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AN ANALYSIS OF THE RELATION BETWEEN VOCABULARY AND EMOTION REGULATION: TOWARD DEVELOPING PROBLEM IDENTIFICATION TOOLS FOR THE SCHOOL SETTING

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AN ANALYSIS OF THE RELATION BETWEEN VOCABULARY AND EMOTION REGULATION: TOWARD DEVELOPING PROBLEM IDENTIFICATION TOOLS FOR THE SCHOOL SETTING

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ABSTRACT

AN ANALYSIS OF THE RELATION BETWEEN VOCABULARY AND EMOTION REGULATION: TOWARD DEVELOPING PROBLEM IDENTIFICATION TOOLS FOR THE SCHOOL SETTING

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Previous research suggests that the ability to describe one's own emotions significantly impacts their overall emotional adjustment. The current study aimed to determine whether the relation between language and emotional adjustment extends beyond emotion vocabulary, to general vocabulary. Participants (n = 181) were administered measures of emotion vocabulary, general vocabulary, and emotional maladjustment. Results indicated that a general vocabulary measure cannot replace an emotional maladjustment measure but may serve as a proxy for emotion vocabulary in predicting mental health outcomes. Statistical analyses revealed that general and emotion vocabulary constructs are most closely related to mental health outcomes in the specific realms of interpersonal relations, social roles, and acute emotional distress. Findings have important implications for the school setting in regard to early detection of mental health issues, maximizing resources in low socioeconomic school districts, and developing preventative mental health strategies.

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"Part of the essence of gratitude is that it recognizes that we are not the sole authors of what is good in our lives."

– Rabbi Lord Jonathan Sacks

As I reflect on the dissertation process and the years that have brought me to its completion, I teem with gratitude for the life I've been blessed with. While this written document may have my name on it, I am well aware that I am not the sole "author" and could not have reached this milestone alone.

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Introduction

Research indicates that the ability to verbally describe one's own emotions significantly impacts their overall emotional adjustment (Barrett, 2018; Barrett et al., 2001; Borrill et al., 2009; Greene & Ablon, 2006; Kashdan et al., 2015; Winstanley et al., 2018; Yew & O'Kearney, 2013; Zaki et al., 2013). It can be argued that the possession of emotion vocabulary words is closely related to language development and lexical knowledge, narrow abilities of crystallized intelligence, which represents one's general understanding of spoken language and knowledge of vocabulary words and their underlying concepts, respectively (Schneider & McGrew, 2012). Although intelligence and emotional adjustment are generally considered to be independent constructs (Davies et al., 1998; Salovey & Mayer, 1990; Schutte et al., 1998; Van Der Zee et al., 2002), the growing research base that consistently indicates a positive relation between intelligence and emotional adjustment challenges this notion (Devi & Rayalu, 2005; Greenwald et al., 1989; Leikas et al., 2009).

The Current Study

The primary aim of the current study is to determine whether the relation between language and emotional adjustment extends beyond emotion vocabulary, to general vocabulary. More specifically, the study aims to determine whether crystallized intelligence, and specifically the narrow ability of lexical knowledge, significantly relates to emotional adjustment. It is important to note that the current study will focus on lexical knowledge rather than language development, as the latter is more about understanding words in context than understanding the meaning of words in isolation (Schneider & McGrew, 2012).

Based on the results of the primary aim, the secondary aim of the current study is to determine the extent to which a lexical knowledge measure or general vocabulary assessment can identify individuals with poor emotional adjustment as well as, or at least to a comparable level as, a measure that is specifically designed to identify poor emotional adjustment. These results will have important clinical implications in the school setting.

Literature Review

Conceptualizing Emotions

Although there is no unanimous agreement about the definition of "emotion," much of the research points to its core property of intentionality (Mulligan & Scherer, 2012). The concept of intentionality, which was originally conceived by philosopher Franz Brentano in the last quarter of the 19th century, refers to the notion that all emotions are directed towards an object (as cited in Pierre, 2019). This concept was similarly proposed by evolutionist Charles Darwin during the same period, as he believed that the purpose of emotions is their function of preparing individuals to adaptively respond to challenges (as cited in Barrett, 2018). These` foundational beliefs have led present-day researchers to conclude that emotions do not serve a purpose in and of themselves, but only after they are contextualized can they be perceived, experienced, and serve a function (Barrett, 2018). It is, therefore, essential that individuals possess the ability to appropriately conceptualize their emotions, as it is key to emotional adjustment.

Schacter and Singer's (1962) two-factor theory of emotion suggests that cognitive appraisal of physiological arousal plays a crucial role in one's experience and understanding of his own emotions. According to the theory, only once the reason for the arousal is identified can it be labeled as an emotion. Given that arousal sensations can feel similar to one another, misinterpretations can occur, which leads to potentially maladaptive emotional labeling and consequent responses. Similarly, Barrett (2018) suggests that individuals do not experience emotion unless they possess what she termed "conceptual packages," which refers to sets of explanations for the origin of specific emotions, what the emotions refer to in the world, and how the individual should respond to them. It is

clear that without awareness and understanding of emotion, emotions are meaningless and cannot serve an adaptive purpose for the individual experiencing them.

Language Development and Emotional Adjustment

Emotions become meaningful in individuals' internal and external worlds when they possess the language to represent emotion concepts (Barrett, 2018). It is through words that emotions can be effectively and efficiently identified and communicated, enabling language to become the instrument of both interpersonal and intrapersonal communication. Interestingly, language is primarily thought of as an interpersonal tool, as it was originally developed to serve the functional purpose of describing external experiences rather than internal ones. Possessing the language to communicate with oneself, however, is essential to human experience.

There is growing evidence which suggests that individuals with language impairments are at an increased risk for both internalizing and externalizing disorders (Yew & O'Kearney, 2013). Barrett (2018) proposes that the inability to use language and consequently possess the vocabulary for emotions prevents individuals from quickly accessing their emotion's conceptual packages, which further prevents them from accurately and efficiently identifying the significance of a given situation, appropriate coping response, and plan of action. Findings also reveal that the more discretely one can identify their emotions, the more effectively they can regulate their emotions (Barrett et al., 2001).

The term "alexithymia," which refers to the inability to identify, conceptualize, and describe emotions, was derived from the Greek language and means "lacking words for emotion." Interestingly, findings regarding the association between self-harming behaviors

and the alexithymic population highlight the importance of emotion vocabulary in the context of emotional adjustment. According to the model proposed by Chapman, Gratz, and Brown (2006), individuals who engage in self-harm also tend to engage in other maladaptive behaviors that often stem from avoidance and impulsivity, and possess a low tolerance for emotional intensity and poor ability to express themselves.

A related study revealed that individuals who endorsed having self-harmed in their lifetime scored significantly higher than others on the Alexithymia scale and specifically indicated greater difficulty identifying their feelings (Borrill et al., 2009). Another study showed that adolescents who self-harmed reported more victimization from bullying and more alexithymic symptoms than did their counterparts who never self-harmed (Garisch & Wilson, 2010). Findings also indicated that alexithymia serves as a moderator and partial mediator of the relation between bullying and self-harm. Furthermore, the researchers concluded that adolescents are more likely to engage in self-harming behaviors in reaction to social stressors when they have poor communication skills, emotion regulation, and mood difficulties, which are all linked to language. Taken together, researchers conclude that alexithymia serves as a predictor of self-harming behaviors (Norman & Borrill, 2015).

According to Greene and Ablon (2006), psychologists who specialize in treating behaviorally challenging children, language impairments can lead children to feel misunderstood, frustrated, and into a vicious cycle of maladaptive behaviors. In their book, "Treating Explosive Kids" (2006), they specifically identify lagging language-processing skills as an underlying cause for aggressive outbursts and non-compliance and further explain that children with the inability to verbally express themselves struggle with correctly identifying their emotions and communicating how they feel to others, which

ultimately prevents them from coping with their problems in adaptive ways. This phenomenon is further supported by findings which revealed that significantly more youth offenders residing in institutions for juvenile delinquents were identified with language impairments than were their non-offending counterparts (Lount et al., 2015).

A longitudinal study sought to explore the impact of receiving early intervention services for developmental language disorders on the engagement with risky behaviors, rule-breaking behaviors, and overall aggression in young adulthood (Winstanley et al., 2018). The findings revealed that compared to same-age peers without an identified language disorder, young adults who received language services in childhood reported less engagement with the justice system due to rule-breaking behaviors and were less likely to abuse substances. They did, however, report higher feelings of aggression but they did not manifest in rule-breaking behaviors. These particular findings have important clinical implications, as they suggest that the early identification and administration of intervention services can lower the likelihood that language-impaired individuals will engage in maladaptive behaviors later in life.

The Critical Role of Lexical Knowledge in Emotional Adjustment

Researchers argue that individuals who can differentiate between their emotions and speak about them with granularity are better emotionally adjusted (Barrett et al., 2001; Kashdan et al., 2015). The terms emotion differentiation and emotional granularity refer to the ability to identify and describe emotions with high specificity. In fact, researchers have found that this ability strongly correlates with enhanced emotion regulation, because these individuals can more accurately use emotion as information about their current situation and are thus able to respond appropriately (Kashdan et al., 2015; Barrett, 2018).

A related study found that emotion differentiation of negative emotions moderated the relation between rumination and non-suicidal self-injury (NSSI) among individuals with borderline personality disorder (Zak et al., 2013). Specifically, they found that those who demonstrated greater emotion differentiation reported that they engaged in NSSI less frequently than those who did not differentiate, even when they did experience high levels of rumination. The researchers, therefore, concluded that the ability to make nuanced distinctions between negative emotions serves as a protective factor against NSSI in this population. They suggested this may be because labeling negative emotions attenuates emotional intensity and increases the likelihood that people will self-regulate more effectively, as it creates distance between the emotions and appraisals and leaves room for more adaptive interpretations. Studies have also found that emotion differentiation is relevant in other clinical populations with major depressive disorder, social anxiety disorder, autism spectrum disorder, and eating disorders (Kashdan et al., 2015), which further indicates that weak emotion differentiation is associated with decreased emotional adjustment and adaptive coping skills. Emotion differentiation is also associated with enhanced emotion regulation in non-clinical populations (Barrett et al., 2001).

Intellectual Ability and Emotional Adjustment

Taken together, it is arguable that emotional adjustment directly relates to language development and lexical knowledge, both of which are narrow abilities of crystallized intelligence, one of the seven broad areas of cognitive ability (Schneider & McGrew, 2012). While intellectual ability and emotional adjustment are generally considered to be independent constructs (Davies et al., 1998; Salovey & Mayer, 1990; Schutte et al., 1998; Van Der Zee et al., 2002), the growing research base that consistently indicates a positive

relation between intelligence and emotional adjustment challenges this notion. Results from a 1989 study (Greenwald et al.) suggested that intellectual ability could serve as a predictor of psychopathology in psychiatric patients. Specifically, they suggested that individuals with weak intellectual ability might have a weakened ability to manage stress that may contribute to psychopathology. Another study indicated that cognitive ability serves as a buffer for emotional stability and its effect on overall adjustment in individuals with low cognitive ability, in particular (Leikas et al., 2009).

A significant positive relation between cognitive ability and emotional intelligence is also supported in the literature. Although emotional intelligence is different from emotional adjustment, Devi and Rayalu's (2005) study indicated that, out of the 15 subscales of emotional intelligence, empathy and optimism were most significantly related to intellectual ability. It has been argued that these two emotional abilities contribute greatly to one's emotional adjustment (Kolokotroni, 2018; Naor, 2018).

Emotional Adjustment Screening in the School Setting

Mental health issues are highly prevalent in the school setting and have significant consequences. According to a recent study, 7.4% of children ages 3 through 17 have behavioral or conduct problems, 7.1% have anxiety, and 3.2% have depression (Ghandour, 2018). Research indicates that such mental health issues significantly impair academic performance and school absenteeism and drop-out rates (Schulte-Körne, 2016). Furthermore, findings indicate that children from low socioeconomic backgrounds are less likely to be diagnosed with mental health disorders and are more likely to suffer from mental, behavioral, and developmental disorders due to their heightened experience of risk

factors (Cree, 2018; Ghandour, 2018). It is, therefore, worthwhile to focus on this specific population.

Given that these children often live in school districts with few resources, it is important to consider how these school districts can provide sufficient mental healthcare in a cost effective and efficient manner. Schulte-Körne (2016) emphasized the importance of investing in preventing mental health and behavioral issues in the school setting and suggested timely detection of mental health problems as an efficient way to proactively prevent these issues. Specifically, he recommended that schools use appropriate measures as screeners to increase the likelihood of timely detection. The current study, therefore, aims to determine whether vocabulary tests, which are already being administered in the school setting, can serve as an appropriate screener for emotional adjustment.

Hypotheses

I will make three hypotheses based on the literature. The first hypothesis is that there will be a relation between lexical knowledge and emotion vocabulary and between emotion vocabulary and emotional adjustment. More specifically, there will be a significant negative relation between lexical knowledge and emotion vocabulary measures with a measure of emotional maladjustment. The second hypothesis is that results on a lexical knowledge measure will negatively correlate with a measure specifically designed to assess emotional maladjustment at a comparable level with the correlation obtained between an emotion vocabulary measure and a measure of emotional maladjustment. The third hypothesis is that emotion vocabulary will at least partially explain a relation between lexical knowledge and emotional maladjustment. The results of the second and third hypotheses will indicate whether general vocabulary tests can be substituted for emotional adjustment screeners in the school setting.

Implications

If there is a significant negative relation between lexical knowledge and emotional maladjustment, then there is a potential basis for general vocabulary tests to serve as emotional adjustment or mental health screeners in the school setting. This data would be particularly relevant for schools with limited resources, as school-wide mental health screeners are mostly unavailable in such settings. Theoretically, students who perform poorly on regularly administered vocabulary tests could be flagged and administered specialized mental health screenings.

Method

Participants

Based on a statistical power analysis, it was determined that to detect a moderate effect (r = .30), a sample size of 100 participants is sufficient to have a power of .80 to reject the null hypothesis that the correlation is 0 at the two-tailed alpha level of .05. The estimated minimum sample size to detect a moderate relation among the variables is 84. I used a community sample to test my research questions. Participants were at least 18 years of age and fluent in English. They were recruited, on a volunteer basis, through the St. John's University SONA system and word of mouth.

Procedures

Once participants were recruited and consented to participate in the study, they were asked to complete a survey comprised of 85 items.

Measures

Lexical knowledge was measured using a general vocabulary assessment, which is comprised of 20 items (α = .72). Emotion vocabulary was measured using an emotion vocabulary assessment based on Paul Ekman's six basic emotions and is also comprised of 20 items (α = .75). Emotional adjustment was measured using the second version of the Outcome Questionnaire (OQ; Lambert et al., 1996). It has 45 items and assesses functioning in the areas of symptom distress, interpersonal relations, and social roles (α = .94; Boswell et al., 2013). The symptom distress subscale represents symptoms of depression, stress, and anxiety, and is made up of 25 items (α = .93; Boswell et al., 2013). The interpersonal relations subscale represents relationship quality and satisfaction and is made up of 11 items (α = .78; Boswell et al., 2013). The social roles subscale represents

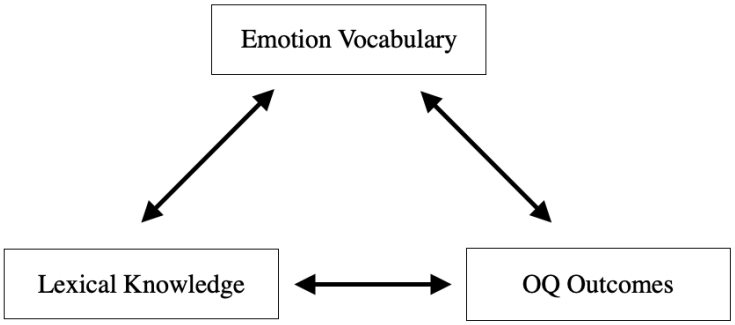
satisfaction in tasks related to employment, school, family roles, and leisure activities, and is made up of 9 items ($\alpha = .70$; Boswell et al., 2013). The OQ includes five "critical items," which measure acute emotional distress ($\alpha = .71$; i.e., suicidal ideation, substance use, workplace conflict). Note that higher scores on the OQ will indicate increased levels of emotional maladjustment. The OQ will, therefore, be referred to as a measure of emotional maladjustment.

Statistical Analyses

Three statistical analyses were conducted to answer my research questions. To answer my first research question, I conducted a correlation analysis among the outcomes on measures of lexical knowledge, emotion vocabulary, and emotional maladjustment. To answer my second research question, I compared the degrees to which lexical knowledge and emotion vocabulary relate to emotional maladjustment. I did this using a statistical test of the difference of dependent correlations (Lenhard & Lenhard, 2014). Specifically, I conducted z-tests among lexical knowledge, emotion vocabulary, and the OQ Total Score and subscale outcomes and evaluated the extent to which the two measures of vocabulary are comparable in their relation to the OQ outcomes. To answer my third research question, I conducted regression analyses among lexical knowledge, emotion vocabulary, and emotional maladjustment outcomes. Lexical knowledge is the proposed independent variable, OQ outcomes are the proposed dependent variables, and emotion vocabulary is the proposed covariate. The general form of this covariance model is shown in Figure 1.

Figure 1

Proposed Covariance Model of Lexical Knowledge, Emotion Vocabulary, and OQ Outcomes



Results

Participants

The study consists of data from 181 participants. Participants were all at least 18 years of age and their primary language was English. They were recruited on a volunteer basis through the St. John's University SONA system and word of mouth. Participants recruited through the SONA system were students enrolled in undergraduate psychology classes and received course credit for their participation.

Descriptive Statistics

The descriptive statistics for all of the variables are shown in Table 1.

Table 1
Variable Descriptive Statistics

Variable	N	Min.	Max.	Mean	Standard Deviation	Skewness
Lexical Knowledge Score	181	2	20	15.0773	2.87993	-.827
Emotion Vocabulary Score	181	0	19	14.4199	4.00977	-1.389
OQ Total Score	181	4	117	61.2707	24.03143	.145
OQ Symptom Distress Score	181	0	78	36.2486	15.54453	.255
OQ Interpersonal Relations Score	181	0	28	12.4199	6.55748	.124
OQ Social Roles Score	181	1	24	12.6022	4.45556	.184
OQ Critical Items Score	181	0	13	1.6077	2.44852	2.288

Correlations Between Lexical Knowledge, Emotion Vocabulary, and OQ Outcomes

The correlation statistics for lexical knowledge, emotion vocabulary, and OQ Total Score are shown in Table 2.

Table 2

Correlations between Lexical Knowledge, Emotion Vocabulary, and OQ Total Score

Variable		Lexical Knowledge	Emotion Vocabulary	OQ Total Score
Lexical Knowledge	**Pearson Correlation**		.715	-.113
	p		<.001	.131
	95% Confidence Intervals Lower / Upper		.635 / .780	-.254 /.034
Emotion Vocabulary	**Pearson Correlation**	.715		-.066
	p	<.001		.377
	95% Confidence Intervals Lower / Upper	.635 / .780		-.210 / .081
OQ Total Score	**Pearson Correlation**	-.113	-.066	
	p	.131	.377	
	95% Confidence Intervals Lower / Upper	-.254 /.034	-.210 / .081	

This data suggests that those who have knowledge of general vocabulary words are likely to also have knowledge of emotion vocabulary words. The OQ Total Score does not correlate with lexical knowledge or emotion vocabulary at a statistically significant level. The relation between lexical knowledge, emotion vocabulary, and the OQ is analyzed and discussed in further detail below.

The correlation statistics for lexical knowledge, emotion vocabulary, OQ subscales of symptom distress, interpersonal relations, and social roles are shown in Table 3. Table 3 includes an additional variable that is comprised of both the interpersonal relations and social roles subscales to provide a broader measure of symptoms associated with the participants' social worlds. The correlation statistics for the OQ critical items are also included.

Table 3

Correlations between Lexical Knowledge, Emotion Vocabulary, OQ Subscales, IR &SR Combined Score, and Critical Items

Variable		Inter-personal Relations (IR)	Symptom Distress	Social Roles (SR)	IR & SR Combined Score	Critical Items
Lexical Knowledge	**Pearson Correlation**	-.159	-.048	-.207	-.199	-.299
	p	.032	.524	.005	.007	<.001
	95% Confidence Intervals Lower / Upper	-.298 / -.014	-.192 / .099	-.343 / -.063	-.335 / -.055	-.426 / -.160
Emotion Vocabulary	**Pearson Correlation**	-.121	-.002	-.170	-.157	-.357
	p	.105	.975	.022	.035	<.001
	95% Confidence Intervals Lower / Upper	-.262 / .025	-.148 / .144	-.308 / -.024	-.296 / -.011	-.478 / -.222
Inter-personal Relations	**Pearson Correlation**		.679	.597	.932	.484
	p		<.001	<.001	<.001	<.001
	95% Confidence Intervals Lower / Upper		.592 / .750	.494 / .683	.910 / .949	.364 / .588
Symptom Distress	**Pearson Correlation**	.679		.720	.775	.467
	p	<.001		<.001	<.001	<.001
	95% Confidence Intervals Lower / Upper	.592 / .750		.641 / .784	.709 / .827	.344 / .574
Social Roles	**Pearson Correlation**	.597	.720		.847	.491
	p	<.001	<.001		<.001	<.001
	95% Confidence Intervals	.494 / .683	.641 / .784		.800 / .883	.372 / .594

	Lower / Upper					
IR & SR Combined Score	**Pearson Correlation**	.932	.775	.847		.542
	p	<.001	<.001	<.001		<.001
	95% Confidence Intervals Lower / Upper	.910 / .949	.709 / .827	.800 / .883		.430 / .638
Critical Items	**Pearson Correlation**	.484	.467	.491	.542	
	p	<.001	<.001	<.001	<.001	
	95% Confidence Intervals Lower / Upper	.364 / .588	.344 / .574	.372 / .594	.430 / .638	

Comparing the Relation of Lexical Knowledge and Emotion Vocabulary to OQ Outcomes

Four separate statistical tests of the difference of dependent correlations using the z-distribution were conducted among lexical knowledge, emotion vocabulary and OQ outcomes (Lenhard & Lenhard, 2014). Results from these tests are shown in Table 4.

Table 4

Test of the Difference of Dependent Correlations Among Lexical Knowledge, Emotion Vocabulary, and OQ Outcomes

		Outcome Variables				
Predictor Variables		**OQ Total Score**	**Symptom Distress**	**Interpersonal Relations**	**Social Roles**	**Critical Items**
Lexical Knowledge, Emotion Vocabulary	**Test Statistic *z***	.835	.813	.679	.668	-1.095
	p	.202	.208	.248	.252	.137

These results indicate that there are no statistically significant differences between the degrees to which lexical knowledge and emotion vocabulary relate to emotional maladjustment outcomes. Whether general vocabulary tests can be substituted for emotional adjustment screeners in the school setting must be considered alongside the regression data shown in Table 5.

Regression Analyses

For covariance to occur among the variables, the data must be characterized in three ways: 1) a significant correlation must exist between lexical knowledge and emotion vocabulary, 2) lexical knowledge must significantly correlate with the OQ, and 3) emotion vocabulary and the OQ must significantly correlate with each other with lexical knowledge in the model. If all three of these relations are significant, then the covariate is considered to at least partially account for the relation between the independent and dependent variables.

The correlation data in Table 2 indicates that the first criterion for covariance was met, and the correlation data in Table 3 indicates that the second criterion was met for the OQ subscales of interpersonal relations and social roles, only. Tables 6 and 7 show data from regression analyses, which indicate whether the third criterion was met for these OQ subscales and will consequently indicate whether covariance is occurring among these variables. Table 8 shows data from a regression analysis that was conducted among lexical knowledge, emotion vocabulary, and the critical items, which will further illustrate the relation between vocabulary constructs and emotional maladjustment. The regression data shown in Tables 6, 7, and 8 will also indicate whether general vocabulary tests can be

substituted for emotional adjustment screeners in the school setting. Figures 2, 3, 4, 5, 6, and 7 illustrate the results of the covariance analyses conducted among these variables.

To demonstrate the extent of the complete relation between the OQ Total Score and lexical knowledge and emotion vocabulary, the regression analysis of the OQ Total Score on lexical knowledge and emotion vocabulary is shown first in Table 5.

Table 5

Regression Analysis of the OQ Total Score (Dependent Variable) on Lexical Knowledge and Emotion Vocabulary (Predictor Variables)

		Dependent Variable
Predictor Variable		**OQ Total Score**
Lexical Knowledge & Emotion Vocabulary	**R**	.115
Lexical Knowledge	**Standardized Coefficient**	-.134
	p	.209
	95% Confidence Intervals Lower / Upper	-2.873 / .634
Emotion Vocabulary	**Standardized Coefficient**	.030
	p	.779
	95% Confidence Intervals Lower / Upper	-1.080 / 1.439

Table 6

Regression Analysis of the Interpersonal Relations Subscale (Dependent Variable) on Lexical Knowledge and Emotion Vocabulary (Predictor Variables)

		Dependent Variable
Predictor Variable		**Interpersonal Relations**
Lexical Knowledge & Emotion Vocabulary	**R**	.160
Lexical Knowledge	**Standardized Coefficient**	-.149
	p	.161
	95% Confidence Intervals Lower / Upper	-.815 / .136

Emotion Vocabulary	**Standardized Coefficient**	-.014
	p	.891
	95% Confidence Intervals Lower / Upper	-.365 / .318

Table 7

Regression Analysis of the Social Roles Subscale (Dependent Variable) on Lexical Knowledge and Emotion Vocabulary (Predictor Variables)

		Dependent Variable
Predictor Variable		**Social Roles**
Lexical Knowledge & Emotion Vocabulary	**R**	.209
Lexical Knowledge	**Standardized Coefficient**	-.176
	p	.096
	95% Confidence Intervals Lower / Upper	-.592 / .048
Emotion Vocabulary	**Standardized Coefficient**	-.044
	p	.674
	95% Confidence Intervals Lower / Upper	-.279 / .181

Table 8

Regression Analysis of the Critical Items (Dependent Variable) on Lexical Knowledge and Emotion Vocabulary (Predictor Variables)

		Dependent Variable
Predictor Variable		**Critical Items**
Lexical Knowledge & Emotion Vocabulary	**R**	.362
Lexical Knowledge	**Standardized Coefficient**	-.090
	p	.368
	95% Confidence Intervals Lower / Upper	-.299 / -.058
Emotion Vocabulary	**Standardized Coefficient**	-.292

p	.004
95% Confidence Intervals Lower / Upper	-.299 / -.058

Figure 2

Covariance Analysis of Lexical Knowledge, Emotion Vocabulary, and Interpersonal Relations

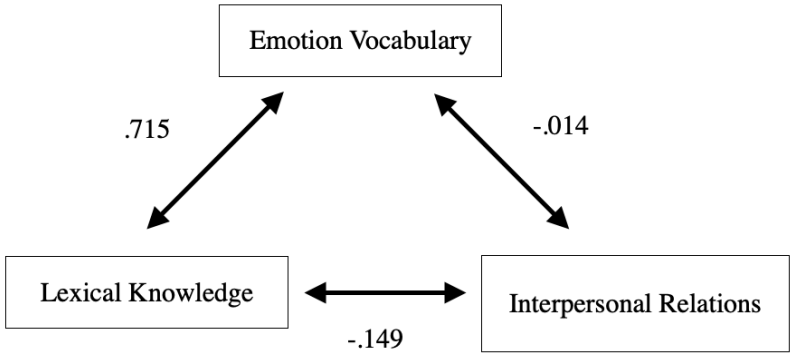


Figure 3

Total Effect of Lexical Knowledge on Interpersonal Relations

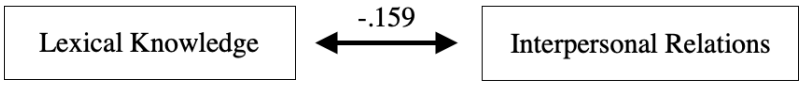


Figure 4

Covariance Analysis of Lexical Knowledge, Emotion Vocabulary, and Social Roles

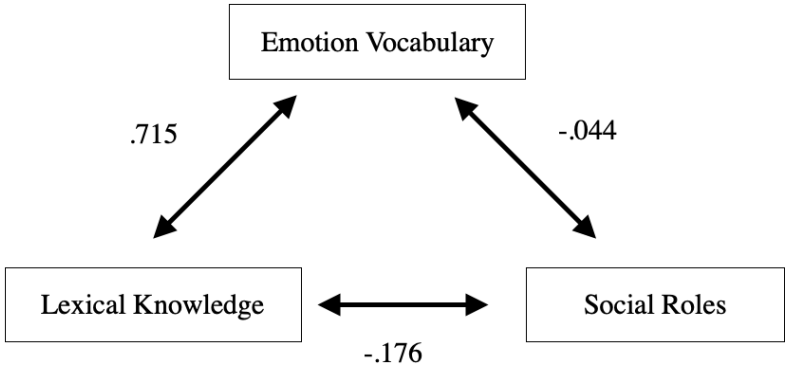


Figure 5
Total Effect of Lexical Knowledge on Social Roles

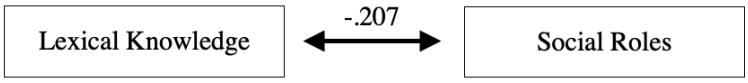


Figure 6
Covariance Analysis of Lexical Knowledge, Emotion Vocabulary, and Critical Items

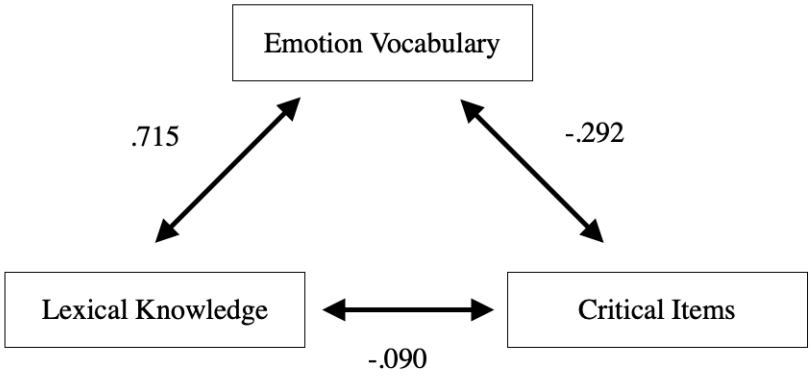
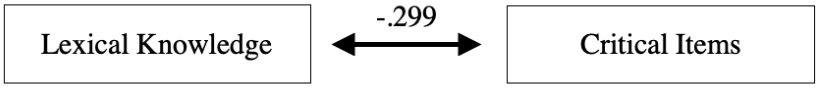


Figure 7
Total Effect of Lexical Knowledge on Critical Items



Conditional process analyses (Hayes, 2022) were conducted to determine whether emotion vocabulary is a statistically significant covariate among lexical knowledge and the aforementioned OQ outcome variables. The data in tables 9, 10, and 11 are from bootstrap tests of the indirect effect.

Table 9

Conditional Process Analysis of Emotion Vocabulary (Proposed Covariant), Lexical Knowledge (LK; Predictor Variable), and Interpersonal Relations Subscale (IR; Dependent Variable)

		Indirect Effect of LK on IR
Emotion Vocabulary	**Effect**	-.0236
	Standard Error Estimate	.1713
	95% Confidence Intervals Lower / Upper	-.3711 / .3117

Table 10

Conditional Process Analysis of Emotion Vocabulary (Proposed Covariant), Lexical Knowledge (LK; Predictor Variable), and Social Roles Subscale (SR; Dependent Variable)

		Indirect Effect of LK on SR
Emotion Vocabulary	**Effect**	-.0489
	Standard Error Estimate	.1049
	95% Confidence Intervals Lower / Upper	-.2552 / .1610

Table 11

Conditional Process Analysis of Emotion Vocabulary (Proposed Covariant), Lexical Knowledge (LK; Predictor Variable), and Critical Items (CI; Dependent Variable)

		Indirect Effect of LK on CI
Emotion Vocabulary	**Effect**	-.1776
	Standard Error Estimate	.0842
	95% Confidence Intervals Lower / Upper	-.3495 / -.0218

These results indicate that emotion vocabulary is not a significant covariate for interpersonal relations and social roles, as the 95% confidence interval contains zero. Emotion vocabulary is, however, a significant covariate for critical items, as the confidence interval does not contain zero.

Discussion

The Relation Between Lexical Knowledge and Emotion Vocabulary

Consistent with the literature, lexical knowledge and emotion vocabulary constructs were found to significantly correlate with each other. This finding suggests that people who have knowledge of general vocabulary words are likely to also have knowledge of emotion vocabulary words. These constructs are highly interrelated.

Relations Between Vocabulary Knowledge and Emotional Maladjustment

Vocabulary and overall emotional maladjustment. Neither lexical knowledge nor emotion vocabulary were found to statistically significantly correlate with the OQ Total Score, which represents overall emotional maladjustment. That being said, while the correlations were not statistically significant, they were meaningful in that both correlations were negative and, therefore, consistent with the inverse relationships I expected to find.

Vocabulary and specific realms of emotional maladjustment. Analysis of the OQ subscales of symptom distress, interpersonal relations, and social roles as well as the five critical items revealed that the OQ Total Score masks important sub-constructs of emotional maladjustment. These analyses yielded the most statistically and clinically meaningful results. Although no statistically significant correlations were found between lexical knowledge, emotion vocabulary, and the symptom distress subscale, the correlations were meaningful in that they indicated an inverse relation between vocabulary constructs and symptom distress. In other words, people with stronger vocabulary knowledge generally endorsed less emotional distress than those with weaker vocabulary knowledge.

Statistically significant negative correlations were found between vocabulary constructs and interpersonal relations and social roles subscales. Lexical knowledge and emotion vocabulary were also found to significantly correlate with interpersonal relations and social roles subscales when combined, which bolstered validity due to the increased number of items. These negative correlations indicate that people with stronger lexical knowledge and emotion vocabulary knowledge experience lower distress surrounding interpersonal relationships and navigating social roles. It is possible that this relation exists for various reasons. First, it is likely that people with strong general and emotion vocabularies are better able to communicate with others, which enables them to more effectively manage their social relationships and roles. These people may more effectively express their feelings to loved ones and articulate their needs to teachers, employers, or colleagues, leading them to feel better understood, connected, and satisfied in those contexts. It is possible that people with strong interpersonal communication skills are generally happier in their home and school/work settings for these reasons. Second, people are better able to communicate with others and function effectively when they experience less emotional distress. When people feel calmer, more energized, hopeful, and focused, they are generally better at managing stressful interpersonal situations at home and work/school. Based on the literature, it is likely a two-way relation; perhaps stronger vocabulary knowledge improves emotion regulation and lower emotional distress improves interpersonal communication and overall effectiveness.

Statistically significant negative correlations were also found between lexical knowledge, emotion vocabulary, and the five critical items on the OQ. These negative correlations indicate that people with stronger general and emotion vocabularies

experience less acute emotional distress than people with weaker vocabularies. It could be argued that the critical items may be a better measure of clinical distress than the OQ Total Score, as the critical items draw out people with elevated Total Scores and functional impairment. Although the correlations between the vocabulary constructs and the OQ Total Score were not statistically significant, the statistically significant correlation between the vocabulary constructs and the critical items indicates a significant relation between vocabulary knowledge and emotional maladjustment. The critical items score is especially meaningful for this reason. These correlational findings corroborate the literature which suggests that vocabulary knowledge serves as a tool for interpersonal and intrapersonal communication, which both impact emotional adjustment.

General Vocabulary Tests as a Measure of Emotional Maladjustment

Comparing lexical knowledge and emotion vocabulary measures to OQ outcomes. Results from the test of the difference of dependent correlations indicated that lexical knowledge and emotion vocabulary measures relate to emotional maladjustment outcomes at a comparable level. While this data is not alone sufficient to indicate whether a lexical knowledge measure can be substituted for the OQ to assess emotional maladjustment, it provides the basis that lexical knowledge and emotion vocabulary measures can be referred to interchangeably in considering emotional maladjustment outcomes.

Lexical knowledge as a proxy for emotion vocabulary in assessing emotional maladjustment. Statistically significant covariance was not detected when the OQ subscales of interpersonal relations and social roles were regressed onto lexical knowledge and emotion vocabulary. Although lexical knowledge and emotion vocabulary correlate

with both subscales and together predict subscale scores, emotion vocabulary does not uniquely relate to the subscales and, therefore, does not explain their outcomes. It is likely difficult to isolate lexical knowledge and emotion vocabulary as distinct constructs because they are so highly correlated with each other. That being said, these results indicate that emotion vocabulary accounts for at least some of the relation between lexical knowledge and the OQ subscales.

Statistically significant covariance was, however, detected among lexical knowledge, emotion vocabulary, and the critical items. This finding indicates that emotion vocabulary uniquely predicts critical items outcomes. Results from the test of the difference of dependent correlations showed a statistically significant difference between the standardized coefficients calculated when the critical items regressed onto lexical knowledge and emotion vocabulary, separately, which suggests that lexical knowledge may serve as an indicator of emotional maladjustment because of its overlap with emotion vocabulary ($z = 3.661$, $p < .001$). It is notable that emotion vocabulary uniquely relates to the outcomes that are most clinically extreme. It is likely that emotion vocabulary, which is a narrower construct than lexical knowledge, predicts critical item outcomes because it is the outcome variable that most closely represents functional impairment, a more specific construct within emotional maladjustment. It is possible that statistically significant covariance would occur among a clinical sample for this reason. This data aligns with previous literature which provides the theoretical foundation that lexical knowledge would be an extension of emotion vocabulary (Barrett, 2018).

These covariance analyses do not support the substitution of a lexical knowledge measure for the OQ as a measure of emotional maladjustment. Rather, lexical knowledge

may be used as a proxy for emotion vocabulary in assessing emotional maladjustment because emotion vocabulary accounts for at least some of the relation between lexical knowledge and interpersonal and social outcomes, and explains the relation between lexical knowledge and acute emotional distress. The implications of these findings are discussed below.

Limitations of the Current Study and Directions for Future Research

Study Sample Limitations

Shortcomings of a community sample. Regarding the study's sample, it is notable that it was a non-clinical, community sample. One likely reason that a statistically significant correlation was not found between vocabulary constructs and overall emotional maladjustment is because the OQ Total Scores were generally low and less variable than what would have likely been found among a clinical sample. Future research should be conducted using a clinical sample to further understand the relation between vocabulary and emotional adjustment.

Need for a more educationally diverse sample. The sample was comprised of undergraduate students in psychology classes at St. John's University, students in psychology doctoral programs, and other well-educated adults that I recruited through word of mouth within my community. It is likely that lexical knowledge and emotion vocabulary scores were considerably high and negatively skewed for this reason. Future studies should include participants of more varied educational backgrounds.

Use of adult sample. It is notable that one of the aims of the current study was to explore the clinical implications that findings may have for the school setting. Given that the current study's sample was comprised primarily of emerging adults, the study can only provide basis for additional research on this topic rather than provide conclusive evidence for what would be helpful for school-aged children. This is an area for future research.

The Limited Extent of Clinical Implications

Regarding clinical implications for the school setting, further research should be done to determine whether general vocabulary instruction can be used to effectively treat

emotional maladjustment and related disorders. While the current study indicates that general vocabulary instruction would likely be helpful in improving maladjustment, it does not enable us to conclude that it would be an effective form of treatment.

The Impact of COVID-19

It is possible that the COVID-19 pandemic may have confounded the data because participants' social relationships and roles were not as usual when participating in the survey due to quarantine and social distancing regulations. It is likely that participants were socially isolated and studying/working remotely, which did not provide them with the same opportunities as they would have typically had if they were in-person. Perhaps "interpersonal relations" and "social roles" were defined too narrowly on the OQ for this specific sample. It may be helpful to replicate this study post-pandemic in future research.

Implications

The results of the current study have important clinical implications for the school setting. More specifically, these results have implications for assessment, instruction, and treatment inside and outside the classroom. The results identify both teachers and school psychologists as key personnel in identifying potential issues and supporting students.

Clinical Significance of Vocabulary Test Results

Although it cannot be concluded that general vocabulary tests measure emotional maladjustment, study results suggest that vocabulary test performance may indicate whether a student may benefit from further emotional support. In addition to flagging students who are actively maladjusted or distressed, lower vocabulary scores may indicate which students are at risk for becoming maladjusted when stressors come along. It is especially notable that lexical knowledge was most strongly related to the OQ subscales of interpersonal relations and social roles, as stressors that arise in school are closely related to these constructs. For example, interpersonal conflict and social insecurity are common sources of distress in the school setting and will, according to the data, likely be reflected in vocabulary test performance. It is, therefore, worthwhile for teachers to attend to students' vocabulary knowledge because it holds clinical significance. When viewed in this way, vocabulary test results can increase the likelihood that mental health issues will be detected in a timely manner, thereby increasing the rate of preventative strategies being employed in the school setting.

Implications for Low Socioeconomic School Districts

The current study's findings are especially helpful for school districts with little funding and few resources. While schools are cautioned to not dismiss the need for specific

mental health screeners, vocabulary tests, which are already being administered, can indicate the need for further follow-up. These schools are then encouraged to use whatever mental health resources they do have access to (i.e., school psychologist, limited amounts of mental health screeners) to follow-up with flagged students.

It is also especially important to consider that many students in low socioeconomic school districts speak English as a second language. It is, therefore, especially important to determine whether the flagged students were tested in their first language, and to consequently consider whether the vocabulary test was indeed an appropriate representation of their interpersonal and intrapersonal communication abilities.

The Importance of Investing in General and Emotion Vocabulary Instruction

The results of the current study indicate that individuals with stronger general and emotion vocabularies are generally better emotionally adjusted. This data highlights the positive impact that vocabulary instruction can have on students' emotional adjustment. Teachers are, therefore, encouraged to invest time and effort into developing quality vocabulary lessons and administering valid benchmark assessments, as these efforts can serve as preventative strategies for all students.

This data also suggests that vocabulary instruction may help students who struggle emotionally. While the current findings do not establish whether it would be an effective form of psychological treatment, school psychologists are encouraged to consider incorporating vocabulary instruction into mental health workshops as well as group and individual counseling sessions. In addition to helping students learn words to describe their emotions and articulate their needs, instruction should also include clarifying the meaning of emotion words that they may already be using. Fiske (2020) emphasizes the need to

clarify the meaning of commonly used emotion labels, as there is often a discrepancy between vernacular words and psychological entities. While the person may understand what they mean when they use a given word, others may interpret it in a way that does not validly represent their experience, which undermines language as a tool for interpersonal communication. In today's American culture, for example, people loosely use the words "anxious" and "depressed" to describe their mood states and do not consider the true psychological meaning of these words. Education on this topic would be especially impactful in the school setting.

Based on the strong relation between vocabulary constructs and the OQ subscales of interpersonal relations and social roles, the potential positive impact that vocabulary instruction may have is particularly relevant for social skills groups and students struggling with socialization.

Conclusion

The current findings fill a gap in the existing literature regarding the relation between lexical knowledge and emotional adjustment. Whereas lexical knowledge has historically been conceptualized as a purely intellectual construct, the current findings suggests that they are, in fact, interrelated. While it cannot be concluded that vocabulary knowledge explains mental health outcomes, the current study reveals that vocabulary knowledge may predict these outcomes and is, therefore, clinically significant. Findings of this study have important implications for the school setting in regard to early detection of mental health issues, maximizing resources in low socioeconomic school districts, and developing preventative mental health strategies. These results provide a strong basis for future research, which should include investigating outcomes among school-age children and exploring vocabulary instruction as an intervention for emotional maladjustment.

Appendices

Appendix A

General Vocabulary Scale

Each question will present you with 5 general vocabulary words. Please select the 2 words that have the most similar meaning.

Question #1:

1. Tiny
2. Faded
3. New
4. Large
5. Big

Question #2:

1. Shovel
2. Spade
3. Needle
4. Oak
5. Club

Question #3:

1. Walk
2. Rob
3. Juggle
4. Steal
5. Discover

Question #4:

1. Finish
2. Embellish
3. Cap
4. Squeak
5. Talk

Question #5:

1. Recall
2. Flex
3. Efface
4. Remember
5. Divest

Question #6:

1. Implore
2. Fancy

3. Recant
4. Beg
5. Answer

Question #7:
1. Deal
2. Claim
3. Plea
4. Recoup
5. Sale

Question #8:
1. Mindful
2. Negligent
3. Neurotic
4. Lax
5. Delectable

Question #9:
1. Entrapment
2. Partner
3. Fool
4. Comparison
5. Mirror

Question #10:
1. Trivial
2. Crude
3. Presidential
4. Flow
5. Minor

Question #11:
1. Above
2. Slow
3. Over
4. Pierce
5. What

Question #12:
1. Assail
2. Designate
3. Arcane
4. Capitulate
5. Specify

Question #13:

1. Succeed
2. Drop
3. Squeal
4. Spit
5. Fall

Question #14:

1. Cistern
2. Crimp
3. Bastion
4. Leeway
5. Pleat

Question #15:

1. Worldly
2. Solo
3. Inverted
4. Drunk
5. Alone

Question #16:

1. Protracted
2. Standard
3. Normal
4. Florid
5. Unbalanced

Question #17:

1. Admissible
2. Barbaric
3. Lackluster
4. Drab
5. Spiffy

Question #18:

1. Facile
2. Annoying
3. Clicker
4. Obnoxious
5. Counter

Question #19:

1. Influence
2. Power
3. Cauterize

4. Bizarre
5. Regular

Question #20:

1. Fixed
2. Rotund
3. Stagnant
4. Permanent
5. Introduce

Appendix B
Emotion Vocabulary Scale

Each question will present you with 5 general vocabulary words. Please select the 2 words that have the most similar meaning.

Question #1:
1. Alert
2. Glad
3. Vigilant
4. Shocked
5. Disappointed

Question #2:
1. Outraged
2. Excited
3. Suspicious
4. Livid
5. Sad

Question #3:
1. Grieving
2. Dread
3. Mournful
4. Repulsed
5. Ecstatic

Question #4:
1. Calm
2. Despondent
3. Frustrated
4. Startled
5. Peaceful

Question #5:
1. Horrified
2. Amused
3. Frightened
4. Dejected
5. Furious

Question #6:
1. Outraged
2. Alarmed
3. Satisfied
4. Scared

5. Amazed

Question #7:
1. Shocked
2. Startled
3. Delighted
4. Depressed
5. Irate

Question #8:
1. Panicked
2. Astonished
3. Loath
4. Jolted
5. Gratified

Question #9:
1. Jovial
2. Infuriated
3. Dismal
4. Delighted
5. Disgusted

Question #10:
1. Contempt
2. Worried
3. Pleased
4. Disappointed
5. Content

Question #11:
1. Surprised
2. Bitter
3. Proud
4. Neglected
5. Resentful

Question #12:
1. Melancholy
2. Distaste
3. Repulsed
4. Stunned
5. Joyous

Question #13:

1. Hurt
2. Anxious
3. Optimistic
4. Anguished
5. Annoyed

Question #14:

1. Hostile
2. Remorseful
3. Scornful
4. Nervous
5. Amused

Question #15:

1. Disappointed
2. Amazed
3. Doubtful
4. Astonished
5. Satisfied

Question 16:

1. Abhor
2. Ebullient
3. Frightened
4. Dislike
5. Vexed

Question #17:

1. Devastated
2. Eager
3. Perplexed
4. Dejected
5. Anxious

Question #18:

1. Disgusted
2. Elated
3. Revolted
4. Glum
5. Aggravated

Question #19:

1. Discouraged
2. Furious
3. Thrilled

4. Disheartened
5. Stunned

Question #20:

1. Cautious
2. Cheerful
3. Seething
4. Amazed
5. Outraged

Appendix C
Outcome Questionnaire (OQ-45.2 Self-Report; Lambert et al., 1996*)*

Looking back over the last week, including today, help us understand how you have been feeling. Read each item carefully and mark the box under the category (never, rarely, sometimes, frequently, almost always) which best describes your current situation. For this questionnaire, work is defined as employment, school, housework, volunteer work, and so forth.

1. I get along well with others.
2. I tire quickly.
3. I feel no interest in things.
4. I feel stressed at work/school.
5. I blame myself for things.
6. I feel irritated.
7. I feel unhappy in my marriage/significant relationship.
8. I have thoughts of ending my life.
9. I feel weak.
10. I feel fearful.
11. After heavy drinking, I need a drink the next morning to get going. (If you do not drink, mark "never.")
12. I find my work/school satisfying.
13. I am a happy person.
14. I work/study too much.
15. I feel worthless.
16. I am concerned about my family troubles.
17. I have an unfulfilling sex life.
18. I feel lonely.
19. I have frequent arguments.
20. I feel loved and wanted.
21. I enjoy my spare time.
22. I have difficulty concentrating.
23. I feel hopeless about the future.
24. I like myself.
25. Disturbing thoughts come into my mind that I cannot get rid of.
26. I feel annoyed by people who criticize my drinking (or drug use). (If not applicable, mark "never.")
27. I have an upset stomach.
28. I am not working/studying as well as I used to.
29. My heart pounds too much.
30. I have trouble getting along with friends.
31. I am satisfied with my life.
32. I have trouble at work/school because of drinking of drug use. (If not applicable, mark "never.")
33. I feel that something bad is going to happen.
34. I have sore muscles.

35. I feel afraid of open spaces, or driving, or being on buses, subways, and so forth.
36. I feel nervous.
37. I feel my love relationships are full and complete.
38. I feel that I am not doing well at work/school.
39. I have too many disagreements at work/school.
40. I feel something is wrong with my mind.
41. I have trouble falling asleep or staying asleep.
42. I feel blue.
43. I am satisfied with my relationships with others/
44. I feel angry enough at work/school to do something I may regret.
45. I have headaches.

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