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Maximizing without difficulty: A modified maximizing scale and its correlates

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Abstract

This article presents several studies that replicate and extend previous research on maximizing. A modified scale for measuring individual maximizing tendency is introduced. The scale has adequate psychometric properties and reflects maximizers' aspirations for high standards and their preference for extensive alternative search, but not the decision difficulty aspect included in several previous studies. Based on this scale, maximizing is positively correlated with optimism, need for cognition, desire for consistency, risk aversion, intrinsic motivation, self-efficacy and perceived workload, whereas the association with regret is inconsistent. Analysis of correlates of the difficulty dimension suggests that decision difficulty should be conceptualized as a separate dimension rather than as a sub-dimension of maximizing. Opportunities for future research are suggested.

Keywords: maximizing, satisficing, risk aversion, self-efficacy, decision difficulty.

1 Introduction

The distinction between maximizing and satisficing approaches to decision making has long been considered important in the decision making literature (Simon, 1955). When maximizing, decision makers hope to find the best possible solution by systematically comparing available alternatives based on well-defined preferences. When satisficing, in contrast, decision makers aspire to find a solution that meets important minimum requirements and aspirations, i.e., an option that is "good enough" rather than "the best".

Schwartz et al. (2002) attracted considerable attention and interest when proposing that individuals differ in their global disposition to maximize versus satisfice in decision making. A new maximizing scale that was claimed to adequately measure individual maximizing tendency was presented. Based on analysis of correlates of this scale, maximizers seemed to be less happy with life, to be less optimistic and to possess lower self-esteem. Maximizers also appeared to be more prone to depression, perfectionism and regret as well as more inclined to engage in upward social comparison than satisficers. Accordingly, Schwartz (2004) argued that maximizing represents a recipe for unhappiness due to overly high expectations and self-fulfilling fears of regret. Increased opportunities for choice were also claimed to represent a particular burden for maximizers, who would feel compelled to explore all possible opportunities and find it increasingly difficult to make a choice. This line of reasoning corresponds to Schwartz's (2000) previous research on problems related to increased choice and the possible tyranny of freedom, and Schwartz (2004, p. 46) recommended that decision makers should make efforts to learn to accept "good enough" rather than searching for the elusive "best" as well as stop worrying about what they are missing.

Subsequent research has replicated several of the key results from Schwartz et al.'s (2002) studies and identified other negative correlates. For example, findings by Parker, Bruine de Bruin and Fischoff (2007) suggest that maximizing is associated with worse life outcomes, less behavioral coping, greater dependence on others and more decision avoidance. Parker et al. (2007) argued that, if these relationships are causal, then it is of importance to teach normative decision making skills as well as to stress the benefits of satisficing in order to obtain better outcomes.

Inspired by the research opportunities associated with Schwartz et al.'s (2002) maximizing scale as well as the prospects of offering practical advice to decision makers, the scale was introduced to several groups of graduate students in business administration in Norway. Some groups responded to the original English version of the scale while other groups rated items on a pilot version in Norwegian (based on preliminary translations of items). Surprisingly, hardly any of the subjects seemed to be maximizers based on their scores on the original maximizing scale, regardless of whether the scale was pre-

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sented in the original English version or in the pilot-version in Norwegian. All but very few subjects reported satisficing approaches to most of the tasks depicted in the items on the scale. Yet, based on discussions of Schwartz et al.'s (2002) theoretical underpinnings, many subjects reported that they indeed considered themselves maximizers. However, many of the items on the scale were seen as too commonplace or too inconsequential to set off maximizing efforts. Subjects also argued that many items referred to situations that were irrelevant to them. This feedback indicated that many items on the scale are not sufficiently *general* in terms of item content and simultaneously not sufficiently *relevant* to measure differences in individual maximizing tendency across samples, settings and cultures. These limitations in the construct validity of the scale have also been stressed by Diab, Gillespie and Highhouse (2008), among others.

Diab et al. (2008) argued that uni-dimensionality and internal consistency are important characteristics of the maximization attribute, and that all thirteen items of the scale should load onto one factor. However, Schwartz et al.'s (2002) scale comprises three distinct sub-dimensions and several items produce relatively weak or inconsistent factor loadings. Accordingly, there has been a debate in the literature concerning the validity of the construct, the factor structure and reliability of the scale as well as the proposed correlates indicating that maximizers are less happy than satisficers.

Diab et al. (2008) asserted that the findings indicating that maximizers are less happy than satisficers need to be interpreted in light of inadequate definition and measurement of the core construct. Based on the definition of individual maximizing tendency as the "*general tendency to pursue the identification of the optimal alternative*" Diab et al. (2008) presented several alternative measures. As hypothesized, Schwartz et al.'s (2002) maximizing scale produced significantly higher correlations with maladaptive personality traits and dysfunctional decision making behaviors such as regret, indecisiveness, avoidance, neuroticism, and life-satisfaction than several of Diab et al.'s (2008) alternative measures, including their nine-item scale.

Nenkov, Morrin, Ward, Schwartz and Hulland (2008) also addressed the factor structure, reliability and validity of Schwartz et al.'s (2002) maximizing scale, and several short forms of the scale were tested using datasets from different populations. Results replicated the three-factor solution from Schwartz et al. (2002). Nenkov et al. (2008) interpreted the first dimension to reflect preference for *extensive alternative search*, i.e., the desire to continue seeking for even better options. The second dimension was interpreted to reflect *decision difficulty*, i.e., decision makers' perceived difficulty in choosing and making decisions. The third dimension was taken to represent decision makers' tendency to hold *high standards* for themselves and their surroundings.

Nenkov et al. (2008) argued along the same lines as Diab et al. (2008), stressing the need for uni-dimensionality and internal consistency in measurements of the maximizing construct. However, although several short versions of Schwartz et al.'s (2002) scale appeared equally useful when analyzing correlates, the three sub-dimensions varied in their correlation with other variables. Nenkov et al. (2008) therefore argued that the three dimensions should be examined separately in future research and that there is a need to resolve whether all or perhaps only one or two of the three sub-dimensions represent inherent components of the maximizing construct.

The research reported by Diab et al. (2008) and Nenkov et al. (2008) suggests that the measurement of individual maximizing tendency is associated with several, fundamental, methodological problems that need to be resolved in order to advance research in this area. In view of the interest in Schwartz et al.'s (2002) seminal article, relatively few studies report empirical findings based on the original scale or refined versions of the scale so far. Important exceptions include Carrillat, Edmondson and Ladik's (2006) study of customer loyalty; Iyengar, Wells and Schwartz's (2006) investigation of job search strategies; Bruine de Bruin, Parker and Fischoff's (2007) investigation of individual differences in decision making competence; Parker, Bruine de Bruin and Fischoff's (2007) exploration of decision making styles, competence, and outcomes; Chowdhury, Ratneshwar and Mohanty's (2008) investigation of maximizing versus satisficing consumers, and Lewer, Gerlich and Gretz' (2009) analysis of determinants of maximizing in consumer purchase.

The ambition of the studies reported here was threefold. The first purpose, which derives from the lack of success when introducing Schwartz et al.'s (2002) scale to a new population, was to contribute to improving the measurement scale by testing original and new items across several new and large samples. The second purpose was to replicate and extend previous studies of correlates of individual maximizing tendency. Improved insight into correlates may shed better light on maximizers' personality traits and the driving forces behind efforts to maximize in decision making.

Instrument development and testing across subjects and settings is important for practical as well as theoretical and methodological reasons. A reliable scale with adequate factor structure and discriminate validity would facilitate future research on maximizing (Diab et al., 2008; Nenkov et al. 2008). Efforts to develop an adequate scale may also improve our understanding of the core construct and aid in the development of a clearer definition and a better nomological net. The attention attracted to

Schwartz et al.'s (2002) research also demonstrates that a reliable scale is of high interest and has high potential value for decision makers who wish to reflect on and improve their decision making.

2 Study 1: Scale pretesting and development

2.1 Purpose

The purpose of this study was to identify a set of items that forms a valid scale for measuring individual maximizing tendency. The approach adopted here relies heavily on Diab et al.'s (2008) contention that the measurement scale should be one-dimensional and internally consistent, i.e., possess high factorial purity. There are clear limitations associated with this approach, including the risk of excluding unique items that measure aspects that are potentially relevant to maximizing. Yet, uni-dimensionality represents a well-acknowledged criterion for assessing the validity of measurement scales for constructs that are not yet adequately defined by a set of meaningful and internally coherent sub-dimensions.

2.2 Participants

A sample of 201 subjects participated in the initial pretesting of scales. Participants were randomly recruited subjects from the general population (street poll), graduate students at a large Norwegian business school and executives from several companies. The mean age was 46, an approximately 60 per cent were female.

Following initial pretests, 3757 subjects from three larger samples of subjects were used for further validations of the scales. Sample 1 and 2 were subjects drawn from the general population in Norway (1203 and 2003 subjects, respectively), while subjects in Sample 3 were Norwegian executives (551 subjects). The mean age in Sample 1 was 54 and 24 per cent were female. The mean age in Sample 2 was 49 and 23 per cent were female. In Sample 3, the mean age was approximately 50 and 61 per cent were female. Subjects in Sample 1, 2 and 3 responded to an electronic questionnaire that was distributed by e-mail.

2.3 Measures

Pretests were based on Schwartz et al.'s (2002) original 13-item scale, six items from Diab et al.'s (2008) nine-item scale that did not overlap with the previous scale, and 11 content-free items that were developed for the purpose of this study. The battery of 30 items was administered in Norwegian based on a translation and back translation procedure. Items elicited from Schwartz et al. (2002) and Diab et al. (2008) were first translated into Norwegian and subsequently translated back into English by another person to ensure that original items retained their meaning. The translation procedure was iterated several times prior to final item phrasing. Subjects responded to each item using a 5-point scale (1 = completely disagree, 5 = completely agree). (Norwegian phrasing of the final five items on the scale is reproduced in the appendix.)

2.4 Results and discussion

2.4.1 Pretest results

Following ratings from pretest subjects, eight items were omitted due to ambiguity, highly skewed distribution of responses or other types of feedback from subjects. Tests indicated that the remaining 22 items were suitable for factor analysis (KMO = .82, Bartlett's test p = .000). Explorative factor analysis using Oblimin and Varimax rotation revealed one dimension that explained a significantly higher proportion of the variance than any other dimensions (30.11%, initial Eigenvalue 6.60). Eight items produced satisfactory loadings ($\geq$ .50) on this dimension and no cross loadings above 0.35 were identified. Of the eight items, three items were drawn from Schwartz et al. (2002), one item was drawn from Diab et al. (2008), while the remaining five items were developed for the purpose of this study. All eight items were content-free. (See Table 1.) Reliability analysis yielded Cronbach's Alpha of .901 and corrected inter-item correlation ranging from 0.48 to 0.89, of which six items scored higher than 0.70. A rerun of the factor analysis using only the selected eight items produced a clean one-dimensional solution with factor loadings ranging from 0.55 to 0.99. Table 1 provides item phrasing in English along with factor loadings.

Pretest results reveal two important scale characteristics. First, the items retained reflect only two of the three dimensions of maximizing that were outlined by Nenkov et al. (2008); extensive alternative search and high standards. None of the items on the scale reflects the difficulty dimension of decision making. Nor do results from factor analysis indicate a unique dimension that reflects decision difficulty. Accordingly, following Nenkov et al.'s (2008) arguments, it is interesting and important to question whether efforts to maximize are associated with perceived difficulty, or whether decision difficulty should be conceptualized as a separate dimension that is not inherent in the individual propensity for maximizing.

Another important aspect of the scale is that all items are *content-free,* which minimizes the problems associated with perceived relevance across different samples

Table 1: Pretest results: factor loadings for retained items. (α is the reliability coefficient.)

My decisions are well thought through.	.96
I am uncomfortable making decisions before I know all of my options.**	.95
Before making a choice, I consider many alternatives thoroughly.	.95
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.*	.83
I often fantasize about living in ways that are quite different from my actual life.*	.82
People who know me would say that I make quick decisions.	.78
No matter what I do, I have the highest standards for myself.*	.74
I choose solutions that satisfy my requirements regardless of whether there might be even better solutions.	.55

Notes: $\alpha = .90$, $N = 201$, * Items drawn from Schwartz et al.'s (2002), ** Item drawn from Diab et al. (2008).

and settings. It seems reasonable to assume that content-free items offer higher reliability across cultures and settings when measuring individuals' global disposition for maximizing. If specific examples are used, relevant examples need to be chosen in a systematic way for each setting and cultural group, which may limit the external validity and comparability of results. However, although Diab et al.'s (2008) scale is content-free (and excludes decision difficulty), one item only is retained on the present scale after initial pretesting based on factor analysis. A possible explanation for the exclusion of several other items is the use of phrases or idioms that are specific to the English language and hence difficult to adapt to many other languages, e.g., "I am a maximizer" or "I never settle."

Although content-free items have several advantages, specific examples may be needed to measure *domain specific* maximizing tendency, i.e., individual maximizing tendency within particular domains such as consumer purchase. Future research needs to address whether there are systematic variations between individuals' global maximizing tendency and their propensity for maximizing within given decision making domains, based on for example the degree of involvement.

2.4.2 Scale testing and refinement

Rating of the eight items outlined above by 3757 subjects in three samples revealed a robust and clear pattern. Five items produced consistent and satisfactory loadings on one unique dimension in all samples, while the remaining three items failed to meet minimum requirements in any of the samples. Of the five items, two items were elicited from Schwartz et al. (2002) and one item was drawn from Diab et al. (2008). Three items (1, 3 and 4) represent extensive alternative search while two items reflect high standards in decision making.

Inspection of the three items that were excluded due to lack of adequate factor loadings revealed that one item referred to fantasizing about a better life (item 5). Diab et al. (2008) previously argued that this item diverges from the definition of maximizing as the pursuit of the optimal alternative. The remaining two items that were excluded were reverse-scored items (items 6 and 8). Reverse-scored items have often been found to be less reliable and have more questionable utility than regular items (Conrad et al., 2004; Rodebaugh, Woods & Heimberg, 2007). Moreover, one of these items referred to speedy decision making, which logically should be negatively correlated with extensive alternative search. However, previous research indicates that maximizers tend to view their own decision making as spontaneous because they find it difficult see their decisions as sufficiently reasoned (Parker et al., 2007). Thus, maximizers may be inclined to overrate the spontaneity and speediness of their own decision making, which in turn limits the reliability and usefulness of reverse-scored items that refer to decision making speed or spontaneity.

In Sample 1 and 2 (general population), 25 per cent of the subjects produced maximizing scores that were higher than 4.2 and 15 per cent scored higher than 4.6, which reflects a very high preference for maximizing. At the other end of the scale, 25 per cent scored lower than 3.4 and 15 per cent scored lower than 3.2, which reflects a stronger preference for satisficing. In Sample 3 (executives), 25 per cent produced scores higher than 4.25 and 15 per cent scored higher than 4.5. At the lower end of the scale, 25 per cent scored lower than 3.5 and 15 per cent scored below 3.25. These results suggest that the scale not only discerns between individuals with preferences for maximizing versus satisficing in decision making, but also helps identify individuals with a very strong to extreme proneness to maximize.

2.5 Summary

The five items presented in Table 2 represent a scale for measuring individual maximizing tendency that has adequate psychometric properties and acceptable reliability

Table 2: Scale development: factor analysis results across three samples: Sample 1 and 2 are general population; Sample 3 is executives.

	Sample		
Item	1	2	3
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.*	.73	.76	.65
My decisions are well thought through.	.73	.76	.66
I am uncomfortable making decisions before I know all of my options.**	.71	.72	.62
Before making a choice, I consider many alternatives thoroughly.	.72	.75	.68
No matter what I do, I have the highest standards for myself.*	.57	.63	.62
α	.73	.77	.65
Mean Maximizing score	3.83	3.86	3.79
(SD)	.59	.67	.57
N	1203	2003	551

Notes: $N = 3757$. * Items drawn for Schwartz et al. (2002). ** Items drawn from Diab et al. (2008).

across subjects and settings. The scale includes items that refer to extensive alternative search and high standards in decision making, whereas no items refer to decision difficulty. In order to explore the scale's usefulness, potential correlates need to be examined.

3 Study 2: Correlates

3.1 Purpose

The primary purpose was to explore correlates of maximizing by partially replicating as well as extending the methods of Diab et al. (2008). Diab et al. (2008) addressed variables associated with decision makers' well-being, including regret, indecisiveness, avoidant decision making, neuroticism and life satisfaction. The present study focuses on a different set of variables that may shed light on the motivation and driving forces behind efforts to maximize, i.e., what makes some decision makers pursue the optimal solution while other decision makers prefer to settle for a solution that is "good enough". The variables examined here include dispositional optimism, need for cognition, desire for consistency and risk aversion, in addition to inclination for regret.

Optimism and need for cognition have previously been linked to maximizing. Schwartz et al. (2002) found a negative association between their maximizing scale and dispositional optimism, while Nenkov et al. (2008) found partial support for a positive relationship between optimism and high standards in decision making. It seems reasonable to assume that optimism partially explains why some decision makers maintain high standards and high aspirations while other decision makers do not. More specifically, it seems plausible to expect that low propensity for optimism is associated with lower rather than higher standards and aspirations. Consequently, it is hypothesized here that maximizers are more rather than less optimistic about life than satisficers.

Need for cognition reflects the inclination to deliberate hard on problems and enjoy thinking and information processing (Cacioppo & Petty, 1982). Nenkov et al. (2008) found empirical support for a positive association between need for cognition and extensive alternative search using Schwartz et al.'s (2002) full thirteen-item scale as well as a short version with six items. The purpose of the present replication is to test whether this association is maintained when using the modified scale presented here.

Decision makers have also been found to differ in their preferences for consistent responding, and findings by Cialdini, Trost and Newsom (1995) suggest that high need for personal consistency is negatively correlated with extraversion and openness to experience and positively correlated with self-consciousness, rigidity and need for structure. Based on these findings, it is of interest to examine whether efforts to maximize are associated with high need for consistency, which may indicate that some decision makers see maximizing as an avenue to consistent and well-structured behavior and perhaps to more predictable decision making outcomes.

Table 3: Correlations with maximizing for the two general-populaton samples.

	Sample 1 ($N = 1203$)		Sample 2 ($N = 2003$)	
Variable	r	(Mean/SD)	r	(Mean/SD)
Regret	.03	(2.30/0.87)	.16**	(2.62/1.02)
Optimism	.13**	(3.93/0.60)	.07**	(4.00/0.66)
Need for cognition	.20**	(3.30/0.76)	.18**	(3.50/0.81)
Desire for consistency	.26**	(3.79/0.63)	.26**	(3.84/0.85)
Risk aversion	.08	(3.10/0.82)	.11	(3.40/0.97)

Notes: $N = 3206$, * p $\leq$ .05, ** p $\leq$ .01, two-tailed.

Previous research has also linked maximizing to decision making competence and consistency in risk perception, and Parker et al. (2007) speculate that individuals who perceive greater risk may be encouraged to maximize, hoping it will lead to better outcomes. Along the same lines, one may hypothesize that decision makers that are risk averse will be more inclined to engage in extensive alternative search, hoping it will reduce the risks associated with choice.

3.2 Subjects

Data from 3206 subjects from two general population samples (Sample 1 and 2) were analyzed.

3.3 Measures

Regret was measured by the five items presented by Schwartz et al. (2002). *Dispositional optimism* was measured with eight items that were selected from the life orientation (LOT) scale developed by Scheier and Carver (1985) and later used in Schwartz et al.'s (2002) study. Measures for *need for cognition* were five items drawn from the 18 item scale developed by Cacioppo, Petty and Chuan (1984). *Desire for consistency* was measured by eight items reflecting need for personal consistency in the 18-item scale developed by Cialdini, Trost and Newson (1995). *Risk aversion* scales were adapted from Raju (1980). All items were adapted into Norwegian based on an iterative translation and back translation procedure and measured using a 5-point scale (1 = completely disagree, 5 = completely agree). All scales were subject to item reduction based on factor analysis, and only items with satisfactory loadings and reliability estimates were retained for further analysis. As indicated in Table 2, maximizing was measured by the five items that loaded consistently and adequately across all samples.

3.4 Results and discussion

Table 3 reports correlation coefficients between maximizing tendency and the selected variables. Significance tests are reported, but have limited value due to the large sample sizes and the likelihood of a Type 1 error, i.e., of incorrectly rejecting the null hypothesis.

Table 3 reveals similar correlations for all variables except regret. Regret seems to be positively correlated with maximizing in Sample 2 but not in Sample 1. The two samples appear highly similar in terms of demographic characteristics and with respect to subjects' mean score on individual maximizing tendency. Yet, Table 3 reveals several differences that may be relevant. First and perhaps most importantly, subjects in Sample 2 report higher general susceptibility for regret (Sample 1, M = 2.30 / Sample 2, M = 2.62). Differences in mean scores for optimism and desire for consistency are very small, but subjects in Sample 2 report notably higher need for cognition (Sample 1, M = 3.30 / Sample, 2 M = 3.50) and notably higher risk aversion (Sample 1, M = 3.10 / Sample 2, M = 3.40). However, when examining the correlation between regret and other variables moderate correlations (>.10) are observed only between regret and optimism in both samples (Sample 1, P = -.28 / Sample 2, P = -.20) and between regret and risk aversion in Sample 2 (P=.17). These results may indicate that observed differences in the correlation between maximizing and regret may be explained by dissimilarities between the two samples with respect to the mean inclination for regret and the mean propensity for risk aversion.

However, previous research has also suggested that the relationship between maximizing and regret may be inconsistent. Of the three dimensions studied by Nenkov et al. (2008), regret correlated systematically with decision difficulty, which is not part of the maximizing scale used here. However, extensive alternative search and high standard did not correlate with regret across all versions of Schwartz et al.'s (2002) scale. Consequently, it seems

Table 4: Correlations with maximizing tendency and decision difficulty for Sample 2 (general population).

Variable	Maximizing	Decision difficulty	(Mean/SD)
Maximizing		.04	(3.86/0.67)
Regret	.16**	.20**	(2.62/1.02)
Optimism	.07**	–.02	(4.00/0.66)
Need for cognition	.18**	–.05*	(3.50/0.81)
Desire for consistency	.26**	.12**	(3.84/0.85)
Risk aversion	.11	.16**	(3.40/0.97)

Notes: $N = 2003$. * p $\leq$ .01, ** p $\leq$ .05, two-tailed.

plausible that the relationship between maximizing and regret is more complex than initially assumed, and possible moderators and mediators of this relationship should be investigated in future research.

Table 3 demonstrates that maximizers in both samples reported more, not less, optimism about life than satisficers, as hypothesized. This finding contradicts Schwartz et al.'s (2002) key findings based on the original thirteen items. However, Nenkov et al. (2008) found that optimism correlated negatively with the difficulty dimension, which is not included in the maximizing scale studied here, whereas the correlation between optimism and the high standards dimension was positive.

As expected, findings also indicate that maximizing is positively related to need for cognition. This finding corresponds to Nenkov et al.'s (2008) analyses, which suggested that need for cognition correlated positively with high standards but correlated negatively with decision difficulty. Since need for cognition may be conceptualized as the relative appetite for information and enjoyment of thinking (Cacioppo and Petty, 1982), findings may suggest that maximizers enjoy the activities inherent in maximizing efforts such as the extensive search for alternatives. This interpretation is interesting in view of other studies that have linked maximizing to maladaptive decision making behaviors. For example, using Schwartz et al.'s (2002) original scale, Parker et al. (2007) found that maximizers were more susceptible to heuristic judgments and cognitive biases. Logically one would expect that decision makers high in need for cognition would be less, not more, susceptible to heuristics and biases in decision making. However, the inclination to use heuristic approaches is generally assumed to increase when decision making tasks are seen as complex and outcomes are associated with risk or chance, i.e., when decision making is perceived as difficult. Consequently, it is possible that the correlation between maximizing and heuristic decision making in Parker et al.'s (2007) study should be interpreted in light of the measurement scale, in which decision difficulty is included.

As hypothesized, maximizers in both samples also reported higher desire for consistency than satisficers. The correlation between desire for consistency and maximizing is relatively high in both samples, which may indicate that consistency in behavior is important to maximizers. Moreover, it is possible that maximizers see the pursuit of an optimal solution as a behavioral norm that contributes to more consistent and more well-reasoned choices, i.e., that maximizing represents a method for behaving consistently.

Finally, findings support the hypothesized positive relationship between maximizing and risk aversion. One possible interpretation is that maximizers see risk associated with choice as particularly undesirable and incompatible with the high standards they hold for themselves and their decision making processes. Another possible explanation is that maximizers hope their efforts will result in reduced risk and consequently, lower likelihood of experiencing regret.

3.5 Additional analyses: decision difficulty

When interpreting the findings reported above, one needs to consider the specific samples as well as the measurement scale used, which excludes items that do not fit a one-dimensional solution. There are apparent limitations associated with this approach in general and with excluding difficulty items from analysis in particular. Ideally, measures of decision difficulty (and other excluded items) should have been included in data collection in order to explore differences in correlations with other variables. However, when collecting data from Sample 1, the number of items was kept to a minimum to limit the size of the total survey. Data for Sample 2 in contrast, were collected as part of a larger survey that included one item intended for measuring perceived de-

cision difficulty within a specific decision making domain (consumers' choice of cell phone). Although not intended for the studies reported here, the item was inspired by Schwartz' (2000; 2004) argument that many decision makers find it increasingly difficult to choose as options become more abundant. The difficulty item is content-specific but refers to a decision making domain that is highly relevant to nearly all subjects in the Norwegian population. The market for cell phones is completely saturated. Parents buy cell phones for their children from a very young age, and consumers switch models very frequently (every nine to twenty months). More than two million cell phones are sold every year in a population of less than five million people. Accordingly, this item seems to represent a potentially valuable indicator of the inclination to associate decision making with difficulty. Table 4 provides correlations that make it possible to inspect differences between the maximizing scale used here and the item referring to decision difficulty. (See the appendix for English and Norwegian phrasing of items.)

Results indicate no correlation between the maximizing scale used here and the item reflecting decision difficulty. Similar findings were made by Diab et al. (2008), who observed no correlation between maximizing and indecisiveness (or avoidance), which may be seen to reflects the tendency to struggle and have difficulty when making decisions.

However, results reveal several differences between the correlates of the maximizing scale and correlates of the decision difficulty item, which may shed light on the relationship between maximizing and decision difficulty. Significance tests should be interpreted with caution due to the large sample size, but may still provide potentially valuable indicators of reliability when comparing the correlates of two variables within the same sample. The most notable differences in correlation coefficients are observed for need for cognition and desire for consistency. Results indicate that the propensity to associate decision making with difficulty is associated with notably lower need for cognition (change in correlations, .23) and lower desire for consistency (change in correlations, .12) than maximizing. These findings support the initial assumptions that maximizers are triggered by need for cognition and desire for consistency. Findings also indicate that maximizers differ from decision makers who view decision making as difficult with respect to need for cognition and desire for consistency. Consequently, although results rest on a single item reflecting decision difficulty, observed differences in the pattern of correlations support the notion that decision difficulty represents a separate dimension rather than an inherent sub-dimension of maximizing.

3.6 Summary

Findings from two large and diverse samples support the hypothesized positive relationships between maximizing and optimism, need for cognition, desire for consistency and risk aversion. Additional analyses based on one item reflecting decision difficulty provide support for the assumption that need for cognition and desire for consistency represent triggers of maximizing, and that decision difficulty should be conceptualized as a separate rather than integrated dimension of maximizing.

4 Study 3: Work related correlates

4.1 Purpose

In order to explore the scale's correlates and usefulness further, a third study was conducted in a work setting. Previous research has linked need for cognition to individual differences in the intrinsic motivation to engage in effortful and demanding cognitive processes (Cacioppo, Petty, Feinstein & Jarvis, 1996) and a positive relationship between need for cognition and self-efficacy has been identified (Elias & Loomis, 2006). Since maximizers in Study 2 reported higher need for cognition, it was hypothesized that maximizers would report (1) higher intrinsic motivation for their work, reflecting enjoyment of the activities in the decision making process, such as extensive search for alternatives, and (2) higher self-efficacy, reflecting confidence in their own competence and their own ability to perform given tasks. Finally, since maximizing is generally more time-consuming than satisficing due to more extensive alternative search and more thorough evaluation of alternatives, it was hypothesized that maximizers would report higher workloads. Maximizers' inclination for regret was also examined in order to replicate previous studies in a different sample.

4.2 Subjects

A sample of 551 executives responded to an electronic questionnaire. The mean age was approximately 50 and 61 per cent were female. Executives were selected as subjects due to the role as key decision makers in organizations.

4.3 Measures

Maximizing was measured by the five items reproduced in Table 2. *Regret* was measured by the five items developed by Schwartz et al. (2002). *Intrinsic motivation* was measured by five items that are previously well validated in a Norwegian setting (Lai and Kapstad, 2009; Kuvaas, 2006). *Self-efficacy* measures were based on eight

Table 5: Correlations between maximizing and selected variables for Sample 3 (executives).

Variable	r	(Mean/SD)
Regret	.16**	(2.20/0.66)
Intrinsic motivation	.15**	(4.42/0.54)
Self-efficacy	.19**	(4.20/0.46)
Perceived workload	.10*	(3.57/0.79)

Notes: $N = 551$. * p $\leq$ .05, ** p $\leq$ .01, *** p $\leq$ .001, two-tailed.

items from the short form of Schyns and von Collani's (2002) occupational self-efficacy scale. *Perceived workload* was measured with twelve items derived from several sources, including Bacharach, Bamberger, and Conley (1990), Bateman (1981), Macan, Shahani, and Dipboye (1990), Strongman and Burt (2000), Sing & Sing (2004), and Adriaenssens and De Prins (2006). All scales were adapted into Norwegian and measured with a 5-point scale (1 = completely disagree, 5 = completely agree) following the same procedures as in study 1 and 2.

4.4 Results and discussion

Table 5 shows that executives that are self-reported maximizers report higher intrinsic motivation, higher self-efficacy and higher workload, as hypothesized. Maximizers in this sample also report higher proneness for regret than satisficers.

Findings suggest that executives who report a preference for maximizing are more intrinsically motivated than executives who prefer satisficing, as expected. This finding supports the proposition that maximizers find decision making activities such as searching for and evaluating alternatives motivating and enjoyable. However, in the absence of information about decision difficulty, it is not possible to examine whether maximizers become increasingly motivated by high perceived decision difficulty. The relationships between maximizing, intrinsic motivation, need for cognition and perceived difficulty therefore call for further inquiry.

As hypothesized, maximizers report higher confidence in their own competence and abilities (self-efficacy) than satisficers. This finding is interesting in view of Parker et al.'s (2007) findings, which indicate that maximizers have lower decision making competence than satisficers and show greater dependence on others. However, as discussed above, it seems likely that observed correlations between maximizing and many maladaptive behaviors and outcomes may be attributed to including decision difficulty when measuring maximizing.

Executives that are self-reported maximizers also report higher workloads than satisficers. Maximizing is innately more time consuming than satisficing, and maximizers are less willing than satisficers to make tradeoffs between decision accuracy (optimal solutions) and the effort required to make a choice. This logically implies that, when the disposition to maximize is global, maximizers spend more time on making a given number of decisions than satisficers. When considering executives, who are key decision makers in organizations, it seems reasonable to assume that very high or extreme levels of maximizing will be associated with impaired decision making ability and executive performance. Consistent with this assumption, findings show that there is a smaller proportion of extreme maximizers among executives than among subjects from the general population (Sample 1 and 2).

However, previous research indicates that maximizers perceive higher time pressure than satisficers, particularly when there are many options (Chowdhury et al., 2009). Schwartz (2004) also argues that maximizers experience more negative emotions than satisficers as options increase. Future research should therefore address the relationship between maximizing, intrinsic motivation, emotional responses and the number of options. It is also relevant to investigate whether high perceived work load represents a stressor that negatively affects maximizers' decision performance or whether maximizers thrive on and become even more intrinsically motivated and more productive when the work load is perceived as high. Previous research suggests that overloaded employees tend to have higher, rather than lower, productivity (e.g., Sales, 1970). Research has also found a positive association between overload and a personality pattern typically referred to as Type A. Individuals with a Type A personality are chronically and aggressively struggling to achieve more and more in less and less time due to a strong sense of urgency and achievement orientation. Type A personalities also tend to seek out additional work demands that, over time, lead to overload (Friedman & Rosenman, 1974). Future research should therefore continue to explore the relationship between maximizing and other personality traits, such as neuroticism, conscientiousness and openness to experience (John & Srivastava, 1999).

The final important finding from this sample is that executives who were self-reported maximizers also reported higher proneness to regret. This finding replicates one of the key findings in Schwartz et al.'s (2002) article, along with findings from Sample 2, but not Sample 1. However, in Nenkov et al.'s (2008) analysis of sub-dimensions, regret correlated systematically with decision difficulty, but not with extensive alternative search and high standards, which makes it important to explore this relationship even

further. Schwartz et al. (2002) interpreted regret as a partial mediator of the relationship between individual maximizing tendency and other variables. In view of this interpretation, it is interesting to speculate about the possible causal relationships between the variables included here. Intrinsic motivation and self-efficacy represent plausible antecedents of maximizing, whereas proneness to regret may represent an antecedent as well as an outcome of maximizing. Maximizers do perhaps engage in maximizing in order to avoid regret. Yet, through their attempts to maximize they become increasingly aware of the wide range of options that ideally should be considered in order to find the "best possible" option. Increased awareness of the array of options increases the probability of subsequent doubt and regret.

The possibility that there is a reciprocal relationship between individual maximizing tendency and regret implies particular challenges when trying to explain the mechanisms underlying the aspiration to maximize as well as the outcomes of maximizing. When inspecting the items included in Schwartz et al.'s (2002) regret scale, regret seems to be conceptualized as *doubt* about whether or not the highest standards have been met rather than actual regret, i.e., as a precursor of regret rather than actual regret. According to Zeelenberg (1999) regret represents a negative emotion that is derived from realizing or imagining that we would have been more contented had we decided differently. Accordingly, future research needs to resolve the relationship between individual maximizing tendency and *actual* regret associated with choice. It is therefore important to explore alternative measures, not only of maximizing, but also of regret and other relevant variables.

4.5 Summary

Findings from Sample 3 demonstrate that executives that are self-reported maximizers report higher intrinsic motivation and higher self-efficacy than satisficers. However, maximizing executives also reported higher workload and higher proneness to regret than satisficers. Several possible interpretations are discussed, and future research needs to investigate a number of potential moderators and mediators of relationships, including for example time pressure, the number of options and other personality traits of maximizers.

5 Conclusion

This paper presents a modified scale for measuring individual maximizing tendency that is one-dimensional and content-free. The scale comprises five items and demonstrates adequate psychometric properties across three large and diverge samples. Of the three dimensions identified by Nenkov et al. (2008), this scale reflects maximizers' preference for high standards and extensive alternative search, but decision difficulty is not reflected in the scale. Analysis of correlates shows that in the general population, self-reported maximizers report (1) higher optimism, (2) higher need for cognition, (3) higher desire for consistency, and (4) higher risk aversion than satisfiers. Self-reported maximizers among executives report (5) higher intrinsic motivation, (6) higher self-efficacy, and (7) higher work loads than executives that are self-reported satisficers. Maximizers in two samples report higher proneness to regret, whereas no correlation between maximizing and regret was observed in one of the general population samples. Consequently, results indicate that, when decision difficulty is omitted from the scale, maximizing correlates with a number of positive rather than negative variables.

Additional analyses of decision difficulty in the largest general population sample, suggest that need for cognition, desire for consistency and optimism may represent important triggers to maximizing, and that decision difficulty should be conceptualized as a separate dimension rather than as a subdimension of maximizing.

The studies reported here are associated with several important limitations, one of which is heavy reliance on factor analysis and quest for factorial "purity". A related limitation is that many items were excluded from further data collection and analysis at an early stage, which limits the possibilities for exploring correlates and conceptually interesting relationships.

Consequently, the research presented here generates more questions than answers, and there are vast research opportunities associated with exploring the maximizing construct and its measurement, as well as correlates and causal relationships involving individual maximizing tendency. Continued efforts are important to advance our knowledge about individual differences in decision making styles and motivations. Hopefully, the modified scale presented here as well as findings concerning its correlates may contribute to these efforts.

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Appendix. Final items in English and Norwegian translation.

Maximizing:

Item 1

English: 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.*

Norwegian: Når jeg star overfor et valg, prøver jeg å forestille meg hva alle de andre mulighetene er, selv de som ikke er tilgjengelige for øyeblikket.

Item 2

English: My decisions are well though through.

Norwegian: Mine beslutninger er gjennomtenkte.

Item 3

English: I am uncomfortable making decisions before I know all of my options.**

Norwegian: Jeg liker ikke å ta beslutninger før jeg kjenner alle alternativ.

Item 4

English: Before making a choice, I consider many alternatives thoroughly.

Norwegian: Før jeg tar et valg, vurderer jeg mange alternativer grundig.

Item 5

English: No matter what I do, I have the highest standards for myself.*

Norwegian: Uansett hva jeg gjør, krever jeg det aller beste av meg selv.

Decision difficulty:

English: I find it difficult to choose new cell phone because there are so many models to choose between.

Norwegian: Jeg synes det er vanskelig å velge ny mobiltelefon, fordi det er så
mange modeller å velge blant.

* Items drawn for Schwartz et al.'s (2002), ** Items drawn from Diab et al. (2008).