with larger numbers of items (Schmitt, 1996),

I tested whether adding the 6 newly developed items to the 6-item model would help improve the reliability. Indeed, the internal reliability of the 12-item measure was much enhanced (Cronbach's $\alpha = .71$). In regard to fit indexes, the fit indexes of the 12-item model are not as good as the 6-item model, with the CFI slightly falls short of the .90 cutoff criterion. This is probably due to added unique variance associated with the 6 new items. However, other than CFI, all the rest fit indexes of the 12-item model indicated a good fitting model. Although the relative inferior fit indexes suggest an increased risk of underrejection of inadequate models (Hu & Bentler, 1999), the combination of validity and reliability indicate that the 12-item measure is statistically more adequate than the 6-item one.

In an attempt to improve the 12-item model, I examined whether elimination of certain individual items may help improve the model. Item 9 and 23 were identified as candidates for removal because they had the lowest loadings on maximization (.28 and .22, respectively) and the lowest corrected inter-item correlations among all the 12 items. I therefore eliminated these two items and tested the resulting 10-item model. The comparison of fit indexes between the 12-item and 10-item models led to a mixed conclusion. Other than that the RMSEA which exhibited a small increase, all the other fit indexes and internal reliabilities of the 10-item model are almost identical to those of the 12-item model. A detail examination of the individual item performances suggested that the 10 items present a more consistent and uniform pattern across the items than the 12 items do. As shown in Figure 4-1, the item factor loadings of the 10 items ranged from .36 to .66, in slight contrast to those of the 12 items, which ranged from .22 to .64. In addition, as shown in Table 4-4, all items of the 10-item scale meet the conventional standard (.25) for corrected item-total correlations, while two items from the 12-item scale fell short of this standard. Taken together, I decided to adopt the 10-item scale as an adequate maximization

measurement and used that version for the remaining analyses. I named this measure

"Maximization Behavior Scale" (MBS) in order to distinguish it from the original MS and to

highlight its unidimensionality.

Relations of MBS to the Demographic Variables.

I conducted a two-way ANOVAs to compare MBS scores among the two gender groups

and the four ethnic/cultural groups, i.e, White/European American, Black/African American,

Hispanic/Latino(a), and Asian/South Pacific Islander. The pattern is presented in Figure 4-1.

There were significant main effects of both gender and ethnicity, $F(1, 1879) = 15.16$, $p < .01$,

and $F(3, 1879) = 3.29$, $p < .01$, respectively. There was no interaction between gender and

ethnicity, $p > .1$. Specifically, women reported significantly higher maximization scores ($M =$

4.74, $SE = .03$) than did men ($M = 4.53$, $SE = .05$), effect size Cohen's $d = .26$. Recall that

Schwartz et al. (2002) found the opposite patterns and other studies did not identify any gender

differences, the current finding suggests that women exhibit a stronger behavioral tendency to

maximize their choices than do men.

Regarding cultural/ethnicity, the post-hoc analysis suggests that the significant differences

were only between White/European American ($M= 4.55$, $SD = .82$) and the three ethnic minority

groups, $M_{\text{Black/African American}} = 4.71$ ($SD = .91$), $M_{\text{Hispanic/Latino}} = 4.71$ ($SD = .93$), $M_{\text{Asian/South Pacific}}$

$_{\text{Islander}} = 4.76$ ($SD = .83$), ps $< .05$, Cohen's $d = .18$, .18, and .25, respectively. There were no

significant differences among the three ethnic minority groups. Noting that 120 participants

belonging to ethnic groups other than the five groups were excluded from the analysis, I included

them in the analysis by creating a dummy variable "minority status", in which participants who

belong to the White/European American group were coded as 0 and everyone else were coded as

1. A two-way ANOVA comparing gender and minority status revealed the similar pattern, that

there are significant effects of both gender and minority status and not interaction between them,

*p*s < .001. In sum, consistent with my prediction, in both the cases of gender and ethnicity the groups who traditionally received less social privilege were more likely to maximize than the traditionally privileged groups.

Study 2

Preliminary Analyses.

Table 4-5 displays the scale means, standard deviations, and internal consistency estimates for the measures. Similar to Study 1, procedures for normality screening were performed for all variables. The scores of HS, Order, Happiness and Satisfaction were negatively skewed; the scores of DIS and Depression were positively skewed. In addition, HS and Depression scores were substantially dispersed whereas Order and DIS scores accumulated close to their respective means. Scores on the NFC, MBS, and Regret appeared normally distributed. Based on the recommendation by Field (2005), data transformation was performed for all scores except NFC, MBS and Regret and resulted in approximately normal distribution for all variables. Analyses were conducted with transformed and nontransformed data and the pattern of results obtained from the transformed data displayed very minor difference from those identified by the nontransformed data. Because no important information would be missed by using the original data rather than the transformed data, and for the sake of easy interpretability, reported results are based on the original nontransformed data.

Pearson's chi-square tests to compare composition of gender and ethnicity and one-way ANOVA comparing ages indicated that there were no demographic differences among participants who elected to participate in Version 1 versus those participated in Version 2. One-way ANOVAs comparing the measure scores indicated no significant differences between the answers from Version 1 and those from Version 2. In other words, whether maximization

questions were completed before or after perfectionism questions did not make a systematic difference in participants' answers.

Cross-validation of MBS and Related Preliminary Analyses.

Did the MBS model we derived from Study 1 provide a good fit for the data from Study 2? The same CFA procedure was used to test the 10-item model with the current data and the results are reported in the last part of Table 4-2. The model fit and item loadings were replicated with Study 2 sample, for the most part, with some reasonable variations probably reflecting variations between the two samples. T-tests comparing the two samples showed no systematic sample differences substantial enough to raise concerns, $t\,(2437) = -.19$, $p > .90$.

Next, I examined the impact of demographics variables and procedure variables on MBS scores. Again the mean MBS score was higher among women ($M = 4.82$, $SD = .77$) than among men ($M = 4.68$, $SD = .78$), the effect size of the difference Cohen's $d = .18$, similar to that in Study 1. This difference did not reach statistical significance in Study 2, probably related to the smaller sample size. There were no significant gender differences in all other major variables, although there was a trend toward women ($M = 5.83$, $SD = 6.88$) reporting higher depression levels than men ($M = 4.50$, $SD = 6.53$), $F\,(2, 433) = 4.89$, $p = .06$, Cohen's $d = .20$. The difference between ethnic groups appeared again, that the members of the minority groups ($M = 4.88$, $SD = .73$) were significantly more likely to maximize than White/European American were ($M = 4.69$, $SD = .79$), $F\,(1, 434) = 7.00$, $p = .008$, Cohen's $d = .25$. In addition, minority status was also associated with significantly lower life satisfaction and higher depression, ps $< .05$. There was a trend of possibly higher perfectionism DIS, less need for cognition, and more regret, $.05 < p$s $< .10$[1] among ethnic minorities. There was no significant association between age and

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[1]Given the associations between minority status and several variables under test, I also tested the minority status as a moderator in the association between maximization and psychological well-being variables, with HS or DIS as the

maximization behavior, which is not surprising given the limited age variation in the current

college student sample.

Table 4-6 displays the correlations between the major variables. High maximization

tendency was associated with higher perfectionism levels across all three APS-R dimensions.

High maximization tendency was also linked to higher levels of regret, depression, lower levels

of dispositional happiness and life satisfaction, consistent with the findings in Schwartz et al.

(2002) but not the finding on life satisfaction of Diab et al. (2008). Finally, maximization

tendency was not associated with need for cognition, suggesting that there was little connection

between the two constructs[2]. Individuals who make efforts to maximize their choice do not

necessarily show more interest or tolerance towards effortful cognitive activities, although the

maximization process may very well be facilitated by increased cognitive processing. In fact,

high need for cognition was also associated with lower levels of regret and depression, and

higher levels of dispositional happiness and life satisfaction, opposite to the patterns associated

with high maximization tendency.

Relations of MBS to Perfectionism.

Several analyses were performed to examine the relationship between perfectionism and

maximization. Perfectionism has been conceptualized and measured in past research as both a

score variable and as a group/categorical variable. I therefore analyzed perfectionism in both

terms in the current study in order to facilitate the findings to connect with the two streams in the

literature. In particular, I used regression analysis first to examine the continuous relationship

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mediator. The moderated mediation models tested based on the recommendations of Edwards and Lambert (2007) were not significant and hence not discussed in the analysis and results section.

[2]Although not the focus of the current research, I also tested whether maximizers with high need for cognition were happier than those with low need for cognition. The regression analyses showed no interaction between maximization and need for cognition, ps > .1, again indicating the functional independence of the two constructs.

between perfectionism dimensions and MBS, and then ANOVAs to examine the maximization tendency among categories of perfectionists and non-perfectionists.

In hierarchical multiple regression analysis, I entered HS in the first step, DIS the second step, Order the third step, and HS x DIS in the fourth step to predict maximization. Prior to the regression analysis, all the IVs were mean-centered (Aiken & West, 1991). HS alone accounted for 2% of variance in maximization, $p = .002$, and adding DIS in the model helped explain an additional 17% of the variance, $p < .001$. Order and HS x DIS did not account for the variance in maximization, $ps > .1$. Tests of unstandardized partial regression coefficients at the final step revealed that both HS and DIS were significant predictors of maximization behavior, $B = .022$ and .021, respectively, $ps < .001$. As I had expected, individuals with either high HS or high DIS, or both, are more likely to maximize their choices than those with neither. The standardized coefficient Beta was .20 for HS and .41 for DIS, suggesting that the predicting strength of DIS is larger than HS. The finding that there was no interaction between HS and DIS suggests that the functions of HS and DIS are independent from each other, as consistent with past finding on the distinctive function of the two dimensions.

A similar pattern was identified when I examined individuals' maximization tendency based on perfectionist membership. Following the cutoff criteria supported by Rice and Ashby (2007), 94 participants were classified as maladaptive perfectionists (HS score ≥ 42 and DIS score ≥ 42), 138 participants classified as adaptive perfectionists (HS score ≥ 42 and DIS score < 42), and 204 were non-perfectionists (HS < 42). A one-way ANOVA comparing perfectionist groups (Maladaptive, Adaptive perfectionists and Non-perfectionists) revealed a significant main effect for perfectionist group, $F (2, 433) = 14.47$, $p < .001$, partial eta-squared $= .06$. In particular, maladaptive perfectionists ($M = 5.13$, $SD = .75$) were significantly more likely to

maximize than both adaptive perfectionists ($M = 4.64$, $SD = .74$, Cohen's $d = .66$) and non-perfectionists ($M = 4.68$, $SD = .76$, Cohen's $d = .60$), ps < .001. Adaptive perfectionists did not differ from non-perfectionists in their maximization tendency, probably due to the high DIS among some non-perfectionists.

I also conducted ANOVAs to examine the differences in psychological well-being among the groups, and found that, except for the difference in happiness between maladaptive perfectionists and non-perfectionists, all the between-group differences were significant, ps < .05. Maladaptive perfectionists were the most depressed and least satisfied group among the three, whereas adaptive perfectionists were the least depressed and most satisfied group. These results are consistent with Schwartz et al.'s (2002) findings regarding the relationship between maximization and psychological well-being.

Quadratic Relations of MBS to Psychological Well-being.

Based on the established correlations between maximization and the three psychological well-being variables, I tested whether a quadratic model would provide a good fit for these associations. In three separate hierarchical multiple regression analyses, maximization scores were entered in the first step and squared maximization scores were entered in the second step to predict depression, happiness, and life satisfaction. The model predicting depression was supported in that maximization alone accounted for 3% of variance in maximization, and adding squared maximization in the model accounted for an additional 1% of variance, ps < .05. The quadratic model is presented as following, with y representing depression and x representing maximization:

$$y = .92x^2 - 7.18x + 18.12$$

Figure 4-3 provides a visual presentation of the model. Tests of standardized partial regression coefficients at the final step revealed that maximization-squared is a significant predictor of depression, $p = .03$, and that the main effect for maximization is marginally significant, $p = .08$. This model supports the two-fold relationship between maximization and depression: below the maximization score of 3.90, an increase in maximization is associated with less depression; above 3.90, an increase of maximization is associated with an increase in depression.

For happiness and satisfaction, the quadratic term of maximization did not offer additional explanations beyond the linear term to their variance. This finding suggests that the simple linear relationships in these cases are better presentations of the associations than the quadratic relationships.

HS as Suppressor and DIS as Confound between Maximization and Psychological Well-being

In this section, I examined the suppressing effects of HS and confounding effects of DIS on the relationship between maximization and psychological well-being. A suppressor, according to the most generally accepted definition by Conger (1974, p. 36–37), is "a variable which increases the predictive validity of another variable (or set of variables) by its inclusion in a regression equation" (see also Tzelgov & Henik, 1991). MacKinnon, Krull, and Lockwood (2000) further explain that a suppressor likely accounts for variability in the predictor. When that part of overlapping variability between a predictor and a third variable is controlled, a stronger relationship between that predictor and an outcome would emerge. A confounding variable explains the association between the two variables of interest that, if controlled, would reduce the association between the two variables (MacKinnon, et al., 2000). MacKinnon et al. (2000) conceptualized that suppression and confounding, as well as mediation, can all be considered as

tests of the change in the relationship between two variables as the function of a third variable. Despite conceptual differences, they can all be estimated by the same statistical methods testing the impact of a third variable on the relationship between the predictor and the outcome variable (MacKinnon et al., 2000). As shown in Figure 4-4, the indirect effect of the third variable can be calculated either by ab or the difference between c and c', similar to the traditional Sobel test (1984) for mediation. The distinction between suppressing effects and the other two types of effects involve the signs and magnitudes of the direct and indirect effects. Mediating and confounding effects are not statistically distinguishable in this model; their distinction lies in the causal assumptions of the relationships in the model: mediation assumes causal relationships while confounding does not.

In the following analyses, two sets of mediation/third variable models, each using HS or DIS, were conducted. First, I tested three models, all involving HS as the third variable and maximization as the primary predictor, and happiness (Model 1a, shown as an example model in Figure 4-4), depression (Model 1b) or life satisfaction (Model 1c) as the outcome. The second set of tests involved the same predictor and outcomes as the first set but a different third variable, DIS (Model 2a, 2b, and 2c). Despite the possibilities of testing HS and DIS simultaneously in combined multiple mediation models, I chose to test them with separate simple mediation models due to concern about collinearity between HS and DIS. These two variables have shown a significant correlation in the current study, although they did not correlate in the original measurement development study by Slaney et al. (2001). According to Preacher and Hayes (2008), collinearity between multiple mediators in the same model may obscure certain mediation effects. A drawback of the simple mediation model is that it does not directly inform us of the strength of the HS effect in competing with DIS, or visa versa.

Tests of the confounding/suppression effects used the statistical methods recommended by MacKinnon et al. (2000), which is a combination of the Sobel test for mediation and the confidence intervals (CIs) of the indirect effect reported by bootstrapping approach. The Sobel test was argued as a more powerful approach to address mediation (Preacher & Hayes, 2008) and avoid certain potential shortcomings associated with the commonly used multistep approach proposed by Baron and Kenny (1986) (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002, Edwards & Lambert, 2007). The bootstrapping procedure was used to avoid the power concern often raised by the non-normal distribution of the indirect effect (Shrout & Bolger, 2002).

Table 4-6 presents the results for Models 1a, 1b and 1c. All three suppression models received support as hypothesized. For example, for Model 1a predicting depression, maximization was positively associated with HS, as indicated by a significant unstandardized regression coefficient ($B = 1.25$, $t = 3.11$, $p = .002$). Also, the inverse relationship between HS and depression, controlling for maximization, was supported ($B = -0.33$, $t = -6.99$, $p < .001$). And finally, maximization was found to have an indirect effect on depression; this indirect effect was negative (-0.41), as consistent with the suppression hypothesis. The formal two-tailed significance test (assuming a normal distribution) demonstrated that the indirect effect was significant (Sobel $z = -2.82$, $p = .005$). Bootstrap results confirmed the Sobel test, with a bootstrapped 99% CI around the indirect effect not containing zero (-.93, -.02).

According to MacKinnon, et al. (2000), two conditions indicate suppression: 1). the direct effect is positive, the indirect effect is negative, and in addition the magnitude of the total effect is smaller than the direct effect; 2). the direct effect is negative and the indirect effect is positive. Model 1a meets the criteria for Condition 1; Model 1b and 1c meet the criteria for Condition 2. In sum, having high personal standards accounts for some variability in maximization, and, if

partialled out, the variation left in maximization -- and unrelated to high standards -- accounts for a larger proportion of negative psychological outcomes than was evident before controlling for the overlap between maximization and high standards.

Table 4-8 presents the results for Model 2a, 2b and 2c. Consistent with expectations, all three confounding models were supported. First, maximization was positively associated with DIS, as indicated by a significant unstandardized regression coefficient ($B = 7.38$, $t = 8.68$, $p < .001$). Also, the inverse relationships between DIS and the three psychological well-being outcomes, controlling for maximization, were supported ($ps < .001$). And finally, maximization was found to have significant indirect effects on psychological well-being, all Sobel test $ps < .001$, with the bootstrapped 99% CIs around the indirect effects not containing zero.

MacKinnon et al. (2000) suggested that, for a complete confounding/mediation to be supported, the direct effect should be zero and the indirect effect should not be zero. For a partial confounding/mediation, both the direct and indirect effects have to be of the same sign, and the magnitude of the direct effect should be smaller than that of the total effect. Model 2a meets the latter description for partial confounding, suggesting that DIS partially explains the relationship between maximization and depression. Model 2b and 2c both closely meet the description for complete confounding (the direct effect of Model 2b is 0 and that of Model 2c is .05, very close to 0). Taken together, DIS completely explains the lower level of happiness and life satisfaction experienced by maximizers, as well as part of their depression. This is consistent with my hypothesis that maximization is connected with psychological well-being through DIS. Taking away the effect of DIS, maximization predicts a much reduced variation in depression and little variation in unhappiness and life satisfaction.

Table 4-1. Four-factor models of maximization: Fit comparison

	S-B χ^2	df	S-B $\Delta\chi^2$	GFI	CFI	SRMR	RMSEA (CI)	Items	α
1. Factors uncorrelated	2042.42	135		.86	.84	.15	.084 (.081- .087)	1-18	.79
2. Factors Correlated	1344.55	129	743.40	.90	.89	.08	.069 (.065- .072)	1-18	.79

Note. $N = 2003$. S-B χ^2 is Satorra-Bentler Scaled chi-square, all $p < .01$, S-B $\Delta\chi^2$ was calculated based on the formula provided by Satorra and Bentler (2001); CI = confidence interval, α represents Cronbach's coefficient alpha.

Table 4-2. One-factor models of maximization: Fit comparison

	S-B χ^2	df	GFI	CFI	SRMR	RMSEA (CI)	Items	α
1. 13-item	1773.38	65	.84	.68	.10	.11 (.11-.12)	1-13	.70
2. 6-item	88.79	9	.98	.94	.05	.067 (.054-.079)	2 3 4 5 9 13	.60
3. 12-item	664.72	54	.92	.87	.06	.075 (.070-.080)	2 3 4 5 9 13 19 20 21 22 23 24	.71
4. 10-item								
Study 1	562.73	35	.92	.87	.06	.087 (.081-.093)	2 3 4 5 13 19 20 21 22 24	.72
Study 2	201.95	35	.89	.75	.09	.11 (.092-.12)	Same as above	.68

Note. $N = 2003$ for Study1 and 436 for Study2. S-B χ^2 is Satorra-Bentler Scaled chi-square, all $p < .01$; CI = confidence interval, α represents Cronbach's coefficient alpha.

Table 4-3. The item standardized loadings and reliability of the 10-item Maximization Behavior
Scale

Item and number	Factorial Loading	Corrected item-total correlation
1. No matter how satisfied I am with my job, it's only right for me to be on the lookout for better opportunities.	0.49	0.38
2. When I am in the car listening to the radio, I often check other stations to see if something better is playing, even if I'm relatively satisfied with what I'm listening to.	0.66	0.49
3. When I watch TV, I channel surf, often scanning through the available options even while attempting to watch one program.	0.60	0.43
4. I treat relationships like clothing: I expect to try a lot on before I get the perfect fit.	0.36	0.29
5. I often fantasize about living in ways that are quite different from my actual life.	0.38	0.30
6. I always keep my options open so I will not miss the next best choice available in life.	0.45	0.36
7. Even if I see a choice I really like, I have a hard time to make the decision if I do not have a chance to check out other possible options.	0.56	0.46
8. When going to a new restaurant, I find myself reading the complete menu before narrowing down on what I want to eat.	0.47	0.38
9. I try to do an extensive search when I look for a gift for a close friend.	0.42	0.35
10. When shopping, I often need to scan all the clothing available in a store before I decide on what to try and buy.	0.44	0.37

Note. $N = 2003$. All loadings were on one single maximization factor.
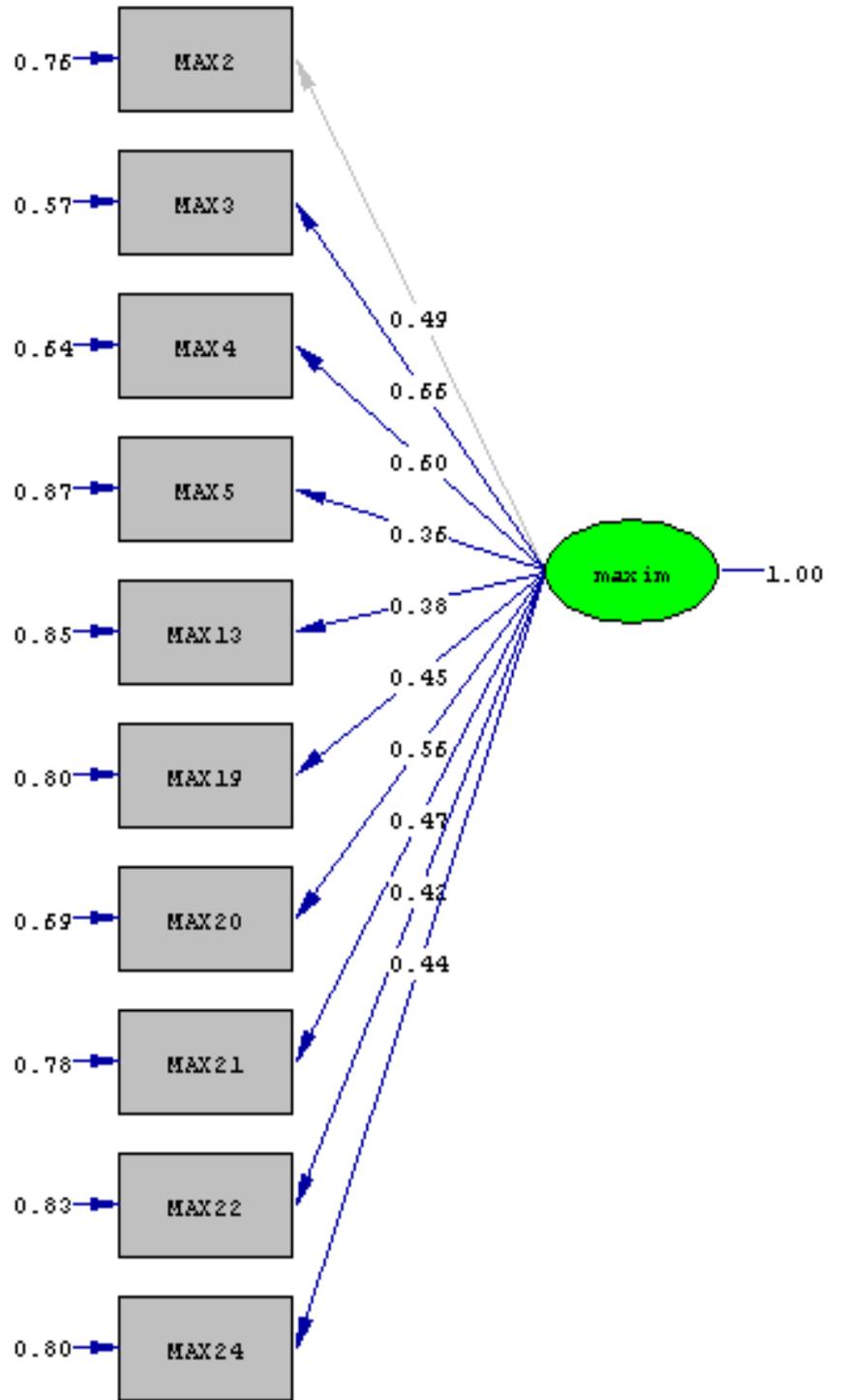
Figure 4-1. Study 1: The individual factorial loadings of the 10-item model.
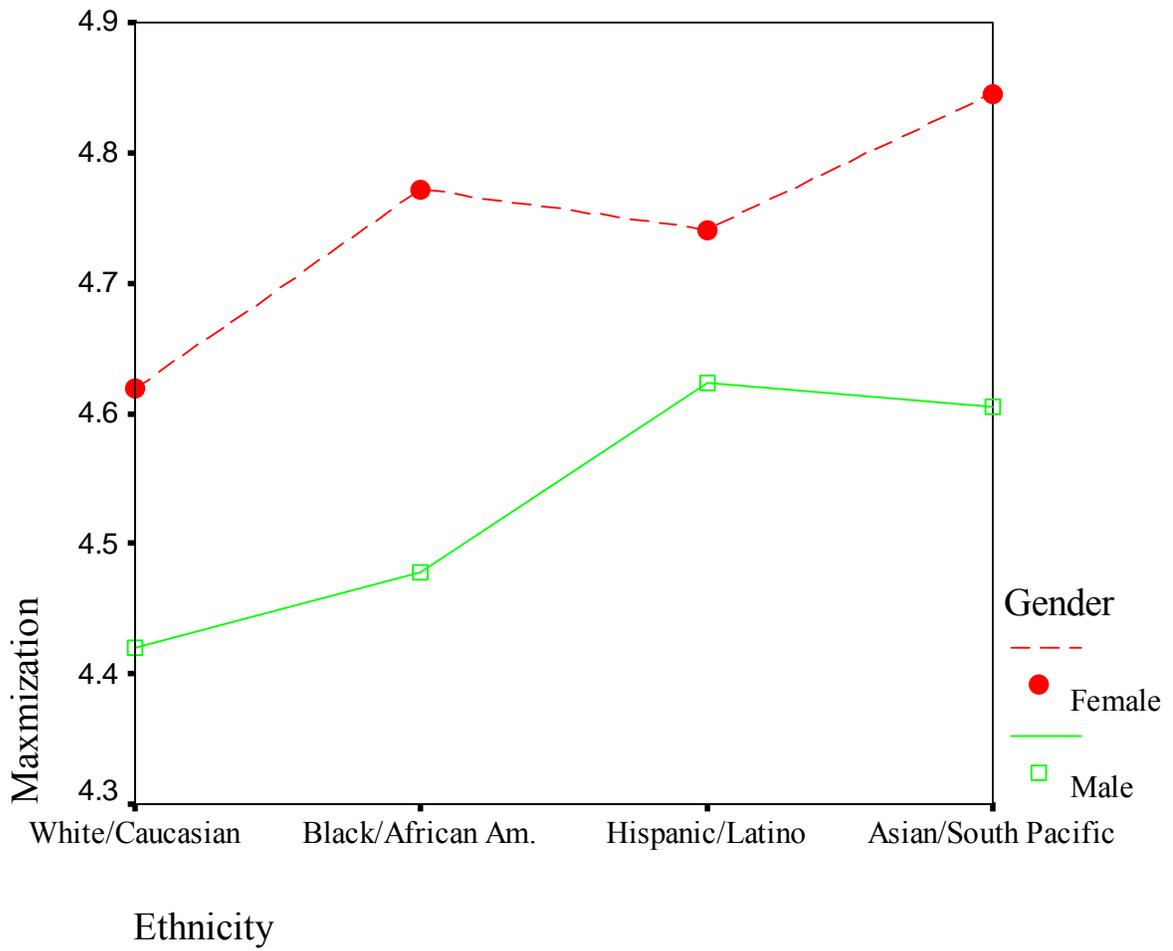
Figure 4-2. Maximization (MBS) scores as related to gender and ethnicity.

Table 4-4. Study 2: Means, standard deviations, and score internal consistencies

	M	SD	α
Maximization	4.77	.77	.68
Regret	4.46	1.07	.78
High Standards	40.50	6.56	.88
Discrepancy	43.69	14.85	.94
Order	19.51	5.17	.89
Need for Cognition	3.35	.64	.89
Depression	5.30	6.77	.89
Subjective happiness	5.11	1.18	.86
Life Satisfaction	4.88	1.33	.90

Note. $N = 436$. Means and standard deviations represent raw scores, α represents Cronbach's coefficient alpha.

Table 4-5. Bivariate correlations

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Maximization (MBS)	1.00								
2. Regret	.53**	1.00							
3. High Standards	.15**	-.02	1.00						
4. Discrepancy	.38**	.41**	-.12**	1.00					
5. Order	.11*	.06	.38**	.02	1.00				
6. Need for Cognition	-.06	-.13**	.26**	-.14**	.03	1.00			
7. Depression	.17**	.29**	-.29**	-.40**	-.14**	-.15**	1.00		
8. Subjective Happiness	-.14**	-.36**	.30**	-.36**	.09	.14**	-.59**	1.00	
9. Life Satisfaction	-.13**	-.33**	.39**	-.41**	-.13**	.18**	-.60**	.64**	1.00

Note. $N = 436$. *$p < .05$, **$p < .01$. Results are based on two-tailed significance tests.

Figure 4-3. The quadratic model predicting depression by maximization (MBS).

Figure 4-4. Suppression/Mediation Model 1a based on Sobel test.

Table 4-6. Regression results for simple mediations, APS-R HS as mediator

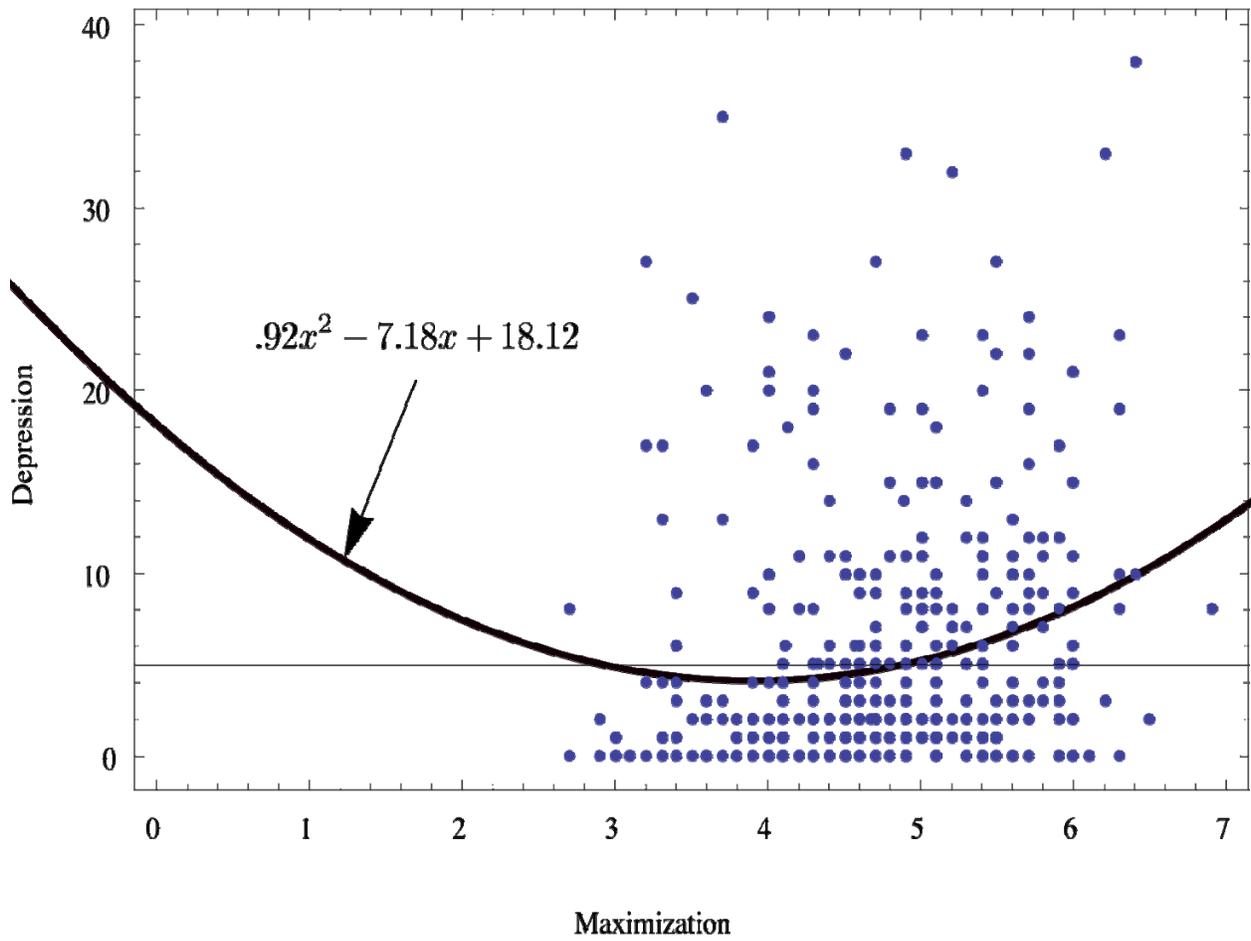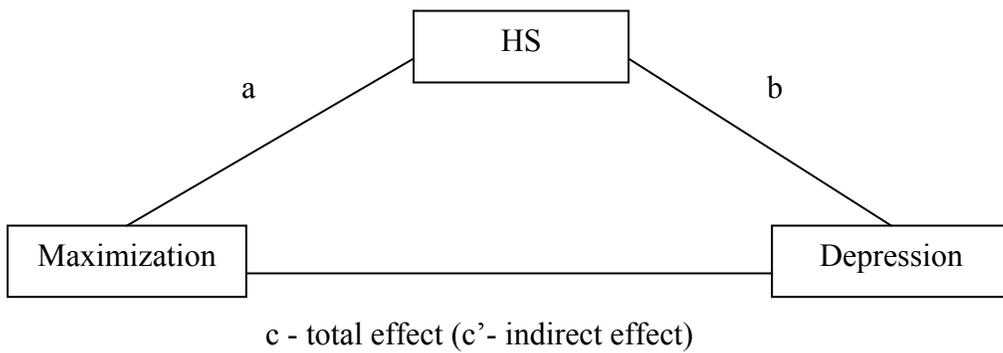| Direct and total effects				
Variable	*B*	*SE*	*t*	*p*
Model 1a (Depression)				
Maximization predicting depression	1.44	.41	3.48	.001
Maximization predicting HS	1.25	.40	3.11	002
HS predicting depression, controlling for maximization	-.33	.05	-6.99	.000
Maximization predicting depression, controlling for HS	1.85	.40	4.66	.000
Model 1b (Happiness)				
Maximization predicting happiness	-.21	.07	-2.90	.004
Maximization predicting HS	1.26	.40	3.11	.002
HS predicting happiness, controlling for maximization	.06	.01	7.11	.000
Maximization predicting happiness, controlling for HS	-.28	.07	-4.07	.000
Model 1c (Life Satisfaction)				
Maximization predicting life satisfaction	-.23	.08	-2.80	.005
Maximization predicting HS	1.25	.40	3.11	.002
HS predicting life satisfaction, controlling for maximization	.08	.01	9.53	.000
Maximization predicting life satisfaction, controlling for HS	-.33	.08	-4.44	.000

Sobel test - Indirect effect and significance using normal distribution

	Value	*SE*	LL 95% CI	UL 95% CI	*z*	*p*
Model 1a (Depression)	-.41	.15	-.70	-.12	-2.82	.005
Model 1b (Happiness)	.07	.03	.02	.12	2.83	.005
Model 1c (Life Satisfaction)	.11	.04	.04	.18	2.94	.003

Bootstrapped indirect effect

	M	*SE*	LL 99% CI	UL 99% CI
Model 1a (Depression)	-.42	.18	-.93	-.02
Model 1b (Happiness)	.07	.03	.01	.16
Model 1c (Life Satisfaction)	.11	.04	.01	.22

Note. $N = 436$. Unstandardized regression coefficients are reported. Bootstrap sample size = 1000. LL = lower limit; CI = confidence interval; UL = upper limit.

Table 4-7. Regression results for simple mediations, APS-R DIS as mediator

Direct and total effects				
Variable	*B*	*SE*	*t*	*p*
Model 2a (Depression)				
Maximization predicting depression	1.44	.41	3.48	.001
Maximization predicting DIS	7.38	.85	8.68	.000
DIS predicting depression, controlling for maximization	.18	.02	8.39	.000
Maximization predicting depression, controlling for DIS	.10	.42	.24	.81
Model 2b (Happiness)				
Maximization predicting happiness	-.21	.07	-2.90	.004
Maximization predicting DIS	7.38	.85	8.68	.000
DIS predicting happiness, controlling for maximization	-.03	.00	-7.47	.000
Maximization predicting happiness, controlling for DIS	.00	.07	.03	.97
Model 2c (Life Satisfaction)				
Maximization predicting life satisfaction	-.23	.08	-2.80	.005
Maximization predicting DIS	7.38	.85	8.68	.000
DIS predicting life satisfaction, controlling for maximization	-.04	.00	-8.73	.000
Maximization predicting life satisfaction, controlling for DIS	.05	.08	.56	.58

Sobel test - Indirect effect and significance using normal distribution						
	Value	*SE*	LL 95% CI	UL 95% CI	*z*	*p*
Model 2a (Depression)	1.34	.22	.91	1.78	6.01	.000
Model 2b (Happiness)	-.21	.04	-.29	-.14	-5.64	.000
Model 2c (Life Satisfaction)	-.27	.04	-.36	-.19	-6.13	.000

Bootstrapped indirect effect				
	M	*SE*	LL 99% CI	UL 99% CI
Model 2a (Depression)	1.35	.24	.78	1.97
Model 2b (Happiness)	-.21	.04	-.29	-.14
Model 2c (Life Satisfaction)	-.28	.05	-.41	-.16

Note. $N = 436$. Unstandardized regression coefficients are reported. Bootstrap sample size = 1000. LL = lower limit; CI = confidence interval; UL = upper limit.

CHAPTER 5
DISCUSSION

Summary of Results

The purpose of the current study was two-fold: 1). to provide a unidimensional maximization measure, more valid and reliable than the previously existing MB, 2). to provide more in-depth understanding regarding the association between maximization and perfectionism. The first goal was partly successful. I obtained the scale MBS with a combination of theoretical and empirical support that seems to have made it more precise than MB, although it also seems clear that the MBS also has room for improvement. The second goal was well accomplished. Other than the limitations involving causal inferences that the statistical models can not narrow down, all the results were consistent with my hypotheses that perfectionism is likely a personality drive associated with, if not directly causing, maximization and one responsible for the unhappiness associated with maximization.

The Refined Maximization Measurement MBS

In assessing a good measure, both theoretical and statistical criteria are important. The original MS failed to meet both criteria. First, it included several peripheral factors other than the core construct. Those factors did correlate with the core construct of maximization, but the correlations were of medium or small size. Second, the initial orthogonal four-factor structure (including Regret) proposed by Schwartz et al. (2002) was not supported. It fits poorly with the current data; allowing the factors to correlate leads to a much better fit. Third, the 13 MS items do not adequately capture one general factor of maximization and produced a poor fit for the data. In combination with the low concurrent validity found by Diab et al. (2008), it is clear that the so far commonly-employed MS is not an adequate measure for maximization. Future

researchers in this area should consider alternative measurements instead of MS and should re-assess the past findings based on MS.

In regard to the one-factor maximization model, except for the original 13-item MS model, the other three models all provide adequate fit for the data. Admittedly, the fit indexes of the 12-item and 10-item models are slightly inferior to those of the 6-item model, particularly in regard to CFI and RMSEA. CFI belongs to the family of incremental fit indexes (measuring the proportionate improvement in fit by comparing a target model with a more restricted, nested baseline model). RMSEA belongs to the family of absolute fit indexes (measuring how well an a priori model reproduces the sample data). Their slight departure from conventional cut-off criteria suggests that the risk of under-rejection of inadequate models is increased. However, the other two absolute fit indexes, GFI and SRMR, both suggest that the models yielded adequate fit for the data. Therefore, I concluded that the two models as acceptable based on the clear support of GFI and SRMR and the trend support of CFI and RMSEA.

The final decision favored the 10-item model because it exceeds the 12-item model in respect to detail item performance and the 6-item model on internal reliability. Marsh and colleagues (1998) demonstrated that measures with relatively larger numbers of items per factor have a better chance than those with smaller number of items to secure consistently high internal reliability even with small samples sizes. My preference of the10-item model over the 6-item model is consistent with their recommendation. On the other hand, the 6-item model may be considered when a short version of maximization measurement is more suitable for particular research situations. Its low reliability calls for improvement but does not necessarily indicate measurement problems, especially at an exploratory stage when larger error terms in the items can be tolerated.

It is worth noting that the 10-item resolution obtained worse fit indexes for the smaller sample in Study 2 than for the sample in Study 1. Marsh et al. (1988) demonstrated that fit indexes such as χ^2, GFI, and SRMR can be substantially affected by sample size and the direction of such a sample size-effect is difficult to predict because it is determined by a combination of the index, the specific data set, and the amount size of variation across samples. If the difference in sample size is the sufficient explanation for the current fit indexes variation, future tests with additional samples may help to replicate the better model fit in Study 1 based on the bigger sample of Study 1. Meanwhile, this variation does raise potential concerns regarding the 10-item model.

Among the two other maximization scales proposed by recent research, Nenkov et al.'s (2008) 6-item measure is clearly not consistent with the unidimensional approach as it retained the multidimensional structure similar to MS. Diab et al. (2008) agreed with the unidimensional measure yet retained the high standards items in their Maximization Tendency Scale. Clearly, the MBS follows, more faithfully than the other measures, the theory behind the maximization construct. When testing the relationship between maximization and other constructs, the MBS clearly narrows the findings to the functions of maximization behaviors and attitudes, and excludes other potential interpretations, such as the functions of having high standards. This is particularly important in addressing the association between MBS and perfectionism, give that the latter contains high personal standards as a main feature.

Perfectionism as the Drive for Maximization and Explanation for the Associated Unhappiness

Without potential confounding due to construct overlap between maximization and perfectionism, the current study demonstrated a clear connection between the perfectionism personality and maximization style of decision-making. Both the HS and DIS dimensions of

perfectionism contribute to maximization tendency; their contributions are independent from each other, and there is little overlap or interaction. In other words, individuals may maximize in decision-making because of their high personal standards or their perceived inadequacy, or both, as in the case of maladaptive perfectionists.

Interestingly, the function of HS is different from that of DIS, both in terms of magnitude and direction: DIS is a stronger predictor for maximization in comparison to HS; DIS but not HS contributes to maximizers' unhappiness. Individuals with high personal standards are likely to maximize but not to an extremely high degree; maximization driven by high standards may protect individuals from depression, presumably in the prospect of approaching the high standards. In contrast, individuals who consistently experience unmet expectations are likely to maximize and when they do, probably maximize to a high extent even in the face of excessive subsequent costs. Despite such efforts to improve their choice outcome, they may continue to be disappointed and unhappy, likely predisposed for disappointment by their tendency to perceive flaws and imperfection with the outcome. This description is consistent with the distinctive psychological experiences of adaptive and maladaptive perfectionists. Adaptive perfectionists do not perceive as large a discrepancy between expectations and evaluation as maladaptives, and they tend to be happier than maladaptive perfectionists.

Past research has accumulated evidence on the negative implication of maximization. The current research provided consistent evidence with a more valid measurement, and went further by supplying a possible explanation for negative outcomes associated with maximization. Based on our findings, maximization alone probably does not lead to unhappiness. Rather, maladaptive perfectionism may be the underlying reason for unhappiness, the same reason that leads individuals to maximize in the first place. If this is true, simply avoiding or reducing maximizing

as recommended by Schwartz (2004a) may not necessarily lead to the path of happiness, if the maladaptive perfectionism tendency stays intact.

On the other hand, the quadratic model predicting depression by maximization indicates that the relationship between maximization and psychological well-being may not be a simple linear association. Instead, individuals at the middle range of maximization were actually the least likely to be depressed, in contrast to those who maximize very little or very much. Thus, maximization may still be a strategy for good life choices if it is not over-used to the extent that associated costs are high.

Other Features of Maximizers

In regard to the relationship between need for cognition and maximization, the current finding supports the non-association hypothesis. Maximizers reveal neither particular interest in rational thinking processes nor high engagement in cognitive activities. In other words, maximizers do not necessarily find the maximizing process more intrinsically rewarding or less burdensome than satisficers do. Maximizers probably employ strategies other than intense cognitive activities to cope with the burden of a decision task, such as heuristic decision-making and social comparison (e.g., Iyengar et al., 2006; Parker et al., 2007). Therefore, even though the rational choice theory camp argues that maximization is a rational decision-making method, individuals who frequently maximize may not necessarily be more rational in their decision-making than those who seldom maximize.

The relatively high maximization tendency among women and ethnic minorities raises several possible interpretations. From a social status and resources perspective, women, in contrast to men, and ethnic minorities, in contrast to White European Americans, can be considered relatively disadvantaged or under-privileged. It is possible that those individuals have a strong tendency to seek better choices, expand their option pool, and strive to get the best out

of situations, with the hope of gaining access to choices otherwise hardly accessible to them. Using this logic, maximization may reflect an adapting strategy in response to disadvantaged social economic status. Future studies can address this possibility by testing the association between maximization and social/economic status, the latter represented by variables such as family income. From a cultural perspective, the maximization orientation as a decision-making method may be more imbedded within certain cultural frames than others, and hence leads to different decision-making practices. It would thus be interesting to use qualitative approaches to examine related cultural beliefs, and quantitatively measure whether individual differences in maximization are associated with the extent of cultural practices of ethnic minority individuals, perhaps captured by variables such as acculturation.

Limitations and Directions for Future Research

One limitation of the current research is that no causal relationships can be concluded due to our correlational research design. Theoretically it is reasonable to assume that perfectionism personality leads to maximization tendency, and maximization is a behavioral expression of perfectionistic pursuits, not the other way around. Experimental or longitudinal methods can test such causal speculations. For example, although trait perfectionism can be hardly altered in a lab-setting, researchers may induce high standards or perceived inadequacy in a specific domain and observe individuals' tendency to maximize their domain-specific choice in comparison to those in the control condition.

The current study employed large samples of participants ($N = 2003$ and $N = 436$) which possibly increases the generalizability of findings. However, caution should be taken when attempting to generalize the findings to populations other than young adult U.S. college students. For example, my samples probably functioned at a generally higher level than the general population, as suggested by their accumulation on the high end scores on variables associated

with high functioning and low end scores on variables indicating difficulties. Future studies should employ community samples with diverse demographic backgrounds to increase generalizability of these findings.

Another limitation of the current research is related to its usage of online surveys. This limitation is comparable to the traditional pencil-and-paper self-report method (Gosling et al., 2003). Self-report is commonly used due to its convenience, yet often challenged by its potential deviation from individuals' actual behavior or experience (Rosenthal & Rosnow, 1991). Such concern is particularly relevant in regard to maximization, in which the behavioral decision-making is probably no less important than the cognitive process involved. Self-report can also contribute to distortion due to lack of self-awareness or to impression management. The latter may be particularly true for participants high in perfectionism, who are often motivated to present themselves in positive light and conceal aspects of "imperfection" such as feeling depressed (Hewitt, Flett, Sherry, et al., 2003). Research designed to include behavioral observation of maximization in an actual or lab-stimulated decision-making situation would help constructing a more complete picture of maximization.

The current paper examined two potential contributors of maximization: perfectionism and need for cognition. Perfectionism accounted for 19% of the variation in maximization, and preference for cognitive activities accounted for no significant variance. This left 81% of maximization unexplained. The literature on maximization can benefit from testing other potential contributors to maximization, particularly cognitive differences such as information processing abilities, or additional personality differences such as competitiveness.

Although the current paper views maximization as a trait, and therefore somewhat static, it is possible that the practice of the maximization is modified according to the content of the

decision-making and/or importance of the goal. Even extremely maximizing individuals are unlikely to devote as much time and cognitive effort in choosing their flavors of ice-cream after dinner as they would in determining their career choices. It would be interesting to examine the situational variation of maximization among individuals, and to examine whether some individuals would display large flexibility in response to the context and thus alter their decision-making method within a wide continuum of maximization and satisficing. In fact, this may be true with the participants scored in the middle range of MBS. Recall that MBS included items describing maximization in different decision contexts, and the final score is an average of the item responses. Perhaps, some of middle score are a product of very high scores on some items and very low on others, rather than consistent medium scores on all items.

Such a flexible maximization approach likely reflects an "ultimate maximization" of maximization method, or "meta-maximization," which derives the most benefit of the maximization method and avoids an excessive cost of energy and resources. Individuals follow this approach may behave like maximizers only in the face of critical life choices, yet satisfice in trivial choice-making and be happy with "good enough" choices. These individuals should be free of maximization-associated psychological suffering. Thus, future research should test situation-specific maximization, from the realm of consumer goods to more significant life choices such as choosing a job or relationship partner; or analyzing individual variation in MBS answers to scenario-specific items. The flexibility or rigidity in maximization engagement in response to different contexts may shed further light on the effects of maximization. Accordingly, individuals may be guided to cultivate maximization in respect to more realistically-founded economic and psychological benefits.

Concluding Remarks

Despite the limitations in the current research and the need for future study, this dissertation made a significant contribution to psychology, and specifically to the study of maximization, for a variety of reasons. First, it produced the MBS, a refined measure of maximization with strong theoretical adherence and converging validity support based on multiple indicators from two large samples. Given its superiority over the original maximization scale, the MBS is likely to facilitate the fast growing body of research in this field. Second, the current study revealed the dynamic relationship between maximization and adaptive/maladaptive perfectionism, which had not been explored in a rigorous manner due to conceptualization or validity limitations associated with the other perfectionism measures used in the past. Third, the dissertation helped to clarify and resolve several misunderstandings regarding maximization, including the suggestion that maximization is not necessarily a rational cognitive process, as well as the implications of maximization being a purely beneficial or purely detrimental tendency. The research revealed that the outcome of maximization is related to its level of practice and the nature of its underlying drives. Finally, the current study pointed to several new directions of research to further specify the maximization phenomenon.

Individuals strive to obtain better choices for the hope of a better life; likewise, modern Western societies grow in the direction of providing individuals an abundance of choices. It would be counterintuitive and even tragic if such efforts would be the very path to unhappiness, as claimed by Schwartz (2004a). Fortunately, this study suggests that Schwartz's speculation is not necessarily true and that the path toward depression is not so simple. Granted, maximization may fail to provide satisfaction, in contrast to what many extreme maximizers may believe. This is particularly true when unrealistically high standards and perception of self-inadequacy have been present, as in the case of maladaptive perfectionists. I agree with Schwartz (2004b) that

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individuals should avoid indiscriminant maximization and overabundance of choices. Nevertheless, maximization may still be a valuable decision-making strategy, if individuals can utilize it judiciously with regard to decision contexts, realistically appraise costs and benefits, pursue the choices approximating their high standards, and bestow positive appraisals on their choices once they have been made.

Maximization and Regret Scale

In the space next to the statement, please enter a number from "1" (completely disagree) to "7"

(completely agree) to describe your degree of agreement with each item.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Completely   Completely
  disagree   agree

_____ 1. Whenever I'm faced with a choice, I try to imagine what all the other

possibilities are, even ones that aren't present at the moment.

_____ 2. No matter how satisfied I am with my job, it's only right for me to be on the lookout for

better opportunities.

_____ 3. When I am in the car listening to the radio, I often check other stations to see if

something better is playing, even if I'm relatively satisfied with what I'm listening to.

_____ 4. When I watch TV, I channel surf, often scanning through the available options even

while attempting to watch one program.

_____ 5. I treat relationships like clothing: I expect to try a lot on before I get the perfect fit.

_____ 6. I often find it difficult to shop for a gift for a friend. (Replaced)

_____ 7. Renting videos is really difficult. I'm always struggling to pick the best one. (Replaced)

_____ 8. When shopping, I have a hard time finding clothing that I really love. (Replaced)

_____ 9. I'm a big fan of lists that attempt to rank things (the best movies, the best singers, the

best athletes, the best novels, etc.)

_____ 10. I find that writing is very difficult, even if it's just writing a letter to a friend, because

it's so hard to word things just right. I often do several drafts of even simple things.

_____ 11. No matter what I do, I have the highest standards for myself.

_____ 12. I never settle for second best.

_____ 13. I often fantasize about living in ways that are quite different from my actual life.

_____ 14. Whenever I made a choice, I'm curious about what would have happened if I had chosen differently.

_____ 15. Whenever I made a choice, I try to get information about how the other alternatives turned out.

_____ 16. If I make a choice and it turns out well, I still feel like something of a failure if I find out that another choice would have turned out better.

_____ 17. When I think about how I'm doing in life, I often assess opportunities I have passed up.

_____ 18. Once I made a decision, I don't look back. *

Newly-developed Maximization Items

_____ 19. I always keep my options open so I will not miss the next best choice available in life.

_____ 20. Even if I see a choice I really like, I have a hard time to make the decision if I do not have a chance to check out other possible options.

_____ 21. When going to a new restaurant, I find myself reading the complete menu before narrowing down on what I want to eat.

_____ 22. I try to do an extensive search when I look for a gift for a close friend. (Replacement for Item 6)

_____ 23. If renting video, I usually do not spend much time to decide which video to rent. * (Replacement for Item 7)

_____ 24. When shopping, I often need to scan all the clothing available in a store before I decide on what to try and buy. (Replacement for Item 8)

Note. * Reverse scored.

Demographic Questions

- What is your age?

- What is your gender?

- I consider myself (choose one):

1 White/Caucasian,

2 Black/African American,

3 Hispanic/Latino,

4 Arab/Middle Eastern,

5 Asian/South Pacific Islander,

6 Native American,

7 Biracial/Multiethnic,

8 Other.

Informed Consent Form

The purpose of this study is to study how certain personality characteristics relate to emotional functioning. You will be asked to complete a set of questionnaires concerning attitudes you have about yourself, decision-making, and emotional functioning. It should take about 30 minutes or less to complete the questionnaires.

There are no known risks involved in completing the study and many students may find that they learn something about themselves from participating in similar studies. Nonetheless, if being part of the study makes you feel uncomfortable, you may consider speaking to a counselor who may be able to help you with your reactions. You can contact a counselor through the University of Florida Counseling Center (P301 Peabody Hall, 392-1575). You may benefit by participating in this study through increased awareness and self-understanding. You will also be contributing to knowledge regarding researchers' ability to understand personality characteristics and emotional functioning. There is no compensation to you for participating in the study.

Your identity will be kept confidential to the extent provided by law. Your responses on the questionnaires will be assigned a code number. The list connecting your name to this number will be kept in a password-protected computer file. When the study is completed and the data have been analyzed, the list will be destroyed. Your name will not be used in any report.

You can only participate if you are 18 years of age, or older. Your participation in this study is completely voluntary. There is no penalty for not participating and you have the right to withdraw from the study at anytime without consequence.

If you have any questions concerning the survey, you may contact Huan J. Ye, Department of Psychology, University of Florida, Gainesville, FL 32611-2250, ph 392-0601, jacqueye@ufl.edu, or Dr. Ken Rice, Department of Psychology, University of Florida, Gainesville, FL 32611-2250, ph 273-2119, kgr1@ufl.edu. Any questions or concerns about your rights in this study can be directed to the UFIRB Office, Box 112250, University of Florida, Gainesville, FL 32611-2250.

I certify that I have read the preceding or it has been read to me, and that I have freely agreed to participate in this research study. I can print a copy of the consent form.

Thank you for your time. We sincerely appreciate your involvement in this research.

Please enter your name in the following blank to indicate your consent of participation. (*i.e., electronic signature.*)

_____ _____
   (First name)   (Last name)

Maximization and Regret Scale

(Same as in Study 1.)

Almost Perfect Scale-Revised

(Slaney et al., 2001)

The following items are designed to measure certain attitudes people have toward themselves, their performance, and toward others. It is important that your answers be true and accurate for you. In the space next to the statement, please enter a number from "1" (strongly disagree) to "7" (strongly agree) to describe your degree of agreement with each item.

STRONGLY DISAGREE 1	DISAGREE 2	SLIGHTLY DISAGREE 3	NEUTRAL 4	SLIGHTLY AGREEE 5	AGREE 6	STRONGLY AGREE 7

_____ 1. I have high standards for my performance at work or at school.

_____ 2. I am an orderly person.

_____ 3. I often feel frustrated because I can't meet my goals.

_____ 4. Neatness is important to me.

_____ 5. If you don't expect much out of yourself you will never succeed.

_____ 6. My best just never seems to be good enough for me.

_____ 7. I think things should be put away in their place.

_____ 8. I have high expectations for myself.

_____ 9. I rarely live up to my high standards.

_____ 10. I like to always be organized and disciplined.

_____ 11.   Doing my best never seems to be enough.

_____ 12.   I set very high standards for myself.

_____ 13.   I am never satisfied with my accomplishments.

_____ 14.   I expect the best from myself.

_____ 15.   I often worry about not measuring up to my own expectations.

_____ 16.   My performance rarely measures up to my standards.

_____ 17.   I am not satisfied even when I know I have done my best.

_____ 18.   I am seldom able to meet my own high standards for performance.

_____ 19.   I try to do my best at everything I do.

_____ 20.   I am hardly ever satisfied with my performance.

_____ 21.   I hardly ever feel that what I've done is good enough.

_____ 22.   I have a strong need to strive for excellence

_____ 23.   I often feel disappointment after completing a task because I know I could have done

better.

Subjective Happiness Scale

(Lyubomirsky & Lepper, 1999)

For each of the following statements and/or questions, please circle the point on the scale that

you feel is most appropriate in describing you.

1. In general, I consider myself:

1   2   3   4   5   6   7

not   **a very**
a very   **happy**
happy   **person**
person

2. Compared to most of my peers, I consider myself:

1   2   3   4   5   6   7

less   **more**
happy   **happy**

3. Some people are generally very happy. They enjoy life regardless of what is going on,

   getting the most out of everything. To what extend does this characterization describe you?

1   2   3   4   5   6   7

not   **a great**
at all   **deal**

4. Some people are generally not very happy. Although they are not depressed, they never seem

   as happy as they might be. To what extend does this characterization describe you?

1   2   3   4   5   6   7

not   **a great**
at all   **deal**

Satisfaction with Life Scale

(Diener, et al., 1985)

Below are five statements with which you may agree or disagree. Using the 1-7 scale below, indicate the extent of your agreement with each item by marking the appropriate number in the space next to each statement.

STRONGLY DISAGREE 1	DISAGREE 2	SLIGHTLY DISAGREE 3	NEUTRAL 4	SLIGHTLY AGREE 5	AGREE 6	STRONGLY AGREE 7

_____ 1.   In most ways my life is close to ideal.

_____ 2.   The conditions of my life are excellent.

_____ 3.   I am satisfied with my life.

_____ 4.   So far I have gotten the important things I want in my life.

_____ 5.   If I could live my life over, I would change almost nothing.

IS-Item Need for Cognition Scale

(Cacioppo et al., 1984)

1	2	3	4	5
extremely uncharacteristic of me	somewhat uncharacteristic of me	neutral	somewhat characteristic of me	extremely characteristic of me

1. I would prefer complex to simple problems.

2. I like to have the responsibility of handling a situation that requires a lot of thinking.

3. Thinking is not my idea of fun.*

4. I would rather do something that requires little thought than something that is sure to challenge my thinking abilities.*

5. I try to anticipate and avoid situations where there is likely chance I will have to think in depth about something.*

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6. I find satisfaction in deliberating hard and for long hours.

7. I only think as hard as I have to. *

8. I prefer to think about small, daily projects to long-term ones.*

9. I like tasks that require little thought once I've learned them.*

10. The idea of relying on thought to make my way to the top appeals to me.

11. I really enjoy a task that involves coming up with new solutions to problems.

12. Learning new ways to think doesn't excite me very much.*

13. I prefer my life to be filled with puzzles that I must solve.

14. The notion of thinking abstractly is appealing to me.

15. I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.

16. I feel relief rather than satisfaction after completing a task that required a lot of mental effort.*

17. It's enough for me that something gets the job done; I don't care how or why it works.*

18. I usually end up deliberating about issues even when they do not affect me personally.

Note. * Reverse scored.

BECK DEPRESSION INVENTORY, SHORT FORM

Instructions: This is a questionnaire. On the questionnaire are groups of statements. Please read the entire group of statements in each category. Then pick out the one statement in that group which best describes that way you feel today, that is, *right now*! Circle the number beside the statement you have chosen. If several statements in the group seem to apply equally well, circle each one.

Be sure to read all the statements in each group before making your choice.

A. (Sadness)
3   I am so sad or unhappy that I can't stand it.
2   I am blue or sad all the time and I can't snap out of it.
1   I feel sad or blue.
0   I do not feel sad.

B. (Pessimism)
3   I feel that the future is hopeless and that things cannot improve.
2   I feel I have nothing to look forward to.
1   I feel discouraged about the future.
0   I am not particularly pessimistic or discouraged about the future.

C. (Sense of failure)
3   I feel I am a complete failure as a person (parent, husband, wife).
2   As I look back on my life, all I can see is a lot of failures
1   I feel I have failed more than the average person.
0   I do not feel like a failure.

D. (Dissatisfaction)
3   I am dissatisfied with everything.
2   I don't get satisfaction out of anything anymore.
1   I don't enjoy things the way I used to.
0   I am not particularly dissatisfied.

E. (Guilt)
3   I feel as thought I am very bad or worthless.
2   I feel quite guilty.
1   I feel bad or unworthy a good part of the time.
0   I don't feel particularly guilty.

F.   (Self-dislike)
3   I hate myself.
2   I am disgusted with myself.
1   I am disappointed in myself.
0   I don't feel disappointed in myself.

G. (Self-harm)
3   I would kill myself if I had the chance.
2   I have definite plans about committing suicide.
1   I feel I would be better off dead.
0   I don't have any thoughts of harming myself.

H. (Social withdrawal)
3   I have lost all of my interest in other people and don't care about them at all.
2   I have lost most of my interest in other people and have little feeling for them.
1   I am less interested in other people than I used to be.
0   I have not lost interest in other people.

I.   (Indecisiveness)
3   I can't make any decisions at all anymore.
2   I have great difficulty in making decisions.
1   I try to put off making decisions.
0   I make decisions about as well as ever.

J.   (Self-image change)
3   I fell that I am ugly or repulsive-looking.
2   I feel that there are permanent changes in my appearance and they make me look unattractive.
1   I am worried that I am looking old or unattractive.
0   I don't feel that I look any worse than I used to.

K. (Work difficulty)
3   I can't do any work at all.
2   I have to push myself very hard to do anything.
1   It takes extra efforts to get started at doing something.
0   I can work about as well as before.

L. (Fatigability)
3   I get too tired to do anything.
2   I get tired from doing anything.
1   I get tired more easily than I used to.
0   I don't get any more tired than usual.

M. (Anorexia)
3   I have no appetite at all anymore.
2   MY appetite is much worse now.
1   My appetite is not as good as it used to be.
0   My appetite is no worse than usual.

Demographic Questions

- What is your age?

_____ (blank)

- What is your gender (choose one)?

1. Male

2. Female

3. Other, pls specify: _____.

- I consider myself (choose one):

1. Asian or Asian-American,

2. Black, African-American,

3. Hispanic, Latino, Mexican-American

4. Pacific Islander,

5. Native American or American Indian,

6. White, European American,

7. Multicultural or Mixed Race,

8. Middle Eastern

9. Other, pls specify: _____.

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BIOGRAPHICAL SKETCH

Huan Jacqueline Ye was born in 1976 in Guiyang, China. At Age of 18 she attended the University of International Business and Economics in Beijing, China, majoring in Business Management. After obtaining my bachelor degree, she worked for two years in business. In 2001, she decided to undertake the study of psychology and started as an undergraduate at University of Waterloo, Ontario, Canada. In 2002, she was admitted to the master program Social and Developmental Psychology at Wilfrid Laurier University, Canada, and obtaining her Master of Arts degree after two years of study and research.

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