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# Psychometric Evaluation of the Valued Living Questionnaire: Comparing Distressed and Normative Samples

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PSYCHOMETRIC EVALUATION OF THE VALUED LIVING  
QUESTIONNAIRE: COMPARING DISTRESSED  
AND NORMATIVE SAMPLES

by

David D. Cotter

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Submitted to the  
Faculty of The Graduate College  
in partial fulfillment of the  
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Department of Psychology  
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Western Michigan University  
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David D. Cotter, Ph.D.

Western Michigan University, 2011

The Valued Living Questionnaire (VLQ; Wilson, 2002) was created to measure the extent to which an individual contacts his/her chosen values, an important construct in Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999). The goal of the current study was to contribute to the psychometric evaluation of the VLQ by replicating and extending the first study of the VLQ's psychometric properties conducted by Wilson, Sandoz, Kitchens, & Roberts (2010). In the present study, the VLQ was administered to a normative collegian sample ( $n = 171$ ,  $M$  age = 19.32) and a distressed sample of collegians who were participating in clinical outcome studies ( $n = 111$ ,  $M$  age = 21.14). With respect to reliability, good internal consistency was found with both the distressed and normative samples and across the VLQ Composite and Importance and Consistency subscales ( $\alpha = .72 - .79$ ). Additionally, good 3-week test-retest reliability was observed, especially for the Composite ( $r = .74$ ) and Importance subscale ( $r = .76$ ). As would be expected, a somewhat lower test-retest reliability was found on the Consistency subscale ( $r = .67$ ). Similar to Wilson et al., three eigenvalues greater than 1.0 (a common criteria for retaining factors) were found within the normative group while within the

distressed sample four eigenvalues greater than 1.0 were found. Across both the normative and distressed samples, work-education, family-parenting, and friends-recreation-self care appeared to cluster. With respect to validity, the VLQ Composite and subscales were significantly higher among the normative than distressed samples ( $p < .001$ ) and correlated (at a Bonferroni corrected  $\alpha$  level of .003) positively with measures of adaptive functioning, negatively with measures of maladaptive functioning, and negligibly with impression management and grade point. Overall, the data support the general reliability and validity of the VLQ for use with normative and distressed collegian samples and are generally consistent with the ACT model of psychopathology.

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I would first like to thank my mother for instilling the value of education in me at an early age and supporting me through this process. I would also like to thank my wife for helping me to behave consistently within my values and showing me a life worth living. Finally, I would like to thank my advisor who has been instrumental in fostering my skills to help others towards valued living.

David D. Cotter

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## INTRODUCTION

Recently there has been a rapid rise in acceptance and mindfulness-based interventions, which has caused a stir within behavior therapy (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Some have argued that the emergence and greater use of mindfulness practices represents a new generation in behavior therapy. From this perspective, the history of behavior therapy can be organized into three waves (or generations): traditional behavior therapy, cognitive-behavior therapy (CBT), and the more recent “third generation” of relatively contextual approaches (Hayes, 2004). These third generation approaches have been defined as follows (Hayes):

Grounded in an empirical, principle-focused approach, the third wave of behavioral and cognitive therapy is particularly sensitive to the context and functions of psychological phenomena, not just their form, and thus tends to emphasize contextual and experiential change strategies in addition to more direct and didactic ones. These treatments tend to seek the construction of broad, flexible and effective repertoires over an eliminative approach to narrowly defined problems, and to emphasize the relevance of the issues they examine for clinicians as well as clients (p. 658).

Examples of “third generation” CBT interventions include Acceptance and Commitment Therapy (ACT; Hayes, 1999), Dialectical Behavior Therapy (Linehan, 1993), Mindfulness-Based Cognitive Therapy (Segal, Williams, & Teasdale, 2001), and Meta-Cognitive approaches (Wells, 2000), among several others. These interventions seek to change the function of psychological events (e.g., negative thoughts, feelings, images) and the individual’s relationship to them using strategies such as mindfulness,

acceptance, or cognitive defusion rather than focusing on directly changing the psychological events themselves (Teasdale, 2003).

Of these “third generation” behavior therapies, ACT is unique in that it was developed in concert with a contemporary behavior analytic account of language and cognition (Hayes et al., 2006). Thus, the ACT model combines a contextualistic philosophy of science, a basic theory of language and cognition (Relational Frame Theory [RFT]; Hayes, Barnes-Holmes, & Roche, 2001), and an applied theory of psychopathology and psychological change (Hayes, 2004; Vilardaga, Hayes, Levin, & Muto, 2009). Although RFT is meant to be a comprehensive contextualistic account of human language and cognition, and thus its goals extend far beyond ACT or even the behavioral and cognitive therapies in general, ACT is connected conceptually to RFT (Hayes, et al.).

According to RFT, the core of human language and cognition is the learned and contextually controlled ability to arbitrarily relate events mutually and in combination, and to change the functions of specific events based on their relations to others (Hayes, et al., 2006). From an ACT/RFT point of view, a primary source of psychopathology is the way that language and cognition interact with direct contingencies to produce an inability to persist or change behavior in the service of long-term valued ends. This kind of psychological inflexibility is argued in ACT and RFT to emerge from weak or unhelpful contextual control over language processes themselves (Hayes, et al.). The underlying premises of RFT are seen as relatively simple, in that language, or verbal behavior, is considered to be operant behavior. We basically say or think what we do because of a

history of reinforcement for saying or thinking those things under similar circumstances (Flaxman, Blackledge, Bond, 2011).

Although language (relational framing) is an extremely useful skill, allowing us to communicate, remember the past, solve problems, plan for the future, consider risks, etc., language is also a double-edged sword (Dahl et al., 2009). Language use involves relating stimuli (objects, people, things, thoughts, memories, emotions, etc.) in ways that change how we perceive and react to these stimuli (Flaxman et al., 2011). These relations can involve any way of relating stimuli, such as: hierarchically, temporally, co-ordinatively, comparatively, spatially, and so on (Hayes et al., 2001). Therefore, just as we are able to remember being on the beach last summer, we are also able to remember all of the times we have been hurt. Being able to remember the past is important for planning for the future, but it also allows us to ruminate about our mistakes, berate ourselves for our perceived failures, and defend our long-established conceptualization of who we are (Dahl et al.).

Due to language being so ubiquitous in human societies and that it typically solves so many of our problems, we come to overestimate the veracity of our thoughts. Thus, what is verbally believed is consumed as solid fact (Flaxman et al., 2011). The ACT approach rests on the idea that normal processes of human language and cognition can play a major role in the development and maintenance of psychopathology (Dahl et al., 2009). Within the ACT model, humans act in a way that is inconsistent with what the environment affords relevant to chosen values and goals. The form or content of cognition is not directly troublesome, unless contextual features lead this cognitive

content to regulate human action in unhelpful ways (Hayes, et al., 2006). This is unlike CBT, which attempts to rectify phenomena by changing the way clients relationally respond (i.e., by changing the way that they think). ACT takes a different approach, by attempting to disrupt the processes by which relational responding changes the function of the verbal stimuli involved with the problematic behavior (Flaxman et al.).

The ACT conceptualization of psychological problems is centered around this narrowing of the behavioral repertoire and the psychological inflexibility that characterizes it. Six fundamental processes are outlined – *experiential avoidance*, *cognitive fusion*, *lack of contact with the present moment*, *attachment to a conceptualized self*, *unclear values*, and *lack of commitment to engaging in valued activity* – all of which lead to psychological inflexibility (Dahl et al., 2009). To combat these issues, ACT has the general goal of increasing psychological flexibility – the willingness to contact thoughts, emotions, images, etc. as what they are (products of language and cognition) and not as what they say they are (something that needs to be decreased, changed, or avoided) so as to persist in behavior directed toward chosen values. Psychological flexibility (which is conceptualized as a positive psychological skill, not merely a method of avoiding psychopathology) is established through six core ACT processes (Hayes, et al., 2006). These core processes include, *acceptance*, *cognitive defusion*, *being present*, *self as context*, *values*, and *committed action* and map onto (in a one-to-one fashion) the processes outlined in the ACT model of psychopathology. In other words, the adaptive and maladaptive processes are two sides of the same coin.

One of the core commitment and behavior change processes is concerned with the client striving to live a valued life (Strosahl, Hayes, & Wilson, 2004; Hayes et al., 2006). In ACT, *values* are used to help clients select directions for their lives that are congruent with what is deeply important to them and establish goals supporting movement in those directions (Dahl et al., 2009). As discussed above and is apparent in Figure 1, lack of acceptance and avoidance of difficult psychological experiences increases psychological inflexibility and has a negative impact on valued living (Hayes, Strosahl, & Wilson, 1999). However, so too does a lack of clarity of values.

Hayes et al. (1999) offered an initial definition of values as “verbally construed global desired life consequences” (p. 206). Within this definition, values are verbal statements about what general classes of outcomes an individual desires to repeatedly experience throughout his/her life (e.g., being a loving parent). An ACT therapist typically approaches values as process variables (summary verbal labels for) rather than outcome variables (accomplished life outcomes; Flaxman et al., 2011).

With this in mind, the ACT definition of values has recently been refined. The most recent definition described *values* as “freely chosen, verbally constructed consequences of ongoing, dynamic, evolving patterns of activity, which establish predominant reinforcers for that activity that are intrinsic in engagement in the valued behavioral pattern itself” (Wilson & DuFrene, 2009, p. 66). This definition states that values are “freely chosen,” meaning they are based on our learning history and experienced as a something that is chosen as opposed to something required (by an authority figure). Because values are “verbally constructed,” they do not need direct

conditioning. Additionally, values are “ongoing, dynamic, [and] evolving” meaning that they take on different forms, which can change over time and are context specific. Values are also described as “patterns of activity,” or more specifically, behavior that are engaged in repeatedly. Values are “predominant reinforcers,” and, therefore, are aspirational ideas that an individual works to obtain as opposed to something that we actively try to escape/avoid. Finally, values are “intrinsic.” This means that simply behaving in accordance with the said value is a reinforcing experience for the behavior.

From this definition, values are seen as self-selected over-arching ideals that can be linked with patterns of action to enhance a sense of meaning and hopefully coordinate behavior over long time frames. That is, they have a motivational function. Values in this sense can never be fulfilled, satisfied, or completed; rather, they serve to give us purpose or direction for goal-directed behavior, which can be satisfied or completed (Dahl et al., 2009). Goal-directed behavior is useful in that while the consequences for any given behavior is ultimately “out of one’s hands,” one always has the ability to behave in accordance to their values (e.g., being a loving parent despite an unruly teenager). Thus, thinking of values as ways of behaving affords more utility to a behavior therapist attempting to shape the increased emission of specific responses in a client (Flaxman et al., 2011).

Wilson and Murrell (2004) broadened the scope of values as set forth by Hayes by emphasizing that the ultimate goal of ACT is increasing the frequency of valued living. Use of the phrase *valued living*, as opposed to *values* implies a focus on the process of behaving consistently with one’s values. At times, it may not be pleasant to engage in

behaviors that will facilitate one's values over the long run. However, RFT predicts that, even at these times, such behavior might actually be immediately reinforced simply because they are in a verbal equivalence class with the stated value (Flaxman et al., 2010).

Overall, the goal of ACT work is to foster *psychological flexibility*, which is characterized by broad repertoires of behavior that move the client in valued directions (Dahl et al, 2009). When using ACT in psychological practice, the clinician needs a way to monitor client flexibility and to make judgments on how to aid the client to change behavior in the service of chosen values. Relatedly, researchers interested in evaluating the processes proposed in the ACT model and their contribution to outcome also need to be able to measure psychological flexibility and values.

Within psychological practice, clinical judgment often has to be used in making assessment and treatment decisions. Viewing psychological practice as part science and part art, clinical judgment has been central to clinical practice since its inception (Bierman, Nix, Maples, Murphy, 2006). Clinical judgment can include estimates of the chance that a client will harm him- or herself, psychiatric diagnoses, and the identification of a client's behavior problems (Haynes, Nelson, & Blaine, 1999). However, whenever possible, clinical judgment should be aided by formal psychological assessment. That is, information derived from unstructured observation, interviewing, and the case history is combined with scores from formalized, psychometrically evaluated measures to provide an integrated picture of the individual (Beutler & Berren, 1995) and to protect against bias in judgment (Dawes, Faust, & Meehl, 1989). Although a

clinician can make bad judgments from good assessment measures, clinical judgment is more often limited by the validity of the measures upon which they are based (Haynes, Nelson, & Blaine).

The need for psychometrically sound measures is equally important in research. Reliable and valid measures of the theoretically proposed change process in ACT are vital to conducting research empirically examining the role of these processes when ACT is implemented. Currently ACT has a growing and impressive initial empirical database supporting its efficacy in a range of areas (Hayes et al., 2006). This sets the stage for and emphasizes the need to examine the treatment process. Psychometry (the science of measurement) is used to evaluate psychological assessment instruments so as to determine its utility in clinical research settings (Haynes, Nelson, & Blaine, 1999). The value of a psychological test depends on the degree to which it serves as an indicator for the targeted area/domain of behavior; that is, the construct that it was designed to capture (Anastasi & Urbina, 1997). Psychometry also includes strategies for developing and evaluating assessment instruments to help ascertain whether they are likely to function as reliable and valid indicators of the targeted domain (Haynes, Nelson, & Blaine).

In summary, measurement is fundamental to all clinical psychology research. The proper application of psychometric principles can increase the validity of psychological assessment, aid the clinician in the interpretation of measures derived from psychological assessment, and assist in the development and evaluation of new assessment instruments (Haynes, Nelson, & Blaine, 1999).

This last application (development and evaluation of new assessment instruments) is relevant for emerging “third wave” behavior therapies. Within these therapies, changes in values guided behavior, acceptance, mindfulness, distress tolerance, and cognitive diffusion, among others, have been proposed as critical aspects of the clinical change process. To determine if they are indeed critical components, they must be measured reliably and accurately. As such, measures need to be developed that capture these domains. Such measures can then contribute to empirical investigations of the process and outcome of ACT interventions (Wilson, Sandoz, Kitchens, & Roberts, 2010).

To help assess valued living, the Valued Living Questionnaire (VLQ) was developed to qualitatively measure an individual’s values and the extent to which he/she is behaving consistently with chosen values in everyday life (Wilson et al., 2010). These quantitative data can also be used clinically to facilitate a conversation about a direction for treatment. That is, identification of important values (e.g., education) might point toward potential targets for behavior change (e.g., attending class, studying daily) and acceptance strategies (e.g., thoughts of failure, feelings of boredom).

To date, psychometric data on the VLQ has only been provided in one research article. Wilson et al. (2010) reported two studies that examined variables related to the reliability (study 1) and validity (study 2) of the VLQ.

In the first study, 56 undergraduates from a southern university (66% female, 53% Caucasian, M = 23 years) participated. Participants in study 1 were given the VLQ and the Butcher Treatment Planning Inventory (BTPI; a 210-item, true-false measure of clinical symptomatology and treatment difficulty; Butcher, 1998) along with a

Demographic Questionnaire. When completing the VLQ, participants rate the *importance* of 10 domains of living (e.g., family relations, intimate relations) on a 10-point Likert-style scale. This part of the scale is designed to measure the individual's values; that is, in what domains of living the individual would likely find a particular behavioral pattern reinforcing. The second part of the VLQ asks the client to rate, using a 10-point Likert-scale, how *consistently* he or she has been currently behaving in accord with the value over the past week. This part of the questionnaire provides a self-assessment of the correspondence between the client's perceived activities and his or her values. The BPTI clinical scales were administered, however they were not the focus, rather the response style indicators were used to omit invalid responders.

The results of study 1 showed that importance ( $M = 85$ ) was generally rated higher than consistency ( $M = 68$ ) suggesting that even among this non-distressed, normative collegian sample they tended to be a discrepancy between values and values-based activity. Additionally, Cronbach's alpha was used to evaluate internal consistency with inter-item consistency found to be adequate. As with overall score, internal consistency was higher for the importance subscale ( $\alpha = .79$ ) than for the consistency subscale ( $\alpha = .58$ ), suggesting greater differences in how much participants were behaving towards values in the various areas compared to how important the domains were to them. Finally, the VLQ was examined for stability over a week interval. Test-retest reliability was strong for the importance subscale with a Pearson's correlation coefficient of .90 ( $p < .001$ ). A Pearson's product moment correlation of the consistency subscale was only moderate ( $r = .58$ ). These data are supportive of the idea in ACT that

values themselves tend to be relatively stable, while consistent values-guided behavior will be more variable.

In the second study, 253 undergraduates at a southern university (80% female, 80% Caucasian,  $M = 20$  years) participated. In addition to the VLQ, the BTPI, the Acceptance and Action Questionnaire, and the Short Form-36 were included in study two.

The focus of study two was to construct validity; however, Wilson et al. also presented the average importance and consistency scores and the internal consistency data for this sample. As in study 1, importance ( $M = 87$ ) was rated higher than consistency ( $M = 72$ ). However, in study two there was no difference in internal consistency between the importance ( $\alpha = .77$ ) and consistency ( $\alpha = .75$ ) scales.

Construct validity was examined using principal component factor analysis with Wilson and colleagues obtaining three eigenvalues greater than one within their sample. Using visual analysis, they reported that their results supported a one-factor solution, which accounted for 35.04% of the variation in VLQ responses. These results suggest a somewhat surprising unidimensional aspect to values; although, only a minority of the variance was accounted for and three factors had eigenvalues greater than 1.0 (a common criterion for retaining factors; Floyd & Widaman, 1995).

There was a significant negative correlation between valued living and psychological flexibility ( $r(251) = -.14, p < .05$ ), consistent with the ACT model. ACT also proposes that valued living should be related to lower psychological distress and higher quality of life (Wilson & Murrell, 2004). Correlation analyses provided initial

support for these hypotheses. For instance, BTPI assessed general psychopathology was negatively correlated with valued living ( $r = -.27, p < .001$ ), while SF-36 assessed vitality was positively correlated with valued living ( $r = .27, p < .001$ ).

The data reported by Wilson et al. (2010) provide promising initial data as to the reliability and validity of the VLQ. There were several limitations to the reported studies, which included the use of relatively homogenous samples of relatively high functioning college students. The data of Wilson et al., provide a reasonable first step in the psychometric validation of the VLQ. The purpose of this study was twofold. First, replicate the Wilson et al. findings. Second, to extend the findings to, and compare the results with, a distressed collegian sample.

As described above, the project had two overall goals. However, within these broad areas there were a number of specific research questions addressed. These are specified below.

1. Did the data replicate those of Wilson et al. (2010) findings and extend them to a distressed sample?
  - a. Were the mean scores higher for *importance* than for *consistency*?
  - b. Was internal consistency higher for *importance* than for *consistency*?
  - c. Was test-retest reliability higher for *importance* than for *consistency*?
  - d. Did the results support a 1-factor solution?
  - e. Was the VLQ related in expected directions with measures of psychological functioning? For example, negative relationships with the

AAQ, AAQ-II, ATQ-N, BSI, and BDI-II, positive relationships with the RSES and ATQ-P, and no relationship with impression management.

1. How did the VLQ results between a distressed and normative sample compare?
  - a. Was the VLQ composite higher for the normative sample than the distressed sample?
  - b. Was the discrepancy (*importance > consistency*) greater in the distressed sample as compared to the normative group?

## METHODS

### *Participants and Recruitment Procedures*

*Data Source.* Data for the distressed sample were drawn from pretreatment assessment measures from three clinical trials using collegian samples (see Clore & Gaynor, 2006; Clore & Gaynor, 2011; Hinton & Gaynor, 2010). In addition, a large normative (college) sample of 171 new participants was collected. All participants were over the age of 18 and from Western Michigan University. Recruitment involved announcements made in undergraduate classes and flyers posted around campus. When data was missing for a participant on a particular measure, he/she was omitted from that analysis.

The inclusion criteria for the clinical trials in which the distressed group participated required they score at least one SD below the mean for a college population on the Rosenberg Self-Esteem Scale (RSES) and one SD above the mean according to the adult non-patient norms on the Brief Symptom Inventory – Global Severity Index (BSI). Those taking medication for psychiatric reasons were allowed to participate if they were

on the medication for at least eight weeks at study entry and met inclusion criteria. Individuals who were receiving other psychological treatment were excluded. As well, individuals who endorsed strong current suicidal ideation at pretreatment (reporting “thoughts of ending your life” as causing them “quite a bit” or “extreme” distress on the BSI) were excluded from the study in favor of a referral for individualized services tailored to their immediate needs.

As a result of the previously described ascertainment procedures, data were potentially available from 282 participants (normative sample = 171, distressed sample = 111) on any given measure. Due to incompleteness of some measures and not all measures being used in all three clinical trials (e.g., the AAQ-II) the number available for analysis differed somewhat across measures. Tables 2, 3, 5, 12, 14, & 15 make clear the number of participants available for each analysis.

*Setting.* Participation from the highly distressed sample took place in therapy rooms within a clinical psychology research suite. Sessions were conducted individually. Participation from the normative sample also took place within the clinical psychology research suite where times were available for participants to fill out measures/forms; this took place individually or within a small group format.

*Procedure.* Participants from the normative sample were seen on one to two separate assessment occasions. After signing the consent form, participants completed a battery of assessments that took them approximately 30 minutes and included the Valued Living Questionnaire (VLQ; Wilson, 2002), Brief Symptom Inventory (BSI; Derogatis, 1992), Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1989), Beck Depression

Inventory-II (BDI-II; Beck et al., 1996), Automatic Thoughts Questionnaire-Negative (ATQ-N; Hollon & Kendall, 1980), Automatic Thoughts Questionnaire-Positive (ATQ-P; Ingram & Wisnicki, 1988), Acceptance & Action Questionnaire (AAQ; Hayes et al., 2004), Acceptance & Action Questionnaire-II (AAQ-II; Bond et al., [in press]), and Impression Management (Paulhus, 1991), along with a Demographic Questionnaire. Participants were then invited (and for those expressing willingness scheduled) to return three weeks later to again complete the VLQ and AAQ. The second session, allowed for test-retest reliability of the VLQ and AAQ measures to be assessed.

### *Measures*

A variety of commonly used self-report measures of psychological functioning were employed with the highly distressed samples and were administered to the normative sample to determine whether the two samples were different. These included:

- 1) Valued Living Questionnaire (Appendix A; Wilson, 2002). Developed as a tool for use in Acceptance and Commitment Therapy, this 20-item questionnaire asks the individual to first rate the *importance* of values in 10 areas of life (e.g., family, work, education, relationships), and then the *consistency* of action taken during the last week towards those values. Each item is rated on a scale from 1 to 10. The Valued Living composite is calculated by multiplying the Importance and Consistency responses for each domain and then calculating the mean of those scores. The resulting Valued Living Composite scores can range from 10-100. If any item is missing (e.g., the item on parenting among our collegian sample) the composite cannot be calculated, which is why the VLQ composite sample size is

244. However, the VLQ Importance and VLQ Consistency subscales are simply an average of the items and, thus, a missing item did not contribute or detract from the average.

- 2) Brief Symptom Inventory (BSI; Derogatis, 1993). The BSI is a 53-item questionnaire designed to reflect psychological symptom patterns. Items are endorsed on a scale of 0 (not at all) to 4 (extremely). Internal consistency ranges from a low of .71 on Psychoticism to a high of .85 on Depression. Test-retest reliability over a 2-week period is reported to range from a low of .68 on Somatization to a high of .91 on Phobic Anxiety. The Global Severity index, described as "the most sensitive" of the macroscopic measures of psychopathology, has a test-retest reliability of .90.
- 3) Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1989). The 10-item RSES asks participants to rate their level of agreement, with statements describing general feelings about themselves. Higher scores (ranging from 0-40), indicate a more positive self-evaluation with a mean of 32.60 (SD = 5.25) established in a large nonpatient college sample (Vispoel et al., 2001).
- 4) Beck Depression Inventory-II (BDI-II; Beck et al., 1996). This widely used 21-item self-report scale assesses the severity of depressive symptoms. The normative mean, from a large collegiate sample, was reported to be 9.11 (SD = 7.57) with recommended descriptors of 0-12 Nondepressed, 13-19 Dysphoric, 20-63 Dysphoric-Depressed (Dozois et al., 1998).

- 5) Automatic Thoughts Questionnaire-Negative (ATQ-N; Hollon & Kendall, 1980).  
The 30-item ATQ measures the frequency of negative self-statements. Each item is scored on a 5-point scale, ranging from 1 (not at all) to 5 (all the time), with higher scores indicating more negativity. Nonpatients score between 40-60, while depressed patients tend to score over 90. The mean among normative samples, provided by Dozois et al. (2003), is 52.91 ( $SD = 18.18$ ).
- 6) Automatic Thoughts Questionnaire-Positive (ATQ-P; Ingram & Wisnicki, 1988).  
This 30-item instrument measures frequency of positive self-statements and is scored from 1 (not at all) to 5 (all the time). As reported by Ingram and Wisnicki (1988), the mean score for non-depressed individuals is 107 ( $SD = 19$ ), 96 ( $SD = 19$ ) for mildly depressed, and 83 ( $SD = 16$ ) for depressed individuals. However, the normative mean averaged across samples, reported by Dozois et al. (2003), is 98.61 ( $SD = 13.02$ ).
- 7) Acceptance & Action Questionnaire (AAQ; Hayes et al., 2004). The 9-item AAQ measures ability to take action despite uncomfortable thoughts/feelings. Each item is scored on a 1-7 scale, with higher scores indicating greater experiential avoidance and immobility. The mean for clinical populations is 38-40. For non-clinical populations it is 33.4 ( $SD = 7.2$ ).
- 8) Acceptance and Action Questionnaire-II (AAQ-II; Bond et al., [In Press]). This 10-item scale also measured ability to take action despite uncomfortable thoughts/feelings. Each item was scored on a 1-7 scale, with higher scores

indicating greater psychological flexibility. Psychometric findings indicate a normative mean score of 50.72 (SD = 9.19) for college students.

- 9) Demographic Questionnaire (Appendix B). Created by authors, will be administered at pretreatment to provide information about participant's age, sex, ethnicity, GPA, year in school, treatment history, etc.
- 10) Impression Management subscale of the Balanced Inventory of Desirable Responding ( Paulhus, 1991). Each item of this 20-item measure is scored on a 1 – 7 scale with higher scores indicating a greater likelihood of a participant responding in a social desirable style.

#### *Data Analysis*

The data were analyzed in the following way. For research question number 1a: Were the mean scores higher for *importance* than for *consistency*?, mean differences between *importance* and *consistency* were examined using paired *t* tests. For research questions number 1b: Was internal consistency higher for *importance* than for *consistency*?, the Cronbach's alpha scores for the *importance* and *consistency* subscales were examined. In terms of research questions number 1c: Was test-retest reliability higher for *importance* than for *consistency*?, the size of the time 1 – time 2 Pearson's product moment correlation coefficients for *importance* and *consistency* subscales were examined. With respect to research question number 1d: Did the results support a 1-factor solution?, factor analysis was conducted to examine the best solution and assess if the results support a 1-factor extraction. For research question number 1e: Was the VLQ related in expected directions with measures of psychological functioning?, the Pearson's

product moment correlation coefficient between the VLQ and the other measures were examined. It was predicted that there would be positive correlations between the VLQ and the RSES and ATQ-P, negative correlations between the VLQ and the BDI-II, BSI, ATQ-N, and AAQ I & II, and no significant correlation between the VLQ and Impression Management. Research questions 2a: Was the VLQ composite higher for the normative sample than the distressed sample?, and 2b: Was the discrepancy (*importance > consistency*) greater in the distressed sample as compared to the normative group?, were analyzed using independent groups *t* tests.

### *HSIRB*

This study was approved by the Human Subjects Institutional Review Board at Western Michigan University (See Appendix C).

## RESULTS

### *Pretreatment Group Differences*

A series of Chi-square and one-way ANOVAs were conducted to examine the comparability of the Normative and Distressed groups. The results of these analyses indicated that a statistically significant difference between the two groups in regards to age ( $t = -5.13, p = .000$ ). As is apparent in Table 1, participants in the distressed group ( $M$  age = 21.14) were older than the normative group ( $M$  age = 19.32) by about 1.75 years on average. No statistical significance in regards to sex ( $\chi^2 = 2.22, p = .14$ ) or race/ethnicity ( $\chi^2 = 10.56, p = .10$ ) was found. Descriptive statistics indicate that the modal participant across samples was a white female.

Table 1

## Demographic

Variable:	Normative (n = 171)	Distressed (n = 111)	Test Statistic	p Value
Sex (% male)	37%	28%	$X^2 = 2.22$	.14
Race/Ethnicity			$X^2 = 10.56$	.10
White	77%	80%		
Black	12%	6%		
Hispanic	5%	1%		
Asian	2%	6%		
Hawaiian	0%	1%		
Native American	1%	1%		
Multi-	3%	5%		
Participants' Age	19.32 (1.92)	21.14 (4.01)	$t = -5.13$	.000

Table 2 shows that the two groups were statistically different in expected directions on every psychological measure administered, with the exception of the Impression Management scale. Thus, the distressed group reported statistically significantly lower self-esteem, higher psychological symptomatology, more depressive symptoms, higher experiential avoidance, lower psychological flexibility, greater negative thinking, and less positive thinking. These differences do not appear due to differences in socially desirable responding as the Impression Management scale did not differ between the groups.

Table 2

## Clinical Characteristics of the Normative and Distressed Groups

Measure:	Normative		Distressed		t value:
	N:	Mean:	N:	Mean:	
RSES	171	31.63 (5.34)	111	22.37 (3.07)	16.58***
BSI gsi	171	.85 (.60)	111	1.53 (.54)	-9.70***
BDI-II	171	8.77 (7.34)	110	23.56 ( 8.65)	-15.37***
AAQ	171	34.25 (7.58)	111	42.61 (5.37)	-10.09***
AAQ-II	171	51.81 (10.08)	22	39.27 (9.66)	5.52***
ATQ-N	171	46.24 (17.47)	111	82.18 (21.63)	-15.35***
ATQ-P	171	100.70 (26.14)	111	69.66 (14.87)	11.37***
Impression Management	171	5.49 (3.33)	81	6.42 (3.45)	-2.01

*VLQ Prescreening*

Prior to conducting any analyses with the VLQ, the data were prescreened to examine the nature of the distributions obtained. In no case was the Kolmogorov-Smirnov test of normality significant: VLQ Composite (statistic = .04, df = 244, p = .20), VLQ Importance (stat = .05, df = 282, p = .20), and VLQ Consistency (stat = .03, df = 282, p = .20), suggesting a normal distribution. The Kolmogorov-Smirnov results are notable given that this test is considered overly sensitive to even small departures from normality with larger samples. Also,  $Z_{skewness}$  and  $Z_{kurtosis}$  test statistics did not reach statistical significance at adjusted alpha levels of .001 for very large samples (Field, 2009): VLQ Composite ( $Z_{skew} = 1.06$ ,  $p > .05$ ,  $Z_{kurt} = -.57$ ,  $p > .05$ ), VLQ Importance ( $Z_{skew} = 2.83$ ,  $p > .001$ ,  $Z_{kurt} = -.48$ ,  $p > .05$ ), and VLQ Composite ( $Z_{skew} = -.28$ ,  $p > .05$ ,  $Z_{kurt} = -1.11$ ,  $p > .05$ ).

### *Test-Retest Reliability*

The data were further analyzed to determine whether self-reported values and values consistent behaviors remain relatively stable over repeated administrations of the VLQ. The results of these analyses can be found in Table 3. As shown in Table 3, the VLQ composite was highly correlated across a 3-week interval ( $r = .74, p < .001$ ) suggesting good test-retest reliability. Likewise, the VLQ Importance was highly correlated across the same 3-week interval ( $r = .76, p < .001$ ). The VLQ Consistency subscale produced a significant but somewhat reduced correlation ( $r = .67, p < .001$ ) suggestive of acceptable test-retest reliability. The direction of the differences in test-retest reliability was similar to that observed by Wilson et al. (2010), but the difference was not as large. That is, reliability was higher for Importance, but not as high as Wilson et al. observed, and Consistency was lower, but not as low as found by Wilson et al.

Table 3

#### Test-Retest Reliability

Measure:	Normative 3 Week test-retest correlations (n = 105):	Wilson et. al. 1-2 week test-retest correlations (n = 57):
Valued Living Composite	.74*** (p < .000)	.75
VLQ Importance Subscale	.76*** (p < .000)	.90
VLQ Consistency Subscale	.67*** (p < .000)	.58

The test-retest data for the individual domains of the VLQ yielded a wide range of correlation coefficients ( $r = .25 - .85$ ). In analyzing these data, a Bonferroni correction was employed to address the problem of multiple analyses. This was necessary to

maintain the familywise error rate by testing each individual correlation at a statistical significance level of  $1/n$  times what it would be if only one test were conducted.

Accounting for the 20 individual domains of the VLQ, the Bonferroni correction set  $p$  at the .005 level.

The results were statistically significant correlations across all 10 items of the VLQ Importance subscale ( $r = .55 - .85$ ) and 8/10 items on the VLQ Consistency subscale ( $r = .25 - .66$ ). On the VLQ Importance subscale, 2 items stood out as having very good test-retest reliability: Spirituality ( $r = .85$ ) and Family ( $r = .81$ ), suggesting these are among the most consistent values. These two items were also highly reliable over time in the Wilson et al. (2010) study. Thus, the consistency of the importance of family and spiritual values appears robust across studies of collegian samples. The consistency of the importance of other values (i.e., marriage, education, & recreation) were less robust across studies. On the VLQ Consistency subscale, two items stood out as having poor test-retest reliability: actions towards values with respect to friends ( $r = .25$ ) and education ( $r = .25$ ). These two domains likely account for a great deal of behavior among our collegian sample, which appears marked by substantial week-to-week variability. Of note, however, is the fact that our correlations on these two items were lower than those reported by Wilson et al. In other areas (i.e., family, marriage, work, & spirituality), both Wilson et al.'s and the current sample showed moderate correlations over the test-retest interval.

### *Internal Consistency*

Cronbach's alpha coefficient of reliability was used to determine the extent to which the items that make up the importance and consistency scales are interrelated. When using this statistic, an  $\alpha$  of .70 is typically considered acceptable (Cronbach's Alpha: UCLA ATS). Table 5 shows satisfactory internal consistency was found across both the Importance and Consistency subscales for both distressed and normative samples,  $\alpha$  range = .71 – .79. The internal consistency data on the VLQ Importance subscale of .72 and .74, respectively for the distressed and normative groups provides a within-study replication across groups but also a between study replication of the  $\alpha$  of .79 reported by Wilson et al. (2010).

Table 4  
Individual Domain Test-Retest Reliability

Domain:	Importance		Consistency	
	Normative:	Wilson et al.:	Normative:	Wilson et al.:
Family	.81*	.78	.47*	.43
Marriage	.58*	.81	.55*	.51
Parenting	.63*	.77	.46*	.66
Friends	.66*	.76	.25	.60
Work	.55*	.64	.57*	.56
Education	.60*	.77	.25	.45
Recreation	.56*	.82	.43*	.51
Spirituality	.85*	.79	.63*	.60
Citizenship	.58*	.69	.66*	.54
Physical	.64*	.61	.48*	.61

Note. \*Bonferroni corrected to  $p < .005$

However, while the VLQ consistency data were replicated across groups in the present study ( $\alpha = .79$  &  $.71$  for the distressed and normative groups), these results suggest greater internal consistency among the items assessing behavior towards values than was found in Wilson et al.

Table 5  
Internal Consistency

Sample:	Importance Subscale	Consistency subscale
Distressed $\alpha$	.72 (n = 100)	.79 (n = 76)
Normative $\alpha$	.74 (n = 171)	.71 (n = 171)
Wilson et al. $\alpha$	.79 (n = 57)	.58 (n = 58)

*Internal Structure*

Alpha is often used as evidence that the items measure an underlying construct, but a “high” alpha value does not imply that the measure is unidimensional. To evaluate whether the scale was unidimensional, exploratory factor analysis was conducted to determine whether any patterns in the relationships existed. To identify factors that statistically explain the variation and covariation among measures factor analysis was utilized. With factor analysis, dimensions for an existing measure are defined statistically based on whether the individual items cluster into groups. The resulting number of factors is considerably smaller than the number of items within the measure. Thus, the factors represent the dimensionality of the measure (Green & Salkind, 2003). In the present case, factor analyses were used to assess whether the data from the 10 items of the VLQ can be explained (statistically) by a smaller set of variables (factors), particularly a single factor. From this perspective, factor analysis can be viewed as a data-

reduction technique since it reduces a large number of overlapping items to a smaller set of factors. This is done by seeking underlying unobservable (latent) variables that are reflected in the observed variables (manifest variables) through the use of factor analysis (Factor Analysis: UCLA ATS).

Two stages are required in conducting factor analysis, factor extraction and factor rotation. In the first stage, the primary objective is to make an initial decision about the number of factors underlying a set of measured items. The goal of the second stage is twofold: (1) to statistically manipulate (i.e., to rotate) the factors to make them more interpretable and (2) to make final decisions about the number of underlying factors (Green & Salkind, 2003).

Within the first stage, principle components analysis (a type of factor analysis) is used to extract factors from a correlation matrix to make initial decisions about the number of factors underlying a set of items. In conducting a factor analysis, as part of the first decision to determine the number of extracted factors, it is necessary to obtain the eigenvalues based on the principle components solutions to assess their absolute and relative magnitudes (Green & Salkind, 2003). To conduct the initial analysis, the following steps were implemented (using SPSS version 14.0):

1. Click *Analyze*, click *Data Reduction*, and click *Factor*
2. Click *Selection Variable* and enter the chosen *Sample* (Normative or Distressed)
3. Select the 10 VLQ Composite variables and move them to the *Variables box* in the *Factor Analysis* dialog box.
4. Click *Extraction*
5. Click *Scree Plot*

6. Click *Continue*

7. Click *OK*

The output showing the initial statistics and the scree plots from the principle component analysis is shown in Table 6 and Figure 2 for the Normative group and Table 7 and Figure 3 for the Distressed group.

The eigenvalues are listed for components 1 thru 10 in Tables 6 and 7. These are important quantities. The total amount of variance of the variables in an analysis is equal to the number of variables (i.e., 10 items of the VLQ). The extracted factors (or components because principle components was used as the extraction method) account for the variance among these variables (Green & Salkind, 2003). An eigenvalue is the amount of variance accounted for by a factor. An eigenvalue for a factor should be greater than or equal to zero and cannot exceed the total variance (10; Factor Analysis: UCLA ATS). The percent of variance of the variables accounted for by the factor, as shown in the output, is equal to the eigenvalue divided by the total amount of variance of the variables times 100 (Green & Salkind). Thus, the eigenvalue associated with the first factor in Table 6 is 2.965 and the percent of total variance accounted for by the first factor is  $(2.965 / 10) 100 = 29.65$ .

Table 6

Normative Group Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.97	29.65	29.65	2.97	29.65	29.65
2	1.37	13.67	43.32	1.37	13.67	43.32
3	1.18	11.76	55.07	1.18	11.76	55.07
4	0.90	9.02	64.09			
5	0.84	8.42	72.50			
6	0.76	7.55	80.06			
7	0.56	5.57	85.63			
8	0.54	5.35	90.98			
9	0.51	5.14	96.12			
10	0.39	3.89	100.00			

Note. Extraction Method: Principal Component Analysis.

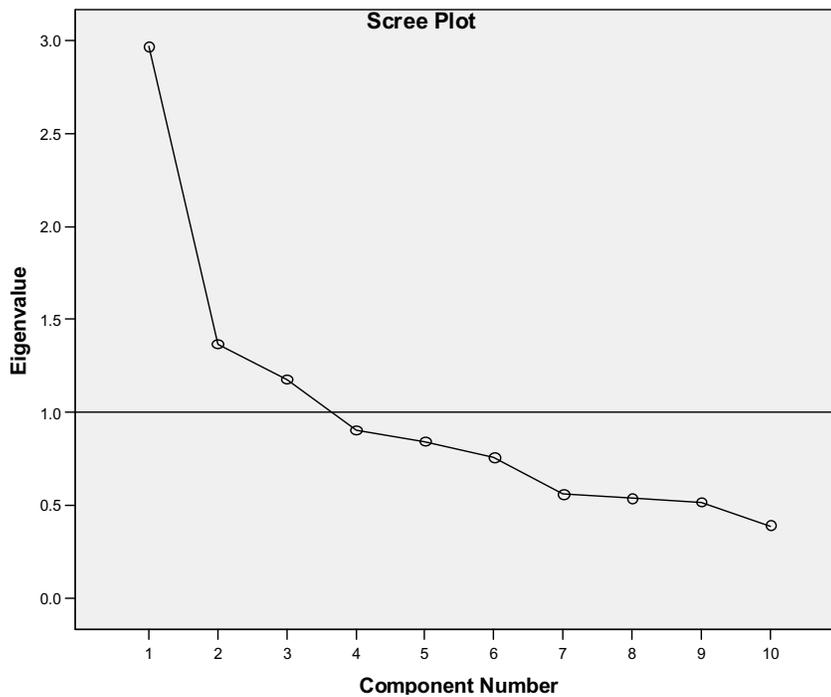


Figure 2. Normative Group Scree Plot

Table 7

Distressed Group Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.21	32.14	32.14	3.21	32.14	32.14
2	1.59	15.87	48.01	1.59	15.87	48.01
3	1.15	11.49	59.50	1.15	11.49	59.50
4	1.02	10.18	69.68	1.02	10.18	69.68
5	0.73	7.34	77.02			
6	0.69	6.87	83.89			
7	0.61	6.08	89.97			
8	0.46	4.60	94.57			
9	0.31	3.11	97.68			
10	0.23	2.32	100.00			

Note. Extraction Method: Principal Component Analysis.

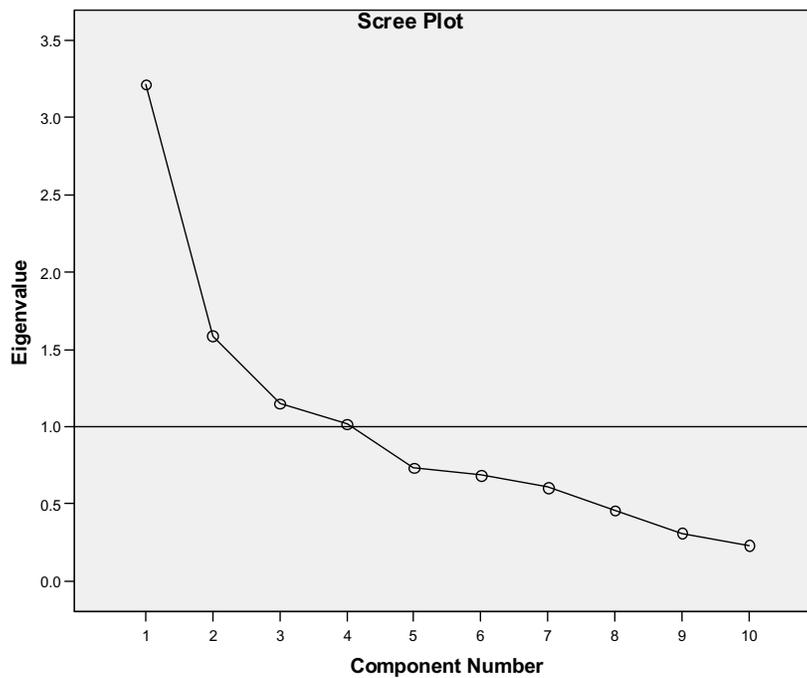


Figure 3. Distressed Group Scree Plot

The reason why eigenvalues are helpful is to decide how many factors should be used in an analysis. Many criteria have been proposed in the literature for deciding how many factors to extract based on the magnitude of the eigenvalues. One criterion is to retain all factors that have eigenvalues greater than 1 and this criterion is the default option in SPSS (Green & Salkind, 2003). Thus, within the Normative group, three factors were rotated and within the Distressed group, four factors were rotated.

In the second stage of factor analysis, the factors are rotated because unrotated factors are typically not very interpretable. In rotating the factors, the data are more meaningful. The rotated factors may be uncorrelated (orthogonal) or correlated (oblique). The most popular rotation method, VARIMAX, yields orthogonal factors and is the rotation used in the following analyses (Green & Salkind, 2003). To conduct a factor analysis with rotated factors the following steps were followed (using SPSS version 14.0):

1. Click *Analyze*, click *Data Reduction*, and click *Factor*. The 10 VLQ Composite variables should already be visible in the *Variables* box.
2. Click *Extraction*
3. Click next to *Number of Factors*. Type 3 (4 for the Distressed group) in the box next to the number of factors that you wish to extract and rotate. We chose three factors based on the scree plot (four factors for the Distressed group).
4. Choose *Principle Axis Factoring* in the Method drop-down menu.
5. Click next to *Scree plot* so that it contains no check.
6. Click *Continue*
7. Click *Rotation*.

8. Click *Varimax* in the Method box to choose an orthogonal rotation of the factors.
9. Click *Continue*
10. Click *Descriptives*.
11. Click *Univariate descriptive* in the Statistic box.
12. Click *Continue*
13. Click *OK*

The total variance explained and the rotated factor matrix for the Normative group is shown in Table 8 and 9 and for the Distressed groups, in Table 10 and 11. The matrix shows factor loadings, which are the correlations between each of the variables and the factors for a Varimax rotation. To streamline the output, correlations below .30 are removed from the factor loading as a general rule (UCLA: Factor Analysis). The factors are interpreted by naming them based on the size of the loadings. In the Normative group, the following items: Citizenship (.72), Spirituality (.63), Work (.49), and Education (.42) were associated most with the first factor. Marriage (.81), Parenting (.47), and Family (.43) were associated most with the second factor. Recreation (.73), Friends (.54), and Self-care (.30) were associated most with the third factor. Based on looking at the content of these three sets of items, the factors were named Career/Calling, Nuclear Family, and Leisure. Career/Calling accounted for 23.68% of the variance, Nuclear Family added 8.51% of the variance, and Leisure accounted for 5.97% of the variance of the 10 variables. In total, the three factors accounted for 38.16% of the variable variance.

In the Distressed group the following items: Citizenship (.87), Recreation (.55), Self-care (.49), Friends (.48), Work (.47), and Spirituality (.47) are associated most with

the first factor. Marriage (.97) is associated most with the second factor. Parenting (.56), Family (.55), Spirituality (.43), and Friends (.42) are associated most with the third factor. Education (.79) and Work (.46) are associated most with the fourth factor. FACTOR 1 accounted for 27.61% of the variance, FACTOR 2 added 11.35% of the variance, FACTOR 3 accounted for 8.72% of the variance, and FACTOR 4 accounted for 5.49% of the variance of the 10 items. In total, the four factors accounted for 53.18% of the item variance.

In summation, the dimensionality of the 10 items from the Valued Living Questionnaire Composite was analyzed using principle axis factor analysis. Three criteria were used to determine the number of factors to rotate: the a priori hypothesis that the measure was unidimensional, the magnitude of the eigenvalues (i.e., greater than 1.0), and the interpretability of the factor solution. The magnitude of the eigenvalues indicated that our initial hypothesis of unidimensionality was incorrect. Based on the eigenvalues, three factors were rotated (using Varimax rotation) for the normative group and four for the Distressed group. The rotated solution yielded three interpretable factors for the Normative group. Career/Calling accounted for 23.68% of the variance, Nuclear Family accounted for 8.51% of the variance, and Leisure accounted for 5.97% of the item variance. In total, the three factors accounted for 38.16% of the variable variance. There were no items, which loaded on two or more factors. The rotated solution yielded four interpretable factors for the Distressed group accounting for 27.61%, 11.35%, 8.72%, and 5.49% of the item variance, respectively. Two items loaded on two factors (i.e., Work

loaded on FACTOR 1 and FACTOR 4 and Spirituality loaded on FACTOR 1 and FACTOR 3).

Table 8

Normative Group Total Variance Explained – Principle Axis Factoring

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.97	29.65	29.65	2.37	23.68	23.68
2	1.37	13.67	43.32	0.85	8.51	32.19
3	1.18	11.75	55.07	0.60	5.97	38.16
4	0.90	9.02	64.09			
5	0.84	8.42	72.50			
6	0.76	7.55	80.06			
7	0.56	5.57	85.63			
8	0.54	5.35	90.98			
9	0.51	5.14	96.12			
10	0.39	3.89	100.00			

Note. Extraction Method: Principal Axis Factoring.

Table 9

Normative Rotated Factor Matrix

	Factor		
	1	2	3
VLC Family	0.23	<b>0.43</b>	0.15
VLC Marriage	-0.04	<b>0.81</b>	0.10
VLC Parenting	0.17	<b>0.47</b>	0.02
VLC Social	0.18	0.02	<b>0.54</b>
VLC Work	<b>0.49</b>	0.15	0.02
VLC Education	<b>0.42</b>	0.04	0.23
VLC Recreation	0.10	0.18	<b>0.73</b>
VLC Spirituality	<b>0.63</b>	0.14	0.23
VLC Citizenship	<b>0.72</b>	0.12	0.15
VLC Physical	0.27	0.26	<b>0.30</b>

Note. Extraction Method: Principal Axis Factoring. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 5 iterations.

Table 10

Distressed Group Total Variance Explained – Principle Axis Factoring

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.21	32.14	32.14	2.76	27.61	27.61
2	1.59	15.88	48.01	1.14	11.35	38.97
3	1.15	11.49	59.50	0.87	8.72	47.69
4	1.02	10.18	69.68	0.55	5.49	53.18
5	0.73	7.34	77.02			
6	0.69	6.87	83.89			
7	0.61	6.08	89.97			
8	0.46	4.60	94.57			
9	0.31	3.11	97.68			
10	0.23	2.32	100.00			

Note. Extraction Method: Principal Axis Factoring.

Table 11

Distressed Rotated Factor Matrix

	Factor			
	1	2	3	4
VLC Family	0.12	-0.05	<b>0.55</b>	-0.14
VLC Marriage	0.11	<b>0.97</b>	0.19	0.03
VLC Parenting	-0.01	0.20	<b>0.56</b>	0.17
VLC Social	<b>0.48</b>	0.15	<b>0.42</b>	0.14
VLC Work	<b>0.47</b>	-0.06	-0.01	<b>0.46</b>
VLC Education	0.11	0.07	0.01	<b>0.79</b>
VLC Recreation	<b>0.55</b>	-0.09	0.24	0.29
VLC Spirituality	<b>0.47</b>	0.20	<b>0.43</b>	-0.07
VLC Citizenship	<b>0.87</b>	0.07	0.14	0.03
VLC Physical	<b>0.49</b>	0.28	-0.14	0.28

Note. Extraction Method: Principal Axis Factoring. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 6 iterations.

The items that made up the four factors and the presence of cross loading items did not suggest intuitive labels for the identified factors. However, it was the case that across both samples, the following items contributed together to a factor in both groups: Work & Education, Family & Parenting, and Friends, Recreation, & Self-care. These data suggest the potential for describing career, family, and leisure factors as partially replicated across samples. It is also worth noting that in neither sample did the present analysis suggest a single factor. This finding is in contrast to Wilson et al. (2010) whose results supported a one-factor solution, which accounted for 35.04% of the variation in VLQ responses. However, similar results were obtained within both normative groups

(Wilson et al. and within the present study) where three eigenvalues were found which is a common criterion for retaining factors.

### *Validity*

Construct validity refers to the extent an inventory measures what it is designed to measure. In psychology, validity is inferred based on how the inventory performs across a range of situations as there is usually no absolute standard against which to evaluate the inventory's validity. One type of validity data comes from comparing an inventory against other criterion variables. In the present study it was possible to compare scores on the VLQ of two groups known to differ (i.e., normative vs. distressed) to determine whether the VLQ differs significantly between these two samples. Table 12 presents the VLQ means, standard deviations, and test statistics comparing the distressed and normative samples. As is apparent, the groups differed significantly on the VLQ Composite ( $t = 52.91, p < .000$ ) and the Importance ( $t = 25.94, p < .000$ ) and Consistency ( $t = 58.78, p < .000$ ) subscales. Distressed individuals rated values as less important and reported engaging in substantially less values consistent behavior. Because the normative and distressed groups were statistically significantly different in age, a univariate analysis of variance was conducted with age entered as a covariate (i.e., an ANCOVA). In all cases, the corrected model was statistically significant: VLQ Composite ( $F = 26.92, p < .001$ ), VLQ Importance ( $F = 13.84, p < .001$ ), and VLQ Consistency ( $F = 30.67, p < .001$ ). In no case was age a statistically significant covariate: VLQ Composite ( $F = .98, p = .33$ ), VLQ Importance ( $F = 1.68, p = .20$ ), and VLQ Consistency ( $F = 2.29, p = .13$ ), while in each case condition (normative vs. distressed) remained significant: VLQ

Composite ( $F = 52.39, p < .001$ ), VLQ Importance ( $F = 27.62, p < .001$ ), and VLQ Consistency ( $F = 60.70, p < .001$ ). The effect size data (standardized mean difference) support the preceding conclusions. A large effect was apparent on the VLQ Composite and VLQ Consistency subscale, while a moderate-large effect size was seen on the VLQ Importance subscale. Interestingly, both the normative (14.16) and distressed (20.95) groups showed a discrepancy between the importance accorded values and their values driven behavior.

The normative data from the current sample also allowed for comparisons to that obtained by Wilson et al. (2010). As presented in Tables 12 & 13, the means (and standard deviations) across the samples are remarkably consistent making it reasonable to calculate weighted means (and standard deviations) which can serve as normative benchmarks on the VLQ for collegian samples. The weighted mean across the two normative samples are as follows: VLQ Composite = 57.14 (sd = 14.13, N = 228), VLQ Importance = 81.93 (sd = 10.55), VLQ Consistency = 66.17 (sd = 13.71)

Table 12

Concurrent Validity of the Normative and Distressed Groups

	Normative		Distressed		<i>t</i> -value	<i>D</i>
	N	Mean	N	Mean		
VLQ Composite	171	56.35 (14.12)	73	41.89 (14.45)	52.91***	1.02
VLQ Importance Subscale	171	81.02 (10.60)	111	74.15 (11.76)	25.94***	.62
VLQ Consistency Subscale	171	66.86 (13.99)	111	53.20 (15.55)	58.78***	.94

Table 13

Concurrent Validity of Wilson et. al

	N	Mean
VLQ Composite	57	59.52 (14.14)
VLQ Importance Subscale	57	84.65 (10.38)
VLQ Consistency Subscale	57	68.11 (12.82)

Concurrent validity was also examined to determine whether the VLQ correlated with clinical measures it would be expected to correlate with (i.e., convergent validity) and failed to correlate with other measures with which it would not be expected to be related (i.e., discriminant validity). Table 14 shows that the VLQ scores were correlated in expected ways with other clinical measures. Statistically significant positive correlations were observed between the VLQ composite and self-esteem (RSES), positive thinking (ATQ-P) and psychological flexibility (AAQ-II). Negative correlations with general distress (BSI gsi), depression (BDI-II), experiential avoidance (AAQ), and negative thinking (ATQ-N) were observed. Examinations of the correlations between the VLQ subscales and the clinical measures show that the correlations are strongest and most consistent on the VLQ Consistency subscale. In examining the discriminant validity of the VLQ, no relationship was observed between the Impression Management subscale, which is a measure of social desirability. Additionally, no relationship was found with Grade Point Average.

Table 14

## Convergent Validity

Measure:	VLQ Composite	VLQ Importance Subscale	VLQ Consistency Subscale
RSES	.37*** (n = 244)	.25*** (n = 282)	.38*** (n = 282)
BSI gsi	-.22*** (n = 244)	-.14 (n = 282)	-.26*** (n = 282)
BDI-II	-.33*** (n = 243)	-.20*** (n = 281)	-.38*** (n = 281)
AAQ	-.20*** (n = 244)	-.09 (n = 282)	-.27*** (n = 282)
AAQ-II	.22*** (n = 189)	.12 (n = 193)	.22*** (n = 193)
ATQ-N	-.35*** (n = 244)	-.19*** (n = 282)	-.38*** (n = 282)
ATQ-P	.43*** (n = 244)	.34*** (n = 282)	.37*** (n = 282)

Note. Bonferroni corrected alpha set at = .003

Table 15

## Discriminant Validity

Measure:	VLQ Composite	VLQ Importance Subscale	VLQ Consistency Subscale
Impression Management	-.13 (n = 225)	.03 (n = 252)	.10 (n = 258)
GPA	.10 (n = 223)	.08 (n = 252)	.10 (n = 258)

## DISCUSSION

Overall, the data add to the psychometric validation of the VLQ and replicate the findings of Wilson et al. (2010) with a larger collegian sample and extending the findings from the Southern University sample by adding a Midwestern University sample.

Additionally, one of the limitations reported by Wilson et al. was the “relatively homogenous sample of relatively high functioning college students.” To partially remedy this limitation, this study extended the findings to, and compared the results with, a distressed collegian sample. In exploring the VLQ, the data capture a general pattern in

which values-driven behavior lags behind values importance across samples. This pattern is not different in kind between distressed and normative groups, but different in degree. In exploring the normative group's data, it is shown to replicate Wilson's findings; however, the distressed group differed significantly from the normative group. Distressed individuals rated values as less important and were engaged in substantially less values consistent behavior. These data support the use clinically of both values clarification and values-guided activation. Additionally, for all samples the VLQ Importance subscale was rated higher than the VLQ Consistency subscale, showing that the struggle to live fully in accord with values is universal across groups. This discrepancy may be a byproduct of some items being considered an *important* area of valued living (e.g., parenting, marriage) but not an area where one can take *actions* towards the value (if you do not have children or are not in an intimate relationship) within our college sample. Therefore, the *importance* may be rated high while the *consistency* of actions towards the value would be low, resulting in the discrepancy.

It is also interesting to note how the discrepancy between the normative and distressed groups maps onto the ACT model of psychopathology. This data lends support to humans acting in a way that is inconsistent with what the environment affords relevant to chosen values and goals as stated by Hayes, Strosahl, & Wilson (1999). In addition to data from the VLQ, distressed individuals rated themselves as having greater experiential avoidance (AAQ), lower psychological flexibility (AAQ-II), greater negative thinking (ATQ-N), less positive thinking (ATQ-P), and endorsed greater depressive symptoms (BDI-II) as compared to the normative group at statistically significant levels. To move

towards psychological flexibility, ACT attempts to help an individual to contact the present moment fully and persist or change behavior in service of chosen values (Luoma, Hayes, & Walser, 2007). In this way, ACT serves to define valued directions, look at what gives our lives meaning which can guide constructive action, and lead to psychological flexibility which was seen in the normative sample compared to the distressed.

In examining the internal consistency of the VLQ, the alpha for the importance scale replicates Wilson's findings and extends the findings with a larger sample along with a distressed sample. Finally, the alpha for the consistency subscale was higher within the normative and distressed samples than that found by Wilson et al. This suggests that within the normative and distressed samples, participants reported behaving in accordance with their perceived values at a higher rate as compared to those in the Wilson et al. study.

Reliability data of the normative group extends and replicates the findings of Wilson et al. with the VLQ appearing to have acceptable test-retest reliability. Additionally, this study provided an extension of the results obtained by Wilson by demonstrating that reported values and values consistent behavior remains relatively stable over a longer period (3-week) than was originally demonstrated in the Wilson study (1-week). Theoretically, values are proposed to be more stable while actions taken towards values are likely to be somewhat more variable from week-to-week. This was seen within the reliability data where somewhat lower scores for the consistency scale as compared to the importance scale were observed across collegian samples. Furthermore,

in examining the test-retest data of the individual domains of the VLQ yielded a wide range of correlation coefficients. However, two individual consistency domains where significant correlations were not obtained (friendship & education) were in areas that likely account for a great deal of behavior among our collegian sample and, hence, are more likely subject to week-to-week variation.

The variance structure of the VLQ appears to be multi-dimensional, exhibiting from 3 to 4 factors. Although Wilson et al. proposed that the structure was uni-dimensional (using visual inspection of the scree plot), they also found three eigenvalues greater than 1.0 (a common criterion for retaining factors; Floyd & Widaman, 1995). Wilson et al. found one factor to account for 35.04% of the variation in VLQ responses. Similarly, in this sample, one factor accounted for the majority of the variance within the normative (23.68%) and distressed (27.61%) groups. Across both samples, the following items collectively contributed to a factor in both groups: Work & Education, Family & Parenting, and Friends, Recreation, & Self-care. These data suggest the potential for describing career, family, and leisure factors as partially replicated across samples. This information may allow for a streamlined approach to the assessment of an individual's values where these three broader areas (factors) can serve as a starting point for clinical assessment and as anchors for individualized intervention. For example, a therapist and client can collaboratively determine within these areas where a client might benefit by taking actions towards his/her values (see values-based behavioral activation, Gaynor & Harris, 2008).

Additionally, the VLQ data show that the consistency of actions taken towards values correlates in expected ways with clinical measures and fails to correlate with academic achievement and concern about making a good impression. Examinations of these correlations are strongest and most steady on the consistent behavior subscale. Therefore, it was not so much the importance accorded one's values, but the consistency of action taken toward them that was related to the clinical indices. These relationships once again demonstrate the potential importance of values and valued actions to the ACT model of psychological flexibility. These data would be made stronger if clinical trials data suggested that change in values consistent action preceded and mediated changes in clinical indices.

In exploring the limitations of this study and future direction of research, it can be seen that additional study of the VLQ is needed. One area where additional research is needed is in exploring the use of the VLQ across different samples. For instance, while the present study expanded on the prior work of Wilson and colleagues by adding a distressed group, the sample included exclusively collegians. A more diverse community sample and a range of clinical samples (both inpatient and outpatient) would be important additions in future work. Additionally, further research is needed to determine if the VLQ can sensitively capture changes during treatment, and whether it indeed captures values-driven behavior. For example, observing diary cards and weekly activity logs to assess their relation to VLQ reports to ascertain actions taken towards values. This would also allow a clinician to determine if the individual encountered potential reinforcers related to

their values and the correspondence of actions taken towards one's values over the course of a week in relation the VLQ measure.

Baer (2010) noted that in the Wilson et al. (2010) study that valued living did not account for a large proportion of the variability in measures of psychological well-being or distress. The reason for this was hypothesized to be due to the idiosyncratic ways clients sometimes answered questions. Using the VLQ as a clinical measure can account for idiosyncratic questioning in that the clinician can clarify the source of the clients ratings on an item-by-item basis. However, idiosyncratic answers are highly problematic when the VLQ is used as a psychometric instrument. Baer goes on to note that although the "overall pattern of correlations is consistent with theory, the measurement error makes the VLQ less useful as an assessment instrument than as a treatment tool" (pg. 91).

A final limitation of this study and probable future direction of exploring client's values and associated valued living is through the use of a revised VLQ. The Valued Living Questionnaire-2 (VLQ-2; Wilson & Dufrene, 2009), was developed primarily to clarify ratings and add additional domains of valued living (environment and aesthetics). The VLQ-2 also clarified the ninth domain from "citizenship / community life" to just "community life" to avoid a nationalism interpretation when used in northern European Countries (Baer, 2010). Additionally, to clarify sources of variability in answers, the original two rating scales were expanded to six rating scales which include: Possibility, Current importance, Overall importance, Action, Satisfaction with level of action, and Concern. With these new rating scales, clients are asked to assign a numerical rating from 1 to 10 stating the extent to which they (1) think it possible that something meaningful

could happen in their life domain, (2) find the domain important to their life at this time, (3) find the domain important to their life as a whole, (4) have acted in the service of a value within the domain in the past week, (5) are satisfied with the level of action in the domain in the past week, and (6) are concerned they won't make as much progress in the domain as they would like. Due to this expansion in rating scales, the primary goal of the VLQ-2 is one of clinical utility in that it orients clinicians towards potential points of intervention. Finally, due its only recent use, the psychometric properties are only just beginning to be examined.

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## Appendix A: Valued Living Questionnaire (VLQ)

Below are areas of life that are valued by some people. We are concerned with your quality of life in each of these areas. One aspect of quality of life involved the importance one puts on different areas of living. Rate the importance of each area (by circling a number) on a scale of 1-10. 1 means that the area is not at all important. 10 means that the area is very important. Not everyone will value all of these areas the same. Rate each area according to your *own personal sense of importance*.

Area	<b>Not at all important      Extremely important</b>									
1. Family (other than marriage or parenting)	1	2	3	4	5	6	7	8	9	10
2. Marriage/couples/intimate relations	1	2	3	4	5	6	7	8	9	10
3. Parenting	1	2	3	4	5	6	7	8	9	10
4. Friends/social life	1	2	3	4	5	6	7	8	9	10
5. Work	1	2	3	4	5	6	7	8	9	10
6. Education/training	1	2	3	4	5	6	7	8	9	10
7. Recreation/fun	1	2	3	4	5	6	7	8	9	10
8. Spirituality	1	2	3	4	5	6	7	8	9	10
9. Citizenship/Community Life	1	2	3	4	5	6	7	8	9	10
10. Physical self care (diet, exercise, sleep)	1	2	3	4	5	6	7	8	9	10

In this section, we would like you to give a rating of how consistent your actions have been with each of your values. We are not asking about your ideal in each area. We are also not asking what others think of you. Everyone does better in some areas than others. People also do better at some times than at others. *We want to know how you think you have been doing during the past week*. Rate each area on a scale of 1-10. 1 means that your actions have been completely inconsistent with your value. 10 means that your actions have been completely consistent with your value.

Area	<b>Not at all important      Extremely important</b>									
1. Family (other than marriage or parenting)	1	2	3	4	5	6	7	8	9	10
2. Marriage/couples/intimate relations	1	2	3	4	5	6	7	8	9	10
3. Parenting	1	2	3	4	5	6	7	8	9	10
4. Friends/social life	1	2	3	4	5	6	7	8	9	10
5. Work	1	2	3	4	5	6	7	8	9	10
6. Education/training	1	2	3	4	5	6	7	8	9	10
7. Recreation/fun	1	2	3	4	5	6	7	8	9	10
8. Spirituality	1	2	3	4	5	6	7	8	9	10
9. Citizenship/Community Life	1	2	3	4	5	6	7	8	9	10
10. Physical self care (diet, exercise, sleep)	1	2	3	4	5	6	7	8	9	10

## Appendix B: Demographic Questionnaire

1. What is your birth date (mm/dd/yr)? \_\_\_\_\_
2. What is your current year in school?    Fresh    Soph    Junior    Senior
3. What is your gender?    Male                  Female
4. What is your ethnicity?  
    \_\_\_\_\_ White, Euro-American  
    \_\_\_\_\_ African American  
    \_\_\_\_\_ Hispanic or Latino  
    \_\_\_\_\_ Asian  
    \_\_\_\_\_ Native Hawaiian or Other Pacific Islander  
    \_\_\_\_\_ American Indian or Alaska Native  
    \_\_\_\_\_ More than one race
5. Are you a full-time student?    Yes    No
6. What is your major? \_\_\_\_\_
7. What is your cumulative GPA? \_\_\_\_\_
8. What was your semester GPA in your most recently completed semester?  
    \_\_\_\_\_
9. Are you employed?    Yes (Full or part time?)    No

## Appendix C: HSIRB Approval

# WESTERN MICHIGAN UNIVERSITY



Human Subjects Institutional Review Board

Date: December 3, 2009

To: Scott Gaynor, Principal Investigator  
David Cotter, Student Investigator for dissertation

From: Christopher Cheatham, Ph.D., Vice Chair

Handwritten signature of Christopher Cheatham in black ink.

Re: HSIRB Project Number: 09-10-18

This letter will serve as confirmation that your research project titled "Examining the Psychological Characteristics of College Students" has been **approved** under the **expedited** category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may **only** conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: December 3, 2010

Walwood Hall, Kalamazoo, MI 49008-5456  
PHONE: (269) 387-8293 FAX: (269) 387-8276

## Appendix D: Domain Means

### Normative Domains Means

Domain:	Importance Mean (sd):	Consistency Mean (sd):
Family	9.18 (1.51)	7.73 (2.07)
Marriage	8.32 (1.67)	6.67 (2.66)
Parenting	8.30 (2.46)	4.64 (3.51)
Friends	8.58 (1.42)	7.87 (2.20)
Work	7.49 (2.11)	5.97 (3.17)
Education	8.92 (1.17)	8.47 (1.71)
Recreation	8.27 (1.63)	7.59 (2.14)
Spirituality	6.91 (2.79)	5.39 (3.10)
Citizenship	6.56 (2.32)	5.41 (2.79)
Physical	8.49 (1.53)	7.25 (2.30)

### Distressed Domains Means

Domain:	Importance Mean (sd):	Consistency Mean (sd):
Family	8.46 (1.97)	7.02 (2.25)
Marriage	8.25 (2.19)	5.29 (3.00)
Parenting	7.61 (2.87)	4.65 (3.28)
Friends	8.13 (1.73)	5.96 (2.42)
Work	7.17 (1.80)	5.47 (3.19)
Education	8.21 (1.56)	6.43 (2.30)
Recreation	7.85 (1.69)	5.74 (2.52)
Spirituality	6.53 (2.98)	4.86 (3.17)
Citizenship	5.56 (2.02)	4.26 (2.73)
Physical	7.31 (2.17)	5.15 (2.75)