

The Relationship Between ADHD Symptoms, Maximization And Regret

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Introduction

People today are faced with endless choices with regard to what products and services to purchase, where to live, career options, and so on. The list is exhaustive and there is evidence that suggests the increase in choices people face in their daily lives is decreasing overall well-being (Schwartz et al., 2002). However, an increase in choices does not necessarily lead to negative psychological effects for everyone. Consider the various effects of increasing choices on two different people, one who aims to maximize their outcomes and one who aims to satisfice. A maximizer is a person who wants the best in all situations and strives to examine every option available (Schwartz et al., 2002). When investigating every option becomes overwhelming, maximizers tend to feel grief over the opportunities forgone. Conversely, a satisficer is a person that accepts anything that passes their own acceptable criteria. Adding options has no effect on the satisficer if a prior option has already been acceptable.

Not surprisingly, maximizers are more prone to regret compared to satisficers. Schwartz (2004) believes worry over future regret is one reason why people become maximizers. Choosing the best possible choice is the only way not to experience regret, but it is unlikely for maximizers to have complete information and comprehension of all their options to choose the best choice.

Knowing how difficult it is for maximizers to make a choice, what effect do choices have on people with Attention Deficit Hyperactivity Disorder (ADHD) symptoms? Or more specifically, are people who report ADHD symptoms more inclined to be maximizers or satisficers? ADHD individuals tend to obsess so they may do the former but they also do not concentrate well for long periods of time so they may do the latter. The purpose of the present study is to examine this topic by studying the relationships between maximization tendencies, sensitivity to regret, and ADHD symptoms. This study is among the first to empirically explore the degree to which these three constructs are associated.

According to the Diagnostic and Statistical Manual of Mental Disorders – 4th Edition (DSM-IV-TR; American Psychiatric Association, 2000), Attention-Deficit/Hyperactivity Disorder (ADHD) is a continual pattern of inattention and/or hyperactivity-impulsivity occurring in several settings, more frequently and severely than is typical for individuals in the same stage of development. ADHD is estimated to affect 3%-7% of school-age children, with a 30% to 50% chance of this condition continuing into their adulthood (Barkley & Edwards, 1998). Children with ADHD have a greater likelihood of experiencing problems in their social, academic, and emotional development (Barkley & Edwards, 1998). Adults with ADHD tend to have higher rates of antisocial, major depressive, and anxiety disorders (Biederman et al., 1993). For the diagnosis of ADHD to be prescribed, the three core symptoms - inattention, hyperactivity and impulsivity - must cause impairment in academic, social, and/or occupational functioning, be developmentally inappropriate, and present prior to the age of seven (American Psychiatric Association, 2000).

Three subtypes of ADHD have been identified by the American Psychiatric Association (APA): the predominantly inattentive type, the predominantly hyperactive-impulsive type, and the combined type.

People with the predominantly inattentive type of ADHD struggle with details and find it difficult to follow instructions or conversations. They are easily distracted and resist any activities that require organization or sustained mental concentration. People with the predominantly hyperactive-impulsive type of ADHD have difficulty listening to directions and talk at inappropriate times. They are often restless and have trouble with impulsivity which can lead to accidents. People with the combined type of ADHD have equally predominant symptoms of the inattentive type and hyperactive-impulsivity type.

Symptoms of ADHD are generally noticed by the age of three or four, or in the preschool years (Barkley & Edwards, 1998). Many preschool children with ADHD are excessively active, impulsive, and demanding (Campbell & Ewing, 1990; Weyandt, 2007). Throughout the elementary school years, children with ADHD have difficulty with peer relationships, conduct problems, and aggressive behavior. Problems associated with the inattention component are related to difficulty sustaining attention. Children are typically described as disorganized, distractible, spacey, and restless (Barkley & Edwards, 1998; Weyandt). Problems associated with the hyperactive-impulsive component are related to difficulties with self-regulation. For example, children will talk excessively and show signs of aggressive behavior. As children with ADHD move into adolescence, they are at greater risk for social, behavioral, and academic problems (Weyandt, 2007).

Approximately 2-4% of the adult population is affected by ADHD (Wilens, Faraone, & Biederman, 2004; Weyandt, Linderman, & Rice, 1995). Compared to children, relatively little is known about adults with ADHD (Downey, Stelson, Pomerleau, & Giordani, 1997; Weyandt, 2007). However, adults with ADHD are at higher risk of drug related substance abuse and having antisocial personality disorder (Downey, Stelson, Pomerleau, & Giordani, 1997; Murphy & Schachar, 2000). In addition, Downey et al. (1997) found a high degree of comorbidity between ADHD and other psychiatric disorders such as depressive disorder and alcohol dependence. Murphy et al. (2000) also found that adults with ADHD have a history of academic underachievement and low occupational success. ADHD in college students

ADHD may be more common in college students than previously expected. Approximately 7% of students reported significant ADHD symptoms such as difficulties with attention, impulsivity, and hyperactivity (Weyandt et al., 1995). The implications of this problem are serious and research on this age group has received relatively little attention (Weyandt et al., 1995; DuPaul et al., 2001; Heiligenstein & Keeling, 1995). Heiligenstein and Keeling (1995) found that college students with ADHD had other associated problems, including depressive disorders, anxiety disorders, drug and alcohol abuse, legal problems, and eating disorders. Furthermore, college students with ADHD are at greater risk for poor academic achievement and dropout (Fulwiler, Guenther, Heiligenstein, Levey, & Savino, 1999). However, it is unclear whether these poor outcomes are the direct consequence of ADHD symptoms or a manifestation of additional diagnoses, such as antisocial personality or illegal substance abuse (Heiligenstein, Guenther, Levy, Savino, & Fulwiler, 1999).

ADHD has been studied more than any other childhood disorder, yet the developmental course from childhood to adulthood is still not clear (Hart, Lahey, Loeber, Applegate, & Frick, 1995). As a result, numerous longitudinal studies have been conducted on the transference of ADHD symptoms from childhood to adulthood. Research suggests that the majority of children and adolescents diagnosed with ADHD will continue to exhibit ADHD symptoms into adulthood (Barkley, 1998; Weyandt et al., 2003; Wilens et al., 2004). As children with ADHD increase in age it appears as though the hyperactivity-impulsivity symptoms tend to decrease while the inattention symptoms tend to persist (Weiss & Hechtman, 1993; Achenbach et al., 1998; Hart et al., 1995). Ninety percent of adults with ADHD have prominent attentional symptoms and about half have clinically significant levels of hyperactivity (Millstein et al., 1997). Discrepancies in reduction rates are a result of the diagnostic tools used to assess the person rather than the disorder's course (Biederman, Mick, & Faraone, 2000).

Although the hyperactivity and impulsivity symptoms seem to decrease in adulthood, recent evidence suggests these symptoms merely manifest differently. For example, Downey et al. (1997) explored the clinical characteristics of ADHD in adults and found that difficulty sustaining attention, impatience, and mental restlessness the symptoms most commonly reported. Difficulty sustaining attention represents the persistent inattentive component. The prevalence of impatience and mental restlessness in adults

suggest the impulsivity and hyperactivity symptoms are evident in a different manner. That is, the impulsivity component manifests into impatience and the hyperactivity component manifests into mental restlessness (Weyandt et al., 2003). This is consistent with criteria established by the APA which states "in adolescents or adults, [hyperactivity] may be limited to subjective feelings of restlessness" (American Psychiatric Association, 2000, p. 92).

In order to further understand the mental restlessness component of individuals with ADHD, the Internal Rating Scale (IRS) was developed by Iwaszuk et al. (1997). The IRS was found to reliably measure the construct of internal restlessness. Further research found that the IRS correlated positively with the Adult Rating Scale (ARS: Weyandt et al., 1995), a self-report instrument designed to measure ADHD symptoms in young adults. Additional research by Weyandt et al. (2003) measured the degree of internal restlessness by using the IRS in a sample of college students with and without ADHD. College students with ADHD exhibited significantly higher ratings of internal restlessness compared to college students without ADHD. Weyandt (2007) reported that few instruments are available to assess and identify ADHD in young adults, thus it is important to explore whether the IRS is a valid instrument in identifying ADHD with more than one disorder. Townley (2003) explored this issue of comorbidity and found that individuals who have anxiety symptoms also have internal restlessness symptoms. Young adults who reported significant anxiety symptoms scored higher on the IRS than those without significant anxiety symptoms (Townley, 2003). Results also support earlier findings that individuals with ADHD symptoms have significantly higher ratings on the IRS compared to students without ADHD symptoms.

Research in the fields of psychology and economics on decision-making has continually supported the benefits of personal choice and the disadvantages of external imposition (Botti and Iyengar, 2004). People compare their options and then select the options that best maximizes their preference. This is advantageous because it allows people to match their personal preferences with the best option (Botti and Iyengar, 2004). However, recent developments in the decision-making field have challenged this framework. The assumption that people have a full grasp of the associated costs and benefits of all their options is implausible and that adding options maybe less rather than more attractive for people (Schwartz et al., 2002). Iyengar and Leppar (2000) administered a series of experiments that examined participants when they were exposed to as many as 30 (extensive) options or as few as six (limited) options. Results show that extensive option may appear more pleasing, but is more likely to hinder people's intrinsic motivation or fundamental rationale. Participants had higher satisfaction levels when given fewer options compared to more options. Participants faced with more options felt more responsible for their choices given the potential of finding the very best option. This leads to a higher level of regret when they do not have the capacity to devote the time and effort to finding the best option. In addition, participants found it difficult and frustrating given the overwhelming amount of information to be considered with more options (Iyengar and Leppar, 2000).

The term satisficer was a term created by Nobel prize-winning economist Herbert A. Simon (1957), which describes a person who makes choices that are both satisfactory and sufficient to meet the needs of the situation without necessarily being the best. Schwartz et al. (2002) first made a distinction between "maximizers" (those who always aim to make the best possible choice) and "satisficers" (those who are satisfied as long as their minimal requirements are met). Maximizers engage in more product comparisons, take longer to make decisions, and spend a considerable amount of time weighing alternative choices. Satisficers spend less time worrying about whether or not they made the right choice. Once satisficers find a product that meets their needs, they stop looking. Maximizers are known for making better objective choices because they will investigate as many alternatives as possible. When maximizers are forced to make a choice, apprehension about other, possible better choices begins (Schwartz et al., 2002). To distinguish maximizers from satisficers, Schwartz et al. (2002) created a set of statements that tests people's propensity to maximize known as the Maximization Scale. Scores from the Maximization Scale were correlated with well established measures of well-being and the results found that maximizers reported significantly less life satisfaction, happiness, optimism, and self-esteem. People with extreme maximization scores had depression scores that were close to borderline clinical range.

Schwartz et al. (2002) also created the Regret Scale to measure people's disposition to feeling regret and found that people with a higher sensitivity to regret tend to be maximizers.

Using the Maximization and Regret Scales, the present study is among the first to study maximization tendencies and feelings of regret with ADHD symptoms and internal restlessness. As mentioned previously, past studies have examined the relationship between ADHD symptoms and internal restlessness while other studies have examined the relationship between maximization and regret. However, the relationship between ADHD symptoms and maximization/regret has never been investigated. Similarly, the relationship between internal restlessness and maximization/regret has also never been explored. Because this is an exploratory study, no specific hypotheses are proposed.

Method

Packets of questionnaires were distributed to 139 university students (31 Introduction to Management students and 108 Introduction to Psychology students). Each student completed the questionnaires during a regular scheduled class and received extra credit for their participation in the study. Thirteen questionnaire packets were omitted due to incomplete data. Age, gender, and other demographics were not collected. Students completed the packet of questionnaires that included three rating scales: the Adult Rating Scale (ARS; Weyandt, 1995), the Internal Restlessness Scale (IRS; Iwaszuk et al., 1997), and the Maximization/Regret Scale (MAX/REG; Schwartz et al., 2002). Before beginning the surveys, participants were given a consent form. The order of the questionnaires was randomized to prevent testing effects and participants received a debriefing handout upon completion of the scales that explained the purpose of the study.

The ARS (Weyandt et al., 1995) is a self report instrument consisting of 25 items pertaining to attention, impulsivity, and hyperactivity. Questions included in the scale were based on diagnostic symptoms from the Diagnostic and Statistical Manual (3rd edition, revised) criteria for ADHD (American Psychological Association, 1987). The ARS format is consistent with scales assessing ADHD in children (e.g., The ADHD Rating Scale, DuPaul et al., 1998) and uses a 4-point Likert scale for each item. Weyandt, Linterman, and Rice (1995) found the internal consistency of the ARS to be 0.86, and test-retest reliability coefficient to be 0.80.

The IRS is a self report instrument consisting of 24 items designed to measure symptoms of internal restlessness and scoring is based on a 7-point Likert scale. The test-retest reliability of the IRS is 0.80 (Weyandt et al., 2005). Factor analysis of the IRS revealed that internal restlessness may be multidimensional, consisting of four factors; "internal distractibility" "internal restlessness" "internal impulsivity" and "internal disorganization" (Weyandt et al., 2005).

The MAX is a 13-item questionnaire that diagnoses people's propensity to maximize. The REG is a 5-item questionnaire that measures people's sensitivity to regret. Participants respond to each item using a 7-point Likert scale. Cronbachs alpha is .71 for the Maximization Scale and .67 for the Regret Scale (Schwartz et al., 2002).

Results

Means and standard deviations for each rating scale are presented in Table 1, For the Adult Rating Scale (ARS), higher means indicate a larger number of Attention Deficit Hyperactivity Disorder behaviors. For the Internal Restlessness Scale (IRS), higher means indicate a higher level of internal restlessness. For the Maximization Scale (MAX) and Regret Scale (REG), higher means are associated with greater tendencies to maximize and experience regret, respectively.

(See Table 1)

According to Weyandt et al. (1995), participants with ARS scores above 1.5 standard deviations from the mean have significant ADHD symptoms. Using this criterion, results from the present study revealed that 8.7% students reported significant ADHD symptoms on the ARS (raw score = 36-23) versus 7% found by Weyandt et al. (1995). No normative data are available for the IRS.

For the Maximization Scale, Respondents with mean scores greater than 52 are generally considered maximizers and those who have scores lower than the midpoint are generally considered satisficers. Mean scores greater than 71.5 indicate an extreme maximizer while mean scores less than 32.5 indicate an extreme satisficer (Schwartz et al., 2002). In the present study 5.6% of the participants scored as

“Extreme Maximizers”, 19% as “Maximizers”, 65.9% as “Average”, 9.5% as “Satisficers” and 0% as “Extreme Satisficers”. No normative data are available for the REG.

Table 2 presents the Pearson r correlations between the four rating scales. Results suggest significant correlations between all of the rating scales with the most significant correlation found between the ARS and IRS ($r = .741$, $p < .0001$). Higher scores on the ARS are associated with higher scores on the IRS. This suggests that more ADHD symptoms are associated with a higher level of internal restlessness symptoms.

(See Table 2)

Statistically significant correlations were found between all measures used in the study, ranging from $r = .284$ to $r = .741$.

Discussion

As mentioned above, prior research has studied on ADHD symptoms using the Adult Rating Scale. Results from the present study are relatively consistent with this research. For example, the mean, standard deviation, and percentage of participants reporting significant symptoms ($VI = 20.61$, $SD = 10.04$, 8.6%) is similar to data ($M = 19.43$, $SD = 9.04$, 7%) found by Weyandt et al. (1995). Prior research has also collected data using the Maximization Scale. Schwartz et al. (2002) found that the mean was 50.44 compared to 55.12 from the present study. Results from the present study indicated a slight inclination towards maximization tendencies compared to results found by Schwartz et al. (2002) who found a slight inclination towards satisfaction (Note: the midpoint is considered 52). However, there is no distinct line that separates maximizers from satisficers. Rather than falling on one side or the other, people differ in the extent to which they maximize, depending on the situation. According to Schwartz et al. (2002), there must be some variation between the extent to which people maximize in different domains of choice - no one maximizes in all domains. Given this, one possible future research direction could be to explore the relationship between the extent a person maximizes and the level of one's standard of acceptability. Research into how maximizers and satisficers differ when applying different standards to different domains is needed.

The correlations from the present study are also consistent with earlier research between the (a) ARS and IRS and (b) MAX and RKG. For the ARS and IRS, the Pearson r correlation between for the present study was $r = .741$, $p < .0001$, compared to $r = .732$, $p < .01$ found by Townley (2003). The present findings provide further support that individuals scoring higher on the ARS which measures behavioral symptoms, also have high scores on the IRS, which measures internal restlessness symptoms. This result is consistent with earlier research (Weyandt, 2007).

The correlation between the MAX and REG scales for the present study was $r = .498$, $p < .0001$, compared to $r = .52$, $p < .001$ found by Schwartz et al. (2002). The present results are consistent with previous research and indicate a significant correlation between maximization and regret. Schwartz et al. (2002) also found that people with a high sensitivity to regret are less happy, less satisfied with life, less optimistic and more depressed than those with low sensitivity. Alternatively, individuals with higher maximization scores are more likely to regret. One possible reason why people become maximizers could be because they are worried about experiencing future regret. According to Schwartz et al., (2002), the only way not to experience regret is by choosing the best possible option. However, the more options that are available, the less likely you will choose the best, leading to experiencing regret.

The correlation between the IRS and REG was ($r = .474$, $p < .0001$) which indicates a relationship between internal restlessness and regret - more internal restlessness symptoms means higher feelings of regret. One possible reason for this significant correlation could be that people with high internal restless scores, who have difficulty putting their thoughts to rest, continually re-think their decisions. With reoccurring situations always playing in their mind, they may uncover a benefit that was not originally realized about another option they didn't choose. This in turn may cause them to regret their current choice. Never experiencing a sense of content from the decisions they make may leave them with a sense of regret.

A significant correlation was also found between the IRS and MAX ($r = .429$, $p < .0001$) which indicates a positive relationship between internal restlessness and maximization. It only makes sense that

people with lower scores on the IRS, which would indicate a higher sense of mental calmness, would coincide with lower scores on the maximization scale which indicates satisfying tendencies. Satisficers ignore or spend very little time sifting through all the options available. In contrast to maximizers who look for the best TV program, or the best radio station, or the best clothes, a satisficer does not need to seek constant stimuli associated with higher IRS scores. People with higher levels of internal restlessness are always thinking about possible outcomes in the future like maximizers who are always fantasizing about other job opportunities or living in different ways.

The significant correlation was between the ARS and REG ($r = .306, p < .0001$) which indicates a relationship between ADHD symptoms and regret - more ADHD symptoms means higher feelings of regret. Potential explanation for this relationship could be because a couple reasons. People with significant ADHD symptoms are impulsive and quick to decide. This may lead to regret because they didn't spend the time to learn about the best option. Another possible reason why this correlation exists may be related to organization. People with ADHD symptoms lack organizational skills that would possibly prevent them from organizing their criteria that they base decisions upon. This may lead to increased regret due to the inability to organize their preferences when making choices.

Finally, the correlation between the ARS and MAX was $r = .284, p < .001$ which indicates a relationship between ADHD symptoms and maximization tendencies - more ADHD symptoms means higher maximization tendencies. Individuals with ADHD symptoms and individuals with maximization tendencies may both find it difficult to make a decision, but possibly for different reasons. Individuals with ADHD symptoms may find it difficult to make a choice because they are unable to concentrate for extended amounts of time. They find it difficult to sustain attention and are easily distracted. Individuals with higher maximization tendencies have a difficult time making a choice because they try to process all the choices available, which requires time and effort. For these subjects, it appears as though people with more ADHD symptoms are inclined to be maximizers. It should be noted that the IRS correlated more significantly to both the MAX and REG compared to the ARS correlations with the same scales. This could be due to the IRS, MAX, and REG measuring more cognition compared to the ARS, which measures more behavioral signs.

The present study has several limitations. First, the study was conducted using a relatively small college student population that may not represent the general population. The variance in the descriptive results between the present study ($n=126$) and results found by Schwartz et al. (2002) who used nearly 2000 participants reiterates this limitation. Regardless, this study may be important because an increasing amount of students are requesting accommodations for ADHD under the Americans with Disabilities Act (Weyandt, 2007).

The second limitation of the study concerns the accuracy of the participant's self-diagnosis ratings. Berkley (1998) suggest that individuals tend to underreport their symptoms whereas research by Murphy and Schachar (2000) suggest that participants tend to rate themselves as having more symptoms, or more intense symptoms compared to informants. Regardless of whether or not participants tend to underreport or overstate their symptoms, the accuracy of self-diagnosis rating scales are questionable. Moreover, it appears as though the effects of ADHD are similar to effects of maximization. Numerous studies have found that people with ADHD report less self-esteem and more depressive symptoms (Barkley, 1998; Biederman et al., 1993). Treating & Hinshaw, 2001). In the same fashion, people with higher maximization tendencies reported higher levels of depression and lower levels of self-esteem (Schwartz et al., 2002). It appears as though these poor outcomes are a result of ADHD symptoms and maximization tendencies. However, it is unclear whether these effects are solely the direct consequence of ADHD symptoms and maximization or a manifestation of additional diagnoses. Due to this, future research not only needs to expand upon the effects of ADHD symptoms and maximization tendencies on measures of well-being, but also on how other diagnoses influence these same measures.

In conclusion, the results from the present study augment past research on the relationship between (a) ADHD and internal restlessness and (b) maximization and regret. College students with substantial ADHD symptoms report significantly more problems with internal restlessness and at the same time, college students with higher levels of maximization tendencies report more feelings of regret. Despite the

limitations, the present study suggests that a relationship exists between ADHD symptoms and maximization and ADHD symptoms and regret. However, it appears as though an even stronger relationship exists between internal restlessness and maximization and regret. More research is needed using larger samples, different age groups, and clinical groups to better understand the relationships between ADHD, internal restlessness, maximization, and regret.

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Table 1
Mean Scores and Standard Deviations for the ARS, IRS, MAX & REG Scales

	<u>N</u>	<u>M</u>	<u>SD</u>
ARS	126	20.61	10.41
IRS	126	84.87	19.56
MAX	126	55.11	9.60
REG	126	21.11	4.73

Table 2
Pearson r Correlations among Measures

	ARS	IRS	MAX
IRS	.741 *		
MAX	.284**	.429*	
REG	.306*	.474*	.498*

** = $p < .001$ (2-tailed)

• = $p < .0001$ (2-tailed)