

A VALIDITY STUDY OF THE REASONS FOR LIFE SCALE WITH  
EMERGING ADULT COLLEGE STUDENTS

By

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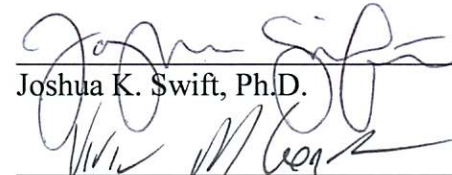
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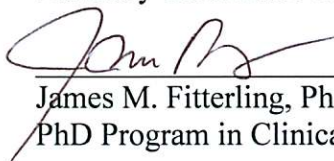
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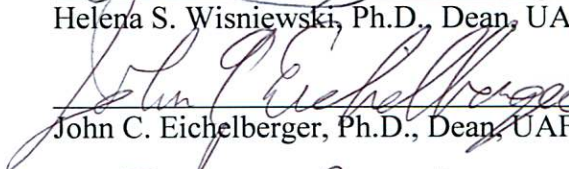
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A VALIDITY STUDY OF THE REASONS FOR LIFE SCALE WITH  
EMERGING ADULT COLLEGE STUDENTS

A  
DISSERTATION

Presented to the Faculty  
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By

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## Abstract

This study examined the validity of the Reasons for Life Scale (RFLS) with emerging adult college students. The RFLS measures “reasons for life.” It was developed for use with Alaska Native youth as a way to assess potential risk of suicide without directly questioning about suicidal ideation or history of suicide attempts. This study sought to adapt the RFLS for use with emerging adult (age 18-25) college students, and to examine its factor structure and convergent validity with this population. First, a focus group was conducted to assist in rewording two Alaska Native-specific items from the RFLS for non-Natives. Then, with the additional items from the focus group, the revised version of the RFLS (RFLS-R) and other suicide-related measures were administered to a sample of 116 emerging adult college students. Exploratory factor analysis indicated a unidimensional factor structure for the RFLS-R with this sample. The RFLS-R showed a significant and strong correlation with the Reasons for Living Inventory (RLI;  $r = .70$ ), which, like the RFLS-R, measures reasons for living but makes direct reference to suicide. There also were significant moderate negative correlations with the Suicidal Behavior Questionnaire - Revised (SBQ-R;  $r = -.36$ ) and the Adult Suicidal Ideation Questionnaire (ASIQ;  $r = -.29$ ). There was a significant moderate correlation between the RFLS-R and a measure of socially desirable responding, the Balanced Inventory of Desirable Responding (BIDR;  $r = .31$ ), with similar correlations found between the BIDR and other suicide-related measures included in this study. The results suggest that socially desirable responding did not strongly affect participants’ responding or explain the associations found among the measures. The high correlation with the RLI suggests that the RFLS-R measures a similar construct, providing evidence of convergent validity; however, the RLI was more highly correlated with measures of suicidality than the RFLS-R – suggesting that while the RFLS was

moderately associated with measures of suicidality, it is a weaker predictor of suicide risk than the RLI. Although the RFLS-R was not as highly correlated with measures of suicidality as the RLI, which directly mentions suicide, the RFLS-R is the only known suicide measure that completely avoids items and instructions that mention suicide, therefore it may be useful in contexts where directly discussing suicide is not acceptable or appropriate.

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## Introduction

Most measures of suicide risk have focused on assessing levels of current suicidal ideation and planning or history of suicidal behavior, as well as other negative aspects in a person's life (e.g., depression, unemployment) that may affect the choice of whether or not to make a suicide attempt. The Reasons for Living Inventory (RLI; Linehan, Goodstein, Nielsen, & Chiles, 1983) was one of the first measures to include adaptive characteristics in an assessment of suicide risk. The assessment of positive, protective factors represented a promising new approach for evaluating suicide risk; however, the RLI contains questions that ask directly about reasons for not committing suicide. Although focused on adaptive characteristics that are protective against suicide, rather than solely focused on negative aspects of life, the direct discussion of suicide is not considered acceptable in some cultures, including many Alaska Native communities (Allen, Mohatt, Fok, Henry, & Burkett, 2009).

The Reasons for Life Scale (RFLS; Allen et al., 2009) was developed for Alaska Native youth as a way to assess suicide risk by evaluating reasons for *life* (i.e., positive beliefs that make life meaningful and enjoyable), as opposed to reasons for living (i.e., reasons for not committing suicide). The RFLS does not involve direct questioning about past suicide attempts, ideation, or even the mention of suicide in any way (Allen et al., 2009). Although the factor structure of the RFLS has been examined among Alaska Native youth, its convergent validity with other measures of suicide risk or with reasons for living has not been examined. This scale also has not been evaluated in any population other than Alaska Native youth. However, a scale that assesses suicide risk without direct questioning regarding suicide may have utility with other populations, including those without specific proscriptions against discussing suicide – such as college students, who have high rates of suicidal ideation and attempts (Brenner, Hassan, & Barrios,

1999), as suicide-related topics are often highly stigmatized, leading to potentially inaccurate and/or socially desirable responding. An instrument like the RFLS that lacks any obvious connection to the topic of suicide may help reduce the potential that a respondent would respond inaccurately because of concerns regarding stigma or how they will be judged by others. The negative perceptions associated with suicidal thinking or behavior would theoretically not be triggered. This could assist in gaining more accurate assessment of student suicide risk at a campus clinic and reducing the need for special precautions associated with questioning regarding suicide in research.

In the current study, the RFLS was revised for use with non-Natives. Then the factor structure, internal consistency, and convergent validity of the Reasons for Life Scale – Revised (RFLS-R) with an emerging adult college student population was examined. Convergent validity was examined by comparing scores on the RFLS-R with the RLI, a measure of reasons for living that has been thoroughly evaluated and is considered to be a useful and valid tool in suicide risk assessment (Osman et al., 1993; Osman, Jones, & Osman, 1991). A strong correlation was expected between these measures, as the RFLS-R measures reasons for life, which is thought to be a highly related construct to reasons for living as measured by the RLI. To further examine the convergent validity of the RFLS-R it was compared with measures of suicidal ideation and behavior. It was hypothesized that scores on the RFLS-R, a measure of protective factors against suicide, would be negatively correlated with scores on the Adult Suicidal Ideation Questionnaire (ASIQ; Reynolds, 1991), which measures severity of suicidal ideation, and the Suicidal Behavior Questionnaire – Revised (SBQ-R; Osman et al., 2001), which measures suicide risk based on prior history of suicidal ideation and behavior in addition to a respondent’s assessment of their likelihood of committing suicide in the future.

The RFLS was previously evaluated for Alaska Native youth with exploratory factor analysis (EFA) and was found to have a four-factor structure. In the current study it was hypothesized that the RFLS-R would have a similar factor structure when used with emerging adult college students; EFA was used to determine the factor structure. In order to further test the RFLS-R's validity, the Balanced Inventory of Desirable Responding (BIDR; Paulhus, 1991) was included in the test battery, and its relationship with the RFLS-R, as well as the three other suicide-related measures was examined. It was hypothesized that social desirability would have less of an impact on the way students answered items on the RFLS-R than on the other measures because the RFLS-R would not cause students to think about suicide and become concerned with the stigma associated with experiencing suicidal ideation (e.g., being concerned others will view them as "crazy"). In addition, the potential for socially desirable response patterns to mediate the relationships between RFLS-R scores and the suicide measures was examined. It was expected that a tendency toward socially desirable responding would not completely mediate the relationships between RFLS-R scores and measures of suicidal ideation and behavior.





## **Chapter 1:**

### **Literature Review**

#### **1.1 Suicide**

Suicide, directly or indirectly, affects people of all ages and of all cultures worldwide, although rates vary by country (World Health Organization; WHO, 2008). Overall, the suicide rate in the United States remains relatively steady at about 10 per 100,000 people (National Institute for Mental Health; NIMH, 2010). In the United States suicide rates vary by race; with higher rates for Whites (15.99 per 100,000) and Alaska Native/American Indian people (17.48 per 100,000) than for other racial groups (NIMH, 2010).

It is important to clearly define the terms related to the construct of “suicide.” Suicide is the taking of one’s own life, a successful suicide attempt where the individual’s life ends at his or her own hands (Centers for Disease Control; CDC, 2010). Suicide rates refer to number of people that have committed suicide and ended their own lives in a given demographic or population in a given time period (CDC, 2010). A suicide attempt involves behavior to end one’s own life that was unsuccessful or interrupted in some way (CDC, 2010). Suicide attempts may or may not have involved injuries, life-saving techniques, and/or hospitalization, but any activity to end one’s life constitutes a suicide attempt. Suicidal ideation involves varying degrees of thoughts about suicide (CDC, 2010). Suicidal ideation includes thoughts about ending one’s life and may involve mental planning of events related to taking one’s own life. Suicidal ideation is more than a passing or transient thought about death.

**1.11 Suicide in Alaska.** In 2004, Alaska had the highest suicide rate in the nation, and from 1995 to 2005, more than twice the national average, at over 20 per 100,000 people (Alaska Injury Prevention Center, 2007). Suicide rates typically rise over the lifespan in the United States,

with elderly White men having the highest rate of suicide (NIMH, 2010). However, in Alaska youth suicide rates have been much higher than those in the other 49 states (Alaska Injury Prevention Center, 2007). In fact, from 2003 to 2006 20 to 29 year olds had the highest rate of suicide (46 per 100,000 people) in Alaska, a much higher rate than for the elderly (27 per 100,000 people; Alaska Injury Prevention Center, 2007).

The rate of suicide is also much higher for Alaska Native people than for non-Native people in Alaska (Alaska Injury Prevention Center, 2007). Studies of suicide among Alaska Native people have shown severe rate increases since they began in the 1970s, with most of the increase in the form of youth and young adult suicide (Mohatt, Allen, & Levintova, 2010). Suicide rates among Alaska Native people have risen to the highest in the United States for any racial group (Yardley, 2007). The suicide rate for Alaska Native people has fluctuated due to a relatively small population, but has been between 30 and 60 per 100,000 people per year (Alaska Injury Prevention Center, 2007). Alaska Native youth suicides have often occurred in clusters (several suicides in a short period of time), adding to the associated trauma and community stress (Alaska Injury Prevention Center, 2007). However, not all Alaska Native communities have faced the same suicide rates. There are many different Native cultural groups in a variety of environmental contexts throughout the state. Communities that have been most affected are people of the Northwest Arctic, people of Nome, and people in the Yukon-Kuskokwim Delta region (Alaska Injury Prevention Center, 2007).

**1.12 Suicidality among emerging adult college students.** Emerging adulthood spans the ages of 18 through 25 years old (Arnett, 2000). Suicide among emerging adults became a concern as rates continually rose from the 1950s through the 1990s (CDC, 2010). Data from the CDC showed that the rate of suicide for college-aged young adults in the United States has

stabilized at about 12 to 12.5 per 100,000 and is the second leading cause of death for this age group (CDC, 2010). A study with a nationally representative sample showed that suicidal ideation is common among college students, with 1 in 10 having seriously considered attempting suicide during the previous 12-month period (Brenner et al., 1999).

The nature of college life and the transitions of emerging adulthood may contribute to the circumstances associated with depression and suicidal ideation (Arnett, 2004). College life for emerging adults includes the potential for relationship disruptions due to moving away from family and friends (Arnett, 2004). College students may have enjoyed strong social ties and/or close family connections during high school, only to see these resources diminished or halted because of the move to college. College students with moderate to high levels of suicidal ideation report poorer relationships with parents and peers than those with no or low suicidal ideation (Strang & Orlofsky, 1990). It has been suggested that the loss of relationships and support associated with the transition to college and emerging adulthood is also related to feelings of helplessness and hopelessness (Arnett, 2004), which have been found to be elevated among students with moderate to high levels of suicidal ideation (Strang & Orlofsky, 1990).

**1.13 Resilience and suicide risk.** The opposing concept of risk is resilience or protective factors against suicide, although research in this area is very limited (Masten, Obravodovic, & Burt, 2006). Recent research in rural Alaska Native communities has focused on looking at resilience factors, factors that predict a greater likelihood that an individual will *not* choose to engage in suicidal behavior (Allen et al., 2009). However, research approaches that have focused on direct study of factors associated with suicide have been rejected by several Alaska Native communities (Allen et al., 2009). Specifically, direct questioning about past ideation and behavior has been seen as too invasive, too sensitive, and have caused concern about making

people think about suicide when they had not previously (Allen et al., 2009). An approach that looked at positive factors and avoided direct questioning regarding suicidal ideation or behaviors was deemed more appropriate for use with communities that expressed these concerns. By understanding positive factors researchers believed they could assist in the development of programs that would help instill the protective factors in all community members, especially those who lack some of the identified factors (Allen et al., 2009). Because of these issues, a measure of protective factors was thought to be an important tool for assessing issues related to suicide in a culturally appropriate manner for Alaska Native people.

Currently there are several instruments available that tap into resilience factors in assessing risk of suicide. The majority of these measures include both protective factors and items and instructions that mention suicide. The latest adaptation, designed for Alaska Native youth, contains no mention of suicide in any way, in accordance with cultural norms. Each measure is reviewed below.

## **1.2 Reasons for Living Inventory**

The Reasons for Living Inventory (RLI) was developed by Marsha Linehan and colleagues at the University of Washington and The Catholic University of America in 1983. The researchers focused on examining the reasons a person would choose to stay alive and avoid suicide. Most measures used for suicide assessment focus on history of attempts, level of ideation, and suicidal behavior and plans (for example, the Suicidal Behaviors Questionnaire – Revised [SBQ – R]; Osman et al., 2001). The RLI was developed as a screening tool for use as part of a battery for the assessment of suicidality (suicidal thoughts and behaviors). It was designed as a predictor of suicide based on low levels of adaptive characteristics or protective beliefs rather than the presence of maladaptive symptoms. Research into adaptive characteristics

and their link to survival was reminiscent of Frankl's research with survivors of the Holocaust, where participants were asked to describe what kept them alive through the depths of their concentration camp experiences (Frankl, 1959, as cited in Linehan et al., 1983). Although the RLI focuses on adaptive characteristics – reasons for wanting to stay alive – it contains items that asked directly about suicide, such as “I am too stable to kill myself” (Linehan et al., 1983).

The item content for the RLI was developed using a diverse sample of 65 adults representing a wide range of age groups and an equal amount of men and women. Participants were asked to provide three lists: reasons for not committing suicide during a difficult time in life, reasons why they would not commit suicide at the current time, and reasons they believed others would not kill themselves (Linehan et al., 1983). A total of 343 reasons for living were obtained, resulting in 72 statements after similar items were combined and the list was reduced through content analysis. The 72 statements were used to create an inventory utilizing a six-point Likert scale (1 = *Always not true*, 2 = *Mostly not true*, 3 = *Sometimes not true*, 4 = *Sometimes true*, 5 = *Mostly true*, 6 = *Always true*).

The factor structure of these items was examined in two samples (Linehan et al., 1983). The first sample was comprised of 218 adults from community settings around Washington, DC. The second was made up of 214 adults recruited from shopping centers in Seattle. Principal-component and factor analyses with orthogonal varimax rotation were conducted for each sample, which yielded six distinct factors (Linehan et al., 1983). The RLI was then constructed of items loading on a single factor at .50 or higher in at least two of the four extractions. This resulted in the elimination of 24 of the 72 items due to ambiguous factor loadings (Linehan et al., 1983). The final inventory consisted of 48 items with six subscales: Survival and Coping Beliefs (24 items), Responsibility to Family (7 items), Moral Objections (4 items), Fear of Suicide (7 items),

Fear of Social Disapproval (3 items), and Child-related Concerns (3 items; Linehan et al., 1983). The RLI was designed to measure suicide risk based on scores on these six general reasons *not* to engage in suicidal behavior.

The Seattle participants also completed a measure of past suicidal ideation and behavior, and were categorized into four groups: those who never considered suicide, those who considered suicide briefly or in a non-serious manner, those who reported having seriously considered suicide, and those who had attempted suicide in the past (Linehan et al., 1983). Those who had never considered suicide had higher Survival and Coping Beliefs scores than the other groups (Linehan et al., 1983). Similarly, results indicated that recent suicidal ideation was related to low Survival and Coping scores ( $r = -.30, p < .001$ ) and high Fear of Suicide scores ( $r = .30, p < .001$ ). Other RLI subscales showed small, non-significant correlations with the SBQ ( $r$ s ranging from  $-.13$  to  $.10$ ), indicating less utility in predicting suicidality.

A second study of the RLI was undertaken with clinical inpatients ( $N = 175$ ) admitted within the prior 48 hours for a suicide attempt, suicidal ideation, or a serious non-suicide related problem (e.g., a medical emergency; Linehan et al., 1983). The associations between the RLI and suicidal ideation and behavior with the clinical population were significant and stronger than those found with the non-clinical sample. Four of the scales, Survival and Coping, Responsibility to Family, Child-Related Concerns, and Moral Objections, were shown to have a negative relationship to participants' recent suicidal behavior and to their self-rated future likelihood of suicide. Participants who endorsed Fear of Social Disapproval items were less likely to report having ever considered or threatened to commit suicide (Linehan et al., 1983).

The RLI was the first measure of adaptive beliefs in the assessment of suicide risk. It demonstrated convergent validity and evidence for construct validity through its negative

associations with suicidal behavior and risk. The original RLI development studies showed that there was a difference in belief patterns between individuals who reported that they would not commit suicide and those who seriously contemplated or attempted to kill themselves. The studies also showed there was a difference between thoughts about reasons for living between the clinical and the non-clinical community populations (Linehan et al., 1983). Since 1983, it has been used in a variety of research studies related to suicide and cognitive-behavioral theory.

The psychometrics of the RLI have also been examined with introductory psychology college students (Osman et al., 1993). Using exploratory factor analysis, Osman and colleagues (1993) replicated the factor structure described by Linehan and colleagues (1983). Osman and colleagues found further validation for the RLI when structural analysis yielded functions that replicated three of the six original RLI results: Survival and Coping Beliefs, Personal and Social Dimensions, and Family Concerns (Osman et al., 1993). The Survival and Coping Beliefs subscale, as in the original studies, contributed the most in accounting for differences between groups. The Survival and Coping Beliefs subscale had a significant small to moderate negative correlations with measures of suicidal behavior and risk (Osman et al., 1993), including the Suicide Probability Scale (SPS; Cull & Gill, 1982) and the Suicide Behaviors Questionnaire (SBQ; Linehan & Nielsen, 1981). The other RLI subscales did not significantly correlate with these measures of suicidal behavior and risk. Overall, this study provided important evidence of convergent validity for the RLI with other measures as well as a replication of its factor structure with a college student sample.

The RLI also has been examined with a long-term adult psychiatric population ( $N = 205$ ; Osman et al., 1999). Internal consistency (alpha coefficients) ranged from .77 to .95 for the six subscales, and .93 for the entire measure. Confirmatory factor analysis (CFA) was used to verify



the original factor structure to determine adequacy of model fit (Osman et al., 1999). The original dimensions had only a moderate fit at the item level, but using the item-parceling procedure preliminary to analyses, CFA demonstrated an adequate fit for the six subscales of the RLI (Osman et al., 1999).

Osman et al. (1999) also established a cut-off score for the prediction of suicide resilience among adult psychiatric patients. A raw RLI score of 3.8 was found to yield the best combination of sensitivity (61%) and specificity (82%) at predicting a high level of adaptive skills among psychiatric patients; however, the authors recommended determining separate cut-off scores for other populations (Osman et al., 1999). Osman et al. also found the RLI to be a better predictor of a person *not* committing suicide (negative predictive value = 79%) than a predictor of attempting suicide (positive predictive value = 66%; Osman et al., 1999). They concluded that the RLI has moderate construct, criterion, and predictive validity and satisfactory internal consistency. Other research studies and comparisons involving the RLI have shown it to be a useful instrument when used as part of an assessment battery to provide a well-rounded understanding of a person's level of suicide risk and level of adaptive traits (Range & Antonelli, 1990) and a less intrusive method of assessing suicide (Range & Knott, 1997).

**1.21 Brief Reasons for Living Inventory.** Though the RLI has been shown to be a useful instrument, one of its primary critiques was that at 48 items it is too long for use with some populations (Range & Knott, 1997). To address this issue, a brief version of the RLI was developed with a sample of 130 incarcerated adult men (Ivanoff, Jang, Smyth, & Linehan, 1994). The RLI was reduced using exploratory factor analysis to form the Brief Reasons for Living Inventory (BRLI). For each of the six RLI subscales, two items with the highest factor loadings were retained.

Confirmatory factor analysis of the BRLI showed similar results as the RLI studies. It revealed that the BRLI had six factors with two items loading on each factor (Ivanoff et al., 1994). The factors were labeled Responsibility to Family, Moral Obligations, Child-Related Concerns, Fear of Social Disapproval, Survival and Coping Beliefs, and Fear of Suicide (Ivanoff et al., 1994). These factors closely resemble the original RLI factors, with the addition of Fear of Disapproval. The authors described the BRLI as having moderately high internal consistency ( $\alpha = .86$ ) and a high correlation with the RLI ( $r = .94$ ). Subscale correlations between the two instruments were moderately high ( $r$ s ranging from .58 to .73), and significant moderate correlations were obtained when comparing BRLI results with three measures of suicidal symptoms (Dean & Range, 1999; Ivanoff et al., 1994).

**1.22 College and adolescent versions of the RLI.** The RLI has been adapted for use with adolescents and young adults, as these groups have elevated risk of suicide (CDC, 2010). The RLI was revised for adolescents, young adults, and college students using similar methods as those described for the BRLI. These versions of the RLI are reviewed below.

**1.221 Brief Reasons for Living Inventory for Adolescents.** Before the development of adolescent measures of reasons for living, the RLI was used with adolescents (i.e., Steede & Range, 1989); however, it was not designed for an adolescent population. A brief version of the RLI for use with adolescents, the Brief Reasons for Living Inventory for Adolescents (BRLI-A), was developed with a sample of 260 adolescents and young emerging adults. The sample included 10<sup>th</sup> to 12<sup>th</sup> graders, college freshmen, and inpatients from an adolescent psychiatric unit at a state hospital (Osman et al., 1996). The RLI items were reduced for developmental appropriateness by eliminating any items that did not apply to younger participants, such as the Child-Related Concerns subscale, and by making the inventory shorter in length. Four items each

from the Responsibility to Family, Moral Objections, and Fear of Suicide subscales were retained based on high corrected total-item scale correlation coefficients. For this same reason, all three Fear of Social Disapproval subscale items were retained (Osman et al., 1996). The Survival and Coping Beliefs subscale was reduced to three items by principal components analysis to retain representative items that loaded highest on this subscale (Osman et al., 1996). Two raters then dropped an additional four items as not useful for assessment of adolescents, yielding a 14-item inventory, the BRLI-A (Osman et al., 1996). Exploratory factor analysis suggested a five-factor solution that included all of the RLI's six factors except for Child-Related Concerns.

A second sample of 120 adolescent psychiatric inpatients was then administered the BRLI-A. The BRLI-A was shown to have good internal consistency and good convergent validity (Osman et al., 1996) based on correlations with the Suicide Probability Scale (Cull & Gill, 1982), the Suicidal Behaviors Questionnaire (Linehan & Nielsen, 1981), and the Brief Symptom Inventory (Derogatis & Melisaratos, 1983). The measure also showed good clinical utility in differentiating between levels of suicidality (i.e., ideation, behavior) among adolescent psychiatric inpatients. The cognitive-behavioral assumptions behind the BRLI-A were supported in that a lack of adaptive traits mediated its relationship with suicidal behavior (Osman et al., 1996).

***1.222 Reasons for Living Inventory for Adolescents.*** A second version of the RLI was developed for adolescents (RLI-A) in 1998 with a large sample of teenagers. Exploratory and confirmatory factor analysis of the RLI-A yielded five factors: Future Optimism, Suicide-related Concerns, Family Alliance, Peer Acceptance and Support, and Self-acceptance (Osman et al., 1998). In addition to cross-validation of the factor structure in two high school samples, the RLI-

A also evidenced convergent and discriminant validity (Osman et al., 1998). Further samples from adolescent psychiatric hospitals and other high schools yielded more positive evidence for the scale's reliability and validity (Osman et al., 1998). A follow-up study replicated these results and suggested the RLI-A had better predictive power for resilience to suicide for adolescents than the Beck Hopelessness Scale (Gutierrez, Osman, Kopper, & Barrios, 2000).

**1.223 College Student Reasons for Living Inventory.** Suicidality among college students has continued to grow as a concern (Westfeld et al., 2005) and thus measures that are specific to the experiences of college students are needed to accurately assess their risk levels. As with the adolescent population, research with college students was originally conducted using the RLI (i.e., Connell & Meyer, 1991; Ellis & Jones, 1996). The College Student Reasons for Living Inventory (CS-RLI; Westfeld, Cardin, & Deaton, 1992) was adapted from original RLI items. The primary difference between this measure and the RLI was that Child-Related Concerns were replaced with Future-Related Concerns and "friends" was added to the Responsibility to Family factor (in CS-RLI it is Responsibility to Family and Friends) – with these changes the same factor structure as the RLI was found for the CS-RLI (Westfeld et al., 1992). The CS-RLI was shown to be effective at classifying students as depressed or non-depressed. A follow-up study replicated the CS-RLI factor structure and showed it to be robust (Rogers & Hanlon, 1996). Other studies showed that the measure demonstrated very good internal consistency for the total scale (alpha of .93), as well as for each subscale (Westfeld, Scheel, & Maples, 1998).

**1.224 Reasons for Living Inventory for Young Adults.** The RLI for Young Adults (RLI-YA) was developed using 12 items from the RLI-A that were deemed appropriate for college students and 42 new items developed by psychology students (Gutierrez et al., 2002). The items were rated by local experts and then reduced by the researchers to create a 40-item scale. The

RLL-YA was then administered to a sample of 200 college students in the Midwest. A five-factor structure was found, including Family Relations, Peer Relations, Coping Beliefs, Future Expectations, and Positive Self-evaluation (Gutierrez et al., 2002). The scale was then reduced to 32 items based on item loadings. The five-factor structure was replicated during a follow-up study with a second sample of 200 college students and a total of 32 items were retained, though three items were replaced with items from the initial pool and six were reworded for clarity (Gutierrez et al., 2002). The initial psychometrics were then examined with a sample of 511 college students from two Midwestern schools. The five-factor structure was again replicated, and the scale demonstrated good internal consistency (alpha of .96) as did the subscales (alpha of .88 to .94; Gutierrez et al., 2002). A final study with a sample of 475 undergraduate students replicated the factor structure and demonstrated good internal consistency, as well as provided evidence for convergent validity with three suicide measures (Gutierrez et al., 2002).

**1.23 Cultural factors and the RLI.** The RLI has been used in cultural and cross-cultural research as a way to identify adaptive beliefs that are universal and those that are specific for people of a given culture, religion, or nationality. Research has been conducted around the globe. Translations of the RLI have been used and variations of the RLI have been created using similar procedures as those used to develop the original RLI and the brief versions. A few important examples of cultural research with the RLI are reviewed below.

The RLI has been used to explore how religion affects adaptive beliefs; this was important as the RLI contained belief statements that reflect morality, a subject that is often involved in religious beliefs. Two studies completed in the United Kingdom looked at how a person's religious view of suicide affected adaptive beliefs. These studies suggest that religious belief systems, as one component of culture, have an effect on reasons for living, especially in

regards to moral objections (Kamal & Loewenthal, 2002; Loewenthal et al., 2003). The first study examined the beliefs of Hindus and Muslims in the UK. This study was based on the common idea that the Hindu religion was relatively tolerant of suicide and that Islam was not (Kamal & Loewenthal, 2002). This study found that Hindus endorsed moral objections as well as survival and coping beliefs less strongly than did Muslims (Kamal & Loewenthal, 2002). These results were consistent with the hypothesis that religious belief systems related to suicide affected adaptive beliefs against self-harm. The second study examined the beliefs of Jews and Protestants in the UK, based on the commonly held view that the Protestant religion is more tolerant toward suicide than the orthodox Jewish faith (Loewenthal, MacLeod, Cook, Lee, & Goldblatt, 2003). Some differences in beliefs about suicide between the two groups were found. Most notably, Jews endorsed moral objections more strongly as a reason for living and not committing suicide than did Protestants (Loewenthal et al., 2003).

Racial differences in RLI beliefs were examined in one study in the United States, involving the beliefs of African American and European American college students (Morrison & Downey, 2000). Overall, White Americans have higher suicide rates than African Americans (Hatch & Dohrenwend, 2007). Consistent with this difference in prevalence of suicide rates, European American college students reported fewer reasons for living than did their African American students (Morrison & Downey, 2000). The African American students scored higher than White students on the Moral Objections and the Survival and Coping Beliefs subscales, indicating that these were the areas of primary difference in adaptive beliefs between the two groups of students (Morrison & Downey, 2000).

The RLI has been translated and evaluated for use in non-English speaking countries. Some examples include research in Sweden (Dobrov & Thorell, 2004), Italy (Innamorati et al.,

2006), and China (Chan, 1995). In Sweden, the factor structure was very similar to the original RLI, with the primary difference being a reduction to five factors; the Responsibility to Family and Child-Related Concerns formed one common factor (Dobrov & Thorell, 2004). In Italy, analysis showed the Italian translation of the RLI differentiated between subjects based on suicide attitudes (Innamorati et al., 2006). The authors stated that the Italian RLI was a useful tool in suicide assessment with university students.

A Chinese translation of the original RLI was used in Hong Kong with high school students (Chan, 1995). Results showed a culturally relevant structure of five factors that were similar in content to the original RLI factors (Chan, 1995). This result demonstrated that adaptive beliefs were similar across cultures, but needed to be described in terms that were meaningful and relevant to each particular group of people. This study was noteworthy in that it produced positive findings with a non-western cultural group (Chan, 1995) and a culture often described as having somewhat different beliefs regarding constructions of the self and roles in the societal collective (Markus & Kitayama, 1991).

Thomas Crofoot Graham (2002) discussed the RLI in relation to American Indian healing traditions. Graham (2002) stated that the RLI could be used with American Indian people to assess whether they may be out of balance in one of four areas: spirit, context, mind, and body. Graham (2002) considered RLI factors to be related to the relational worldview described by Cross (1998), with Moral Objections as part of spirit, Responsibility to Family as part of context, and Survival and Coping Beliefs part of mind. The author believed that using American Indian ways of understanding when using the RLI with American Indians was much more useful than using the typical RLI factors (Graham, 2002). This concept called for further research.

One study used the CS-RLI with college students in Alaska to examine cultural differences in reasons for living with Alaska Native and European American students (Simmons, 2003). Results showed that Alaska Native college students had less suicidal ideation and more reasons for living than their European American counterparts (Simmons, 2003).

### **1.3 Reasons for Life Scale**

Alaska Native communities have been more receptive to positive approaches that look at strengths as opposed to research on constructs viewed to be negative, like suicide (Allen et al., 2009). This is partially attributable to Alaska Native communities having been the victim of negative portrayals by past research (e.g., the Barrow alcohol study; Foulks, 1989). In addition, Alaska Native communities have expressed concern that measures which make direct reference to suicide, such as the available versions of the RLI, could cause people to think about suicide when they had not previously (Allen et al., 2009). A way of asking about positive factors without direct reference to suicide was needed to appropriately assess for protective factors and risks for suicide in Alaska Native communities. The Reasons for Life Scale (RFLS) was designed with community input to provide such an instrument.

Allen, Mohatt, and the People Awakening Team created the RFLS (Allen et al., 2009) by adapting the BRLI-A for use with Alaska Native youth. As previously reviewed, the BRLI-A, a brief version of the RLI developed for adolescents, takes a more positive approach by psychology's standards because it assesses strengths and reasons for *not* committing suicide (Osman et al., 1996). The BRLI-A has been shown to have good convergent validity based on correlations with three measures of suicide risk (Osman et al., 1996). The measure also shows good clinical utility in differentiating between levels of suicidality among adolescent psychiatric inpatients. However, the BRLI-A, like the other RLI variants, includes questions about why a



participant would choose to live and not commit suicide (Osman et al., 1996). Although the RFLS maintained similar subscales as the BRLI-A, the construct was altered to a more positive approach that avoids any direct mention of suicide. The BRLI-A was adapted through an iterative process involving community co-researchers, cultural consultants, and focus groups (Allen, Fok, Henry, Skewes, & People Awakening Team, 2012). Each item was adapted to reflect positive beliefs that make life meaningful and enjoyable without regard to the absence or presence of suicidal thoughts or feelings (Allen et al., 2009). The RFLS was designed so that it would not contain items or instructions that mention suicide or self-harm in any direct way, in accordance with cultural norms (Allen et al., 2009).

The 13-item RFLS was administered to 413 Alaska Native youth; ages 12 to 18 (Allen et al., 2009). Four factors were extracted from the 13 items through exploratory factor analysis (Allen et al., 2009). The factors were titled Others' Assessment of Me, Cultural and Spiritual Beliefs, Personal Efficacy, and Family Responsibility. The subscales and wording of items reflected Alaska Native cultural values. The subscales showed good internal consistency with alphas ranging from .70 to .77 (Allen et al., 2010). It also demonstrated good total scale internal consistency with an alpha of .83. Although the factor structure and internal consistency were studied, no other psychometric properties were examined.

The RFLS was used as part of broad research into adaptive beliefs and practices of Alaska Native people, with focus on restoring cultural heritage to protect against alcohol abuse and suicide (Allen et al., 2009). It was designed to be a more culturally congruent way of inquiring into the difficult topic of suicide with Alaska Native youth. In a similar way, the RFLS may be potentially useful with emerging adult college students.

Although different versions of the RLI for adolescents and for college students have been useful in assessing reasons for living and each has good psychometric properties for measuring the construct in these age groups, like the RLI, these measures and their instructions directly mention suicide. An assessment of resilience factors without any mention of suicide may provide a means of assessing positive traits and attributes and may help in identifying students in need of suicide prevention efforts. The RFLS does not overtly assess suicide risk; this absence of a direct connection to suicide assessment may help students avoid concerns regarding stigma or negative reactions that such questions could produce.

The stigma connected to suicide-related topics has become such a concern that new measures have been developed to assess stigma levels in individuals (Scocco, Castriota, Toffol, & Preti, 2012) and communities (Batterham, Calear, & Christensen, 2013). Thoughts and ideas involving suicide are often viewed as negative (Batterham et al., 2013) and most ways of assessing risk have focused on negative aspects, such as history of ideation and attempts. The stigma of being seen as stupid or weak minded for having engaged in suicidal behavior (Batterham et al., 2013) may create a pressure for individuals to provide a more socially desirable set of responses (i.e., by denying thoughts or behaviors associated with suicide). There is an inherent risk that respondents affected by the stigma associated with suicide may respond differently than they would otherwise, making accurate risk assessment less likely in clinical settings and making research results less valid.

There also is concern about direct questioning regarding suicidal thoughts or intent when conducting research on the subject of suicide, even with non-clinical populations such as college students. Often such research calls for in-person as opposed to online assessment to allow for direct observations of potential participant distress, safety procedures if distress or disclosure of

suicidal intent occurs, as well as debriefing procedures. By focusing on positive, adaptive beliefs and not directly mentioning suicide, the RFLS may provide a tool for suicide risk assessment that does not cause reactance or require special safety procedures for its use in research.

Finally, a more recent concern related to suicide-related assessment with college students involves how colleges handle students who are deemed to be at risk. There have been reports that students have been put on probation or told not to return to school after displaying suicidal ideation or a suicide attempt (i.e., Baker, 2014; Beusman, 2014). These actions place additional pressure on students to respond inaccurately to measures of suicide risk, increasing the chance that such risk may go undetected, as well as potentially negatively affecting suicide-related research with college students. A measure that does not directly mention suicide may prove to be a useful tool for clinicians and researchers at colleges to assess students for risk without the type of direct questions that could trigger administrative actions or student reactance to questions regarding suicide.

#### **1.4 Current Study**

The assessment of suicide risk has evolved from only direct measures of suicidal ideation and attempts to measures of resilience that focus on reasons for living when suicide was considered. The RFLS may represent the next step in this evolution by focusing exclusively on adaptive factors without any obvious connection to suicide risk assessment. Thus far it has only been studied with Alaska Native youth (ages 12 to 18) and no information is currently available regarding its validity with any population.

The overall objective of the current study was to examine the factor structure and convergent validity of the RFLS with emerging adult college students (ages 18 to 25). Although the RFLS was designed for use with adolescents (up to age 18), emerging adults are a closely

related developmental group to adolescents. Based on the face validity of the item content for emerging adults, it was hypothesized that the RFLS would function similarly for this developmental group. First, a focus group study was conducted to culturally adapt the RFLS for use with non-Native college students. A focus group of Native and non-Native students developed cross-culturally equivalent wording for two Alaska Native-specific items on the RFLS, as well as examined whether any other RFLS items needed rewording.

The main study explored the factor structure and the convergent validity of the RFLS-R with emerging adult college students in Alaska. It was hypothesized that the RFLS-R would demonstrate a similar four factor structure to that found with Alaska Native youth: others' assessment of me, cultural and spiritual beliefs, personal efficacy, and family responsibility (Allen et al., 2009). To assess convergent validity, which has not been assessed in any study to date, scores on the RFLS-R were compared to the RLI. The RFLS-R is thought to measure the same construct as the RLI, namely reasons for living, thus these measures were expected to be highly correlated. Although various versions of the RLI have been developed, the RLI was chosen because it is the original measure of its type, it is the most studied, and it has shown the best psychometric properties of all the available versions.

In the current study it was hypothesized that the RFLS-R would demonstrate convergent validity with established measures of recent suicidal ideation and history of suicidal risk. Two measures with well-established psychometrics with college students were chosen: the Adult Suicidal Ideation Questionnaire (ASIQ; Reynolds, 1991) and the Suicidal Behaviors Questionnaire – Revised (SBQ-R; Osman et al., 2001). Each instrument was expected to have a negative relationship with the RFLS-R, as higher scores on these scales indicate greater levels of ideation and risk, respectively.

Finally, the impact of socially desirable responding on each suicide measure was examined using the Balanced Inventory of Desirable Responding (BIDR; Paulhus, 1991). Socially desirable response patterns were not expected to be as strongly associated with RFLS-R scores, particularly given its avoidance of direct questioning regarding suicide. The potential relationship between RFLS-R scores and socially desirable response patterns was examined, as well as the potential that social desirability would account for associations between the RFLS-R and suicide-related measures.

## **Chapter 2**

### **Study 1: Method**

#### **2.1 Participants**

Eight students were recruited to participate in a focus group to develop new items that provided cross-culturally equivalent wording for two Alaska Native-specific items on the RFLS. Focus group members were recruited to create a balanced group of females and males, as well as self-identified Alaska Native and non-Native students. The group consisted of two Alaska Native women, two non-Native women, two Alaska Native men, and two non-Native men, all of whom were undergraduate students at the University of Alaska Fairbanks.

#### **2.2 Procedure**

The Institutional Review Board of UAF approved the study protocol (see Appendix 2.1). Students were recruited from undergraduate psychology classes and via fliers posted on the University of Alaska Fairbanks (UAF) campus. Students were informed that the study would involve a focus group discussion about cross-cultural meaning and that it would take about 60 minutes of their time. Pizza and soft drinks were provided during the focus group; no other compensation was provided for participation.

The researcher began the focus group by explaining how confidentiality would be maintained and obtaining informed consent. Participants were given numbers to identify themselves to ensure confidentiality. The focus group discussion was recorded on audiotape and three student research assistants took notes on the discussion while the researcher facilitated the discussion. The researcher explained to the focus group that the RFLS was originally developed with Alaska Native youth as a way of assessing positive mental health and resilience to suicide.

It was then explained that the current study was to examine use of this measure with emerging adult college students from various cultural backgrounds.

Students were provided a copy of the 13 RFLS items (Appendix 2.2). Students were asked to examine two RFLS items, “Other people say I live my life in a Native way” and “My Elders teach me the life is valuable.” Although these items were appropriate for the Alaska Native youth for whom the RFLS was developed, the focus group members agreed that these items were not clearly applicable to non-Native college students.

The researcher facilitated a discussion of each item by encouraging Alaska Native participants to discuss and explain what the item meant to them. Non-Native students were then encouraged to think and talk about potential equivalencies from their perspectives.

The non-Native group members then suggested various wordings they saw as relatively equivalent. The Alaska Native students then provided feedback regarding their views on equivalence. This back and forth dialogue continued until all group members agreed on an equivalent wording for each of the two items.

### **2.3 Results**

The first item discussed, “Other people say I live my life in a Native way,” generated a lengthy discussion. Native students described a sense of culture and being seen as upholding the traditions of their culture. The non-Native students gave a few attempts at rewording the item without directly referencing culture but were unable to come to agreement. The Alaska Native students then elaborated with discussion of connection to family and the village or place their family was from. Non-Native students reacted more positively to this definition of culture. One non-Native student mentioned “family traditions” and the group soon came to a consensus around the idea of “cultural traditions.” The group reviewed the notes of their discussion

provided by the student researchers and came to a final wording of the item, then went around and gave their final opinions. The group unanimously agreed that the item would be reworded as, “Other people say I live my life according to my cultural traditions.” Students expressed satisfaction with the new item but were unsure if all students would grasp the same meaning.

The last RFLS item, “My Elders teach me the life is valuable,” generated a less lengthy and complex discussion among group members. Alaska Native participants described Elders as older people who are revered and special to the family and community. Elders were described as passing along knowledge to younger people. Non-Native participants responded with two primary ideas involving mentors and grandparents. Alaska Native students agreed with both of these ideas as qualities of Elders. The group decided that it was important to keep the concept of teaching that life is valuable as the point of the item. After more discussion, the item was reworded as, “Influential people who helped me learn core values teach me that life is valuable.” The group as a whole struggled with the length of the new item but was unable to find an acceptable alternative.

The group then reviewed the remaining RFLS items and concluded that none needed similar rewording. Finally, focus group members discussed their ability to understand each item of the RFLS and described the subjective meaning derived from each item to ensure common understanding of the questionnaire. The group members did not have difficulty understanding any items and were in agreement on their understanding of the questionnaire. The two reworded items were then added to the RFLS and the original items were dropped, for a total of 13 items.



## Appendix 2.1

### IRB Approval Letter



#### Institutional Review Board

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(907) 474-5444 fax  
fyirb@uaf.edu  
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November 12, 2010

To: James Allen, PhD  
Principal Investigator

From: University of Alaska Fairbanks IRB

Re: [187367-2] Construct Validity of the Reasons for Life Scale with Emerging Adult College Students: Internal Structure, Item Functioning, and Convergent and Discriminant Validity

Thank you for submitting the New Project referenced below. The submission was handled by Full Committee Review.

Title: Construct Validity of the Reasons for Life Scale with Emerging Adult College Students: Internal Structure, Item Functioning, and Convergent and Discriminant Validity

Received: October 27, 2010

Action: APPROVED

Effective Date: November 12, 2010  
Expiration Date: November 12, 2011

#### Required Information:

Revised documents addressed each item requested by the IRB during October review.

This action is included on the December 9, 2010 IRB Agenda.

*No changes may be made to this project without the prior review and approval of the IRB. This includes, but is not limited to, changes in research scope, research tools, consent documents, personnel, or record storage location.*

## Appendix 2.2

### Reasons for Life Scale (RFLS)

*Reasons for Life Scale items by subscale*  
(Allen, et al., 2009)

Please rate the following:

3-point Likert scale (1 = Not at All, 2 = Sometimes, 3 = A Lot)

#### **Others' Assessment of Me**

1. Other people say I live my life in a Native way.
4. Other people say I live my life in a good way.
5. Other people say I am strong and care about other people.
11. Other people say good things about me.

#### **Cultural and Spiritual Beliefs**

2. My religion teaches me life is valuable.
12. I believe God has a place for me.
13. My Elders teach me that life is valuable.

#### **Personal Efficacy**

3. I have courage to face life.
6. I believe I can find solutions to my problems.
9. I believe everything has a way of working out for the best.

#### **Family Responsibility**

7. My family depends upon me and needs me.
8. I love my family so much and want them to be proud.
10. I never want to hurt my family and would not want them to suffer.



## Chapter 3

### Study 2: Method

#### 3.1 Participants

Participants were 150 students attending UAF or the University of Alaska Anchorage (UAA). The total sample of 150 included 116 emerging adults (ages 18 to 25), 20 participants between the ages of 26 and 34, 12 between age 35 and 44, and two people aged 45 or older. The sample of 116 emerging adults, used for analysis, was 64.7% ( $n = 75$ ) female and 35.3% ( $n = 41$ ) male, with 78.4% ( $n = 91$ ) students from UAF and 21.6% ( $n = 25$ ) from UAA. The sample was 73.3% ( $n = 85$ ) Caucasian or White, 9.5% ( $n = 11$ ) Alaska Native, 7.8% ( $n = 9$ ) Latino or Latina, 3.4% ( $n = 4$ ) African American, 3.4% ( $n = 4$ ) Asian American, and 1.7% ( $n = 2$ ) Pacific Islander, as well as one student who self-described as “mixed” (0.9%).

#### 3.2 Procedure

The Institutional Review Board of UAF approved the study protocol. Students were recruited from undergraduate psychology classes between the summer of 2011 and the fall of 2013 through a brief presentation at the beginning or end of a class. Researchers stated that the project involved studying the validity of a measure with college students and that some of the items included in the study discussed suicide. Students were told that five assessment instruments, taking up to an hour to complete, were included. Students were given an opportunity to have any questions answered. Those interested in participating were asked to either contact the researcher to schedule a time to meet, or were told when a data collection session was scheduled to occur. Psychology classes provided the majority of participants; most received some extra credit or extended learning points for their participation.

Interested students attended on-campus data collection sessions. At each session, participants were given a brief description of the study and then gave informed consent. Test items were presented in random order using SurveyMonkey question randomization on desktop or laptop computers. In order to ensure anonymity of survey responses there were no survey questions asking for identifying information (e.g., name) and there was no way to match participants' responses to their consent forms. Data collection sessions typically included groups of up to five participants, but several individual sessions were held to accommodate students.

Participants were monitored throughout the testing process by the investigator or an undergraduate research assistant for any signs of distress due to the nature of the measures involved, during or after completing the surveys or the focus group. A procedure was developed to respond to potential participant distress (see Appendix 3.1), however, no participants exhibited emotional distress during the focus groups or survey data collection. After the surveys were completed every participant was given a handout with referral information for local resources and crisis line telephone numbers during a short debriefing (See Appendix 3.2).

Computer-based administration of the study measures was used in an attempt to recreate the process utilized during the development of the RFLS, which involved computer-based administration in school computer labs (Allen et al., 2012). Research indicates that participants favor computer and web-based versions of questionnaires to the traditional paper-and-pencil versions (Supple, Aquilino, & Wright, 1999; Wijndaele et al., 2007). Participants also see measures administered via computer as more anonymous than paper-and-pencil versions, and they report higher levels of behavior perceived as socially undesirable when computer-based measures are used (Booth-Kewley, Larson, & Miyoshi, 2007; Feigelson & Dwight, 2000; Supple et al., 1999). Other studies have shown that for mental health questionnaires paper-and-pencil

versions are equivalent with versions administered via computer (Austin, Carlbring, Richards, & Anderson, 2006; Meyerson & Tryon, 2003; Miller et al., 2002; Ryan, Corry, Attewell, & Smithson, 2002; Schulenberg & Yutrzenka, 2001; Wijndaele et al., 2007).

### **3.3 Measures**

**3.31 Reasons for living.** The Reasons for Living Inventory (RLI; Linehan et al., 1983) is a 48-item self-report measure of reasons a person would choose to live when contemplating suicide (see Appendix 3.3). The RLI has demonstrated convergent validity and has shown evidence for its construct validity through negative associations with suicidal behavior and risk (Linehan et al., 1983; Osman et al., 1999), including a study with college students (Osman et al., 1993). Each item represents a reason for living that is rated on a 6-point Likert scale (1 = *not at all important*, 6 = *extremely important*). The RLI consists of six subscales: Survival and Coping Beliefs, Responsibility to Family, Child-Related Concerns, Fear of Suicide, Fear of Social Disapproval, and Moral Objections. The RLI demonstrates good test-retest reliability over a three-week period, with correlations ranging from .75 to .85 for the six subscales and .83 for the full measure (Osman, Jones, & Osman, 1991). Prior RLI studies showed that internal consistency (Cronbach's alpha) ranged from .77 to .95 for the six subscales, and .93 for the entire measure (Osman et al., 1999). Consistent with previous studies, in the current study internal consistency (Cronbach's alpha) ranged from .79 to .92 for the six subscales, and .91 for the entire measure.

**3.32 Reasons for life.** The Reasons for Life Scale (RFLS; Allen et al., 2009) is a 13-item self-report measure of positive beliefs that make life enjoyable and meaningful (see Appendix 3.3). Items are rated on a 3-point Likert scale (1 = *not at all*, 3 = *a lot*), with higher scores indicating an endorsement of the item (reason for life) for the participant. With a sample of Alaska Native adolescents the RFLS had four subscales: Others' Assessment of Me, Cultural and

Spiritual Beliefs, Personal Efficacy, and Family Responsibility (Allen et al., 2009). These subscales showed adequate internal consistency with alpha coefficients ranging from .70 to .77 (Allen et al., 2012). No follow-up studies with the RFLS have been reported at the time of this writing and no information is available regarding the validity of the RFLS. For the current study two items with language specific to Alaska Native culture were reworded by a focus group for use with emerging adult college students.

**3.33 Socially desirable response patterns.** The Balanced Inventory of Desirable Responding (BIDR; Paulhus, 1991) is a 40-item self-report measure of socially desirable responding (see Appendix 3.3). Items are rated on a 7-point Likert scale (1 = *not true*, 7 = *very true*) with half the items reverse scored. Higher scores indicate socially desirable responses. Items include commonly experienced thoughts and behaviors in two subscales: self-deceptive positivity (SDE) and impression management (IM). The BIDR demonstrates good test-retest reliability over a five-week period, with correlations of .69 for self-deceptive positivity and .65 for impression management. The BIDR demonstrates good convergent validity via strong correlations with other measures of socially desirable responding (Paulhus, 1991). In the current study, the BIDR and subscales demonstrated good internal consistency (Cronbach's alpha), with the IM scale at .81, SDE with .71, and the full scale at .83.

**3.34 Suicidal ideation.** The Adult Suicidal Ideation Questionnaire (ASIQ; Reynolds, 1991) is a 25-item self-report measure of recent suicidal thoughts (see Appendix 3.3). Items are rated on a 7-point Likert scale (0 = *never had that thought*, 6 = *almost every day*), with higher scores indicating higher levels of suicidal ideation. The ASIQ demonstrated good 2-week test-retest reliability ( $r = .86$ ) with college students (Reynolds, 1991). The ASIQ has shown good convergent validity with college students through moderate correlations with other suicide-

related measures (Reynolds, 1991). The ASIQ has also demonstrated good predictive validity. During a three-month follow-up, total ASIQ score predicted suicide attempts among psychiatric inpatients with histories of prior attempts (Osman et al., 1999). The ASIQ had very good internal consistency in the current study (Cronbach's alpha of .96).

**3.35 Suicidal behavior.** The Suicidal Behavior Questionnaire – Revised (SBQ-R; Osman et al., 2001) is a four-item self-report measure of suicide risk adapted from the longer Suicidal Behavior Questionnaire (Linehan, 1981). Items include lifetime suicidal ideation and attempts, ideation frequency over the preceding year, history of threat of suicidal behavior, and likelihood of future suicidal behavior (see Appendix 3.3). Items are rated on 5- to 7-point scales that are each scored differently (see Appendix 3.3). The SBQ-R has shown very good two-week test-retest reliability at a correlation of .95 between the administrations (Cotton, Peters, & Range, 1995). The SBQ-R has demonstrated good convergent validity through good correlations with other related measures (Cotton et al., 1995). In the current study, the SBQ-R had good internal consistency, with Cronbach's alpha of .73.

### **3.4 Statistical analyses**

**3.41 Data preparation.** Data was screened for missing responses, univariate and multivariate outliers, and non-normal response distributions in accordance with the procedures outlined in Tabachnik and Fidell (2000). Missing items represented only one percent of the response set. Single missing item cases were replaced by the mean for the participant's group for the given item. This was done for 15 missing RLI items, five SBQ-R items, two ASIQ items, three RFLS items, and two BIDR items. One participant did not complete the entire BIDR; completing only 10 of the 40 items. This case was deleted for the BIDR analysis, leaving 115 participants for which the BIDR was evaluated.



Participants were then divided into two groups based on their score on the first item of the SBQ-R: those with no history of suicidal thoughts or behavior (score of 1), and those with such a history (score of 2, 3, or 4). After the data was divided into the two SBQ-R groups, the data set was evaluated for outliers. Only one outlying ASIQ score was found; this score showed a significantly higher level of suicidal ideation than the group mean ( $z = 4.89$ ). The score was changed to be less divergent from the other scores in an attempt to minimize its impact during analysis while maintaining its rank as the highest score in the group. In order to protect against a loss of generalizability, the score was modified by adding one point to the next highest score rather than deleted, as the participant was properly part of the population of study (Tabachnik & Fidell, 2000). The modified score resulted in improved normality in the distribution of scores, with less influence from the outlier. The ASIQ total score had a positively skewed distribution therefore a logarithmic transformation was applied. After transformation the ASIQ demonstrated a far more normal distribution without significant skew or kurtosis.

The distribution of the 13 RFLS items was examined in preparation for factor analysis. One item, “Other people say I live my life according to my cultural traditions,” was dropped due to a low endorsement rate; 62.1% chose “not at all” for this item. The new 12-item scale was labeled the Reasons for Life Scale – Revised (RFLS-R).

**3.42 Factor structure of the RFLS-R.** Although an EFA was previously conducted for the RFLS, the previous EFA examined the RFLS’s factor structure with Alaska Native youth (Allen et al., 2009). To date, the factor structure and reliability estimates have not been examined in any other population. The current study used an older, culturally dissimilar population and two items were added to the original scale (updated for emerging adult college students, as written by

our focus group), therefore an EFA was conducted to examine the factor structure with an emerging adult college student population.

EFA was used to examine patterns of associations among items in order to explore the dimensionality of the RFLS-R (Tabachnik & Fidell, 2000; Tinsley & Brown, 2000). Version 22.0 of SPSS was used to conduct EFA analyses. First, we conducted an initial SPSS run to examine our sample's suitability for factor analysis using the Kaiser-Meyer-Olin (KMO) measure of sampling adequacy (Kaiser, 1974) and Bartlett's test of sphericity (Bartlett, 1954). For the KMO measure of sampling adequacy (Kaiser, 1974), a score above the .60 level was needed to determine that our sample was suitable for factor analysis (Tabachnik & Fidell, 2000). For Bartlett's test of sphericity, a  $p < .001$  significance level was used to indicate if the data was suitable for factor analysis (Tabachnik & Fidell, 2007). Next, we extracted factors using principal axis factoring, the most commonly used extraction technique for exploratory factor analysis (Tabachnik & Fidell, 2007). We examined the eigenvalues, which represent variance accounted for. Factors with an eigenvalue less than 1 were considered to be not as important as those factors with an eigenvalue of 1 or more (Tabachnik & Fidell, 2000). Eigenvalues represent variance, and each variable contributes a variance of 1 to a factor extraction; therefore, variables with an eigenvalue less than 1 are disregarded because they do not demonstrate being different from any other potential factors. We also examined the scree plot as a second way of determining the number of factors to retain. The scree plot shows the highest eigenvalue first, with decreasing values following until the values become very small (Tabachnik & Fidell, 2000). Using the scree plot, the number of factors was determined by retaining factors that were above the flattened slope of those factors with very small eigenvalues (Tabachnik & Fidell, 2000).

Once an appropriate number of factors were determined based on eigenvalues and an examination of the scree plot, we then planned to conduct a second factor analysis with an oblique rotation, given our hypothesis that there would be multiple variables (specifically, four as found by Allen et al., 2009) and that they would be correlated. We then planned to examine the pattern matrix of the RFLS-R items to look for items that loaded highly on only one factor. We also examined the amount of variance accounted for by the scale and any factors.

**3.43 Sample size with EFA.** In determining sample size for EFA, it was common practice to use a ratio of the number of subjects to the number of items as a rule of thumb (Rouquette & Falissard, 2011). The ratio varied within an accepted range between 3:1 and 10:1 (Rouquette & Falissard, 2011). However, there is no consistent guideline for use of ratios and there also is no evidence that use of ratios is a valid practice (Rouquette & Falissard, 2011). In contrast to ratio-based rules of thumb, some authors have argued that sample sizes of at least 300 participants are needed to reveal underlying factor structure (e.g., Comfrey & Lee, 1992; Rouquette & Falissard, 2011). Currently, all of these guidelines have come into question and research has found that under certain conditions much smaller samples can be useful, and produced valid and reliable results (de Winter, Dodou & Wieringa, 2009). Tabachnik and Fidell (2000) note that a smaller sample size is adequate when correlations are strong and reliable, with few factors, and the factors are distinct. Recent research has shown that a sample of 100 is adequate when communalities of .70 or higher are obtained, with three to five items loading on each component (Wegener & Fabrigar, 2011). Further, a series of simulation studies have shown that larger numbers of factors require larger sample sizes, but well conditioned data can give reliable results with samples lower than 50 (de Winter et al., 2009; Wegener & Fabrigar, 2011).

Factor loadings found for the RFLS with Alaska Native youth ranged from .68 to .81 (Allen et al., 2009). We anticipated that our EFA of the RFLS-R would provide reliable and stable results with our sample of 116 given that prior EFA with Alaska Native youth resulted in four factors with three items per factor and high factor loadings (Allen et al., 2009). We expected to find similar results, with three to four factors and three to five items per factor. We also expected to find similar high factor loadings as described above in the EFA with Alaska Native youth. Based on the previous factor loadings found with the RFLS, a relatively small sample was expected to provide reliable results. Considering the hypothesis that we would have strong correlations on a small number of distinct factors, the sample of 116 was expected to produce an accurate factor analysis of the RFLS-R for emerging adult college students in Alaska.

**3.44 Convergent validity.** To determine convergent validity of the RFLS-R with this sample of emerging adult college students, correlation analyses were conducted to examine the relationships between the RFLS-R and the RLI, ASIQ, BIDR, and SBQ-R.

**3.45 Mediation analyses.** In separate mediation analyses, we examined the potential that social desirability mediates the relationships between the RFLS-R and ASIQ and SBQ-R. In the past, the most commonly used approach for examining mediation was the causal steps approach (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002); for example, that of Baron and Kenny (1986). One problem with this method is that it has been demonstrated to have lower power and to overlook real effects, especially when there is complete mediation (MacKinnon et al., 2002; MacKinnon, Fairchild, & Fritz, 2007). The product-of-coefficients approach, such as the Sobel test, is an alternative approach to examine the significance of mediational models that tests the joint significance of the relationship between the independent variable and the proposed mediator (*a* path) as well as the mediator and the dependent variable (*b* path), known as the joint

*ab* effect. This method yields a  $z$  value, which is then computed in reference to a standard normal distribution. However, the sampling distribution of the joint *ab* effect is normally distributed only in large samples, thus leading to low power, high Type I error rates, and imbalanced confidence intervals (MacKinnon, Lockwood, & Williams, 2004). Another option to deal with some of these problems is the use of bootstrapping (MacKinnon et al., 2004; Preacher & Hayes, 2008; Shrout & Bolger, 2002). Simulation studies have demonstrated that bootstrapping is more powerful than the causal steps approaches and Sobel test; this method also does not impose the assumption of normality in the sampling distribution (MacKinnon et al., 2004; Williams & MacKinnon, 2008). Bias-corrected bootstrapping frequently produces the best power and most accurate confidence intervals (MacKinnon et al., 2004). Using an SPSS macro provided by Preacher and Hayes (2008), bias-corrected bootstrapping was used to test the significance of the indirect effects in this study. The bootstrap estimates, as recommended by Preacher and Hayes (2008) and Hayes (2009), were based on 5,000 bootstrap samples.

### **Appendix 3.1: Emergency Response Procedure**

The PI and a trained research assistant will monitor participants for adverse emotional reactions. If detected, it will be handled as detailed below.

- 1) All participants will be debriefed following completion of the study by a research assistant trained by the PI,
- 2) As part of the debriefing procedure all participants will be provided with referral sources for free or low cost counseling on campus (e.g., UAF Psychology Department Clinic, UAA Psychological Services Center) and crisis/suicide hotlines that can be called 24 hours a day in the case they experience or are experiencing psychological distress or suicidal thoughts,
- 3) In the unlikely event that a participant becomes distressed or verbally discloses intent to harm him or herself, either the PI or graduate student researcher will immediately be contacted to meet with the participant to conduct a crisis assessment and determine a course of action consistent with the level of risk. This may include allowing the participant to leave without further intervention, suggesting psychological counseling, facilitating the initiation of psychological services available on campus (e.g., UAF Psychology Department Clinic, UAA Psychological Services Center), or escorting the participant via taxi to the hospital emergency room.

### **Appendix 3.2: Debriefing Procedure**

After each participant completes the questionnaires they will be told the following information by the PI, graduate researcher, or a trained research assistant.

*Several of the questions in this study asked about thoughts that you may have had about depression or suicide. While it is normal to feel depressed at times, if you are having any thoughts about harming yourself or committing suicide or find that you are so depressed it is hard for you to function at your normal level, now or in the future, you should seek help. There are services that are available to you that are free; you can call them at any time, they are available 24 hours a day. Let me tell you about some these, even if you didn't endorse any of the items about having suicidal thoughts or serious depression, they are important resources to know about for yourself or a friend [hand referral sheet- see below]. One important place you can go is the (UAA Psychological Services Center or UAF Psychology Department Clinic), which is low cost and offers services for students and non-students. Listed on the referral sheet are their phone number and/or web-address where you can find more information [point to referral sheet]. Another alternative is Student Health and Counseling Center, they offer free or low cost health and counseling services for UA students [point to referral sheet]. Finally, there are crisis and suicide hotlines you can call; here are their numbers [point to referral sheet]. Do you have any questions or concerns?*

If a participant does choose to disclose thoughts of self harm then proceed in the manner outlined in the emergency response procedure (Appendix 3.1).

## UAA Referral Sheet

**For your reference, a brief list of low or no cost counseling service is provided below.**

### University at Alaska Anchorage Psychological Services Center

Counseling Services- Tel: (907) 786-1795

Social Sciences Building

University of Alaska Anchorage

3211 Providence Drive

Anchorage, AK 99508

**<http://www.uaa.alaska.edu/psych/services/index.cfm>**

### **Services:**

The Department of Psychology's Psychological Services Center (PSC) offers an array of therapy and counseling services to UAA students, UAA staff, and the general public. You **do not** need to be a UAA student to get services at the PSC. Culturally sensitive, low-cost therapy is available to individuals looking to improve the quality of their lives. Services are provided by supervised therapists enrolled in UAA's master's and doctoral programs in psychology.

### UAA Student Health and Counseling Center

Health and Counseling Services- Tel: (907) 786-4040

Rasmuson Hall

University of Alaska Anchorage

3211 Providence Drive

Anchorage, AK 99508

**<http://www.uaa.alaska.edu/studenthealth/>**

### **Services:**

The Student Health and Counseling Center provides primary health services for physical and mental health, diagnosis, and treatment of general health and mental health conditions as well as education and support to help maintain a healthy lifestyle. This clinic is for UAA students enrolled in six or more credits only. See <http://www.uaa.alaska.edu/studenthealth/eligibility.cfm> for further information on eligibility. There is no charge for a medical office visit. For mental health services an initial evaluation or intake is provided at no charge. Subsequent visits are \$15.00 each.

### Crisis Hotlines

**Trained crisis center staff offer: suicide intervention, crisis counseling, and mental health referral information. You can call for yourself or for someone else. 24 HOUR SERVICE**

**Anchorage Community Mental Health Services 24-Hour Crisis Line (907) 563-3200**

**National Suicide Prevention Lifeline 1-800-273-TALK (8255)**



## UAF Referral Sheet

**For your reference, a brief list of low or no cost counseling service is provided below.**

University of Alaska Fairbanks Psychology Department Clinic

Counseling Services- Tel: (907) 474-1999

Gruening Building, Second Floor, Room 215

University of Alaska Fairbanks

**Services:**

The Psychology Department Clinic (PDC) offers an array of therapy and counseling services to UAF students, UAF staff, and the general public. You **do not** need to be a UAF student to get services at the PDC. Culturally sensitive, low-cost therapy is available to individuals looking to improve the quality of their lives. Services are provided by supervised therapists enrolled in UAF's doctoral program in psychology.

UAF Student Health and Counseling Center

Health and Counseling Services- Tel: (907) 474-7043

Whitaker Hall, Second Floor

University of Alaska Fairbanks

**Services:**

The Student Health and Counseling Center provides primary health services for physical and mental health, diagnosis, and treatment of general health and mental health conditions as well as education and support to help maintain a healthy lifestyle. This clinic is for UAF students enrolled in six or more credits only. There is no charge for a medical office visit. For mental health services, an initial evaluation or intake and up to four sessions are provided at no charge. Subsequent visits are \$10.00 each.

Crisis Hotlines

**Trained crisis center staff offer: suicide intervention, crisis counseling, and mental health referral information. You can call for yourself or for someone else. 24 HOUR SERVICE**

**Fairbanks 24-Hour Crisis Line – Careline Crisis Intervention (907) 452-HELP (4357)  
or 1-877-266-HELP (4357)**

**National Suicide Prevention Lifeline 1-800-273-TALK (8255)**

### **Appendix 3.3: Measures**

#### Demographic Questions

1. What is your age range? (18-25; 26-35; 36-45; over 45)
2. What is your ethnicity? (Alaska Native/American Indian; Asian-American; African-American; Caucasian/White; Latino/Latina; Pacific Islander; Other)
3. What is your gender? (male; female)
4. Which university do you attend? (University of Alaska Anchorage; University of Alaska Fairbanks)

## Reasons for Living Inventory (RLI)

*Reasons for Living Inventory Items by Subscale*  
(Linehan, et al., 1983)

Please rate the following responses to:

I would choose to live and not choose suicide because –

6-point Likert Scale (1 = Not at All Important, 6 = Extremely Important)

### Survival and Coping Beliefs

1. I care enough about myself to live.
2. I believe I can find other solutions to my problems.
3. I still have many things left to do.
4. I have hope that things will improve and the future will be happier.
5. I have the courage to face life.
6. I want to experience all that life has to offer and there are many experiences I haven't had yet which I want to have.
7. I believe everything has a way of working out for the best.
8. I believe I can find a purpose in life, a reason to live.
9. I have a love of life.
10. No matter how badly I feel, I know that it will not last
11. Life is too beautiful and precious to end it.
12. I am happy and content with my life.
13. I am curious about what will happen in the future.
14. I see no reason to hurry death along.
15. I believe I can learn to adjust or cope with my problems.
16. I believe killing myself would not really accomplish or solve anything.
17. I have a desire to live.
18. I am too stable to kill myself.
19. I have future plans I am looking forward to carrying out.
20. I do not believe that things get miserable or hopeless enough that I would rather be dead.
21. I have an inner drive to survive
22. I do not want to die.
23. Life is all we have and is better than nothing.
24. I believe I have control over my life and destiny.

### Responsibility to Family

25. It would hurt my family too much and I would not want them to suffer.
26. I would not want my family to feel guilty afterwards.
27. I would not want my family to think I was selfish or a coward.
28. My family depends upon me and needs me.
29. I love and enjoy my family too much and could not leave them.
30. My family might believe I did not love them.
31. I have a responsibility and commitment to my family.

**Child-Related Concerns**

- 32. The effect on my children could be harmful.
- 33. It would not be fair to leave the children for others to take care of.
- 34. I want to watch my children as they grow.

**Fear of Suicide**

- 35. I am afraid of the actual "act" of killing myself (the pain, blood, violence).
- 36. I am a coward and do not have the guts to do it.
- 37. I am so inept that my method would not work.
- 38. I am afraid that my method of killing myself would fail.
- 39. I am afraid of the unknown.
- 40. I am afraid of death.
- 41. I could not decide where, when and how to do it.

**Fear of Social Disapproval**

- 42. Other people would think I am weak and selfish.
- 43. I would not want people to think I did not have control over my life.
- 44. I am concerned about what others would think of me.

**Moral Objections**

- 45. My religious beliefs forbid it.
- 46. I believe only God has the right to end a life.
- 47. I consider it morally wrong.
- 48. I am afraid of going to hell.

### **Reasons for Life Scale - Revised (RFLS-R)**

(Adapted from the Reasons for Life Scale; Allen, et al., 2009)

Please rate the following:

3-point Likert scale (1 = Not at All, 2 = Sometimes, 3 = A Lot)

1. My religion teaches me life is valuable.
2. I have courage to face life.
3. Other people say I live my life in a good way.
4. Other people say I am strong and care about other people.
5. I believe I can find solutions to my problems.
6. My family depends upon me and needs me.
7. I love my family so much and want them to be proud.
8. I believe everything has a way of working out for the best.
9. I never want to hurt my family and would not want them to suffer.
10. Other people say good things about me.
11. I believe God has a place for me.
12. Influential people who helped me learn core values teach me that life is valuable.

### **Sample Items: Adult Suicidal Ideation Questionnaire (ASIQ)**

(Reynolds, 1991)

1. I thought it would be better if I was not alive
2. I thought about killing myself
3. I thought about how I would kill myself

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## Chapter 4

### Results

The sample contained significant numbers of individuals with suicidality. Based on scores from the first SBQ-R item, 44% of the sample ( $n = 51$ ) reported having had a brief passing thought about suicide, while 17.2% ( $n = 20$ ) reported having had a suicide plan during their lifetime. Participants who attempted suicide at some point in their lives made up 9.5% ( $n = 11$ ) of the sample. This sample had higher rates compared to national statistics for emerging adult college students, where 7% had a plan and 2% had at least one attempt in the past year (Brener et al., 1999). Additionally, 12.1% ( $n = 14$ ) were identified as having been actively thinking about suicide at the time of data collection, based on ASIQ scores above the clinical cut-off (at or above 31; Reynolds, 1991). Table 4.1 shows the mean, standard deviations, and intercorrelations of the study's variables based on the various measures.

#### 4.1 Internal Structure of the RFLS

**4.11 Sample suitability for factor analysis.** Before we examined the factor structure of the 12-item RFLS-R, we assessed our sample's suitability for factor analysis. The KMO measure of sampling adequacy yielded a result of .81, well above the .50 level considered to be suitable for factor analysis (Tabachnik & Fidell, 2007). Bartlett's test of sphericity showed significance at  $p < .001$ , also indicating that our data were suitable for factor analysis (Tabachnik & Fidell, 2007). The RFLS-R demonstrated adequate internal consistency (Cronbach's alpha = .80).



Table 4.1

*Means and Standard Deviations of Reasons for Life Scale - Revised Items*

Item	<i>M</i>	<i>SD</i>
1. My religion teaches me life is valuable	2.34	.83
2. I have courage to face life	2.81	.39
3. Other people say I live my life in a good way	2.84	.39
4. Other people say I am strong and care about other people	2.77	.48
5. I believe I can find solutions to my problems	2.72	.47
6. My family depends upon me and needs me	2.46	.62
7. I love my family so much and want them to be proud	2.78	.51
8. I believe everything has a way of working out for the best	2.63	.54
9. I never want to hurt my family and would not want them to suffer	2.85	.42
10. Other people say good things about me	2.77	.42
11. I believe God has a place for me	2.18	.84
12. Influential people who helped me learn core values teach me that life is valuable	2.61	.62

**4.12 Exploratory factor analysis.** An EFA was conducted on the 12 remaining RFLS-R items. Results of the factor analysis showed four factors with eigenvalues greater than one. However, examination of the scree plot showed that only one factor rose above the level where the other factors were relatively even (see Figure 4.1). Finally, factor interpretability was examined and only one factor could be adequately interpreted. The other three factors that emerged from this initial EFA (i.e., those with eigenvalues greater than one) had items with either very low factor loadings ( $< .30$ ), had only one or two highly loaded items, or had items that loaded on multiple factors despite oblique rotation (see Table 4.2).

Based on the results of the scree plot a single factor solution was then examined. This single factor accounted for 33.69% of the variance among scale items (see Table 4.3). The one factor solution showed that three items loaded at .60 or above. Two of these items were concerned with family as reasons for life, while the other involved a belief that everything would work out for the best. Four items loaded between .50 and .59 these items were related to positive beliefs about self, belief in God, and the positive effect of influential people (the reworded item

based on Elders teaching that life is valuable). The remaining items loaded between .40 and .49. There were no items that loaded at .80 or above, which would have been considered strong indicators of reasons for life. This result suggests that for this sample of emerging adult college students the RFLS did not evidence a strong underlying construct (Tabachnik & Fidell, 2000).

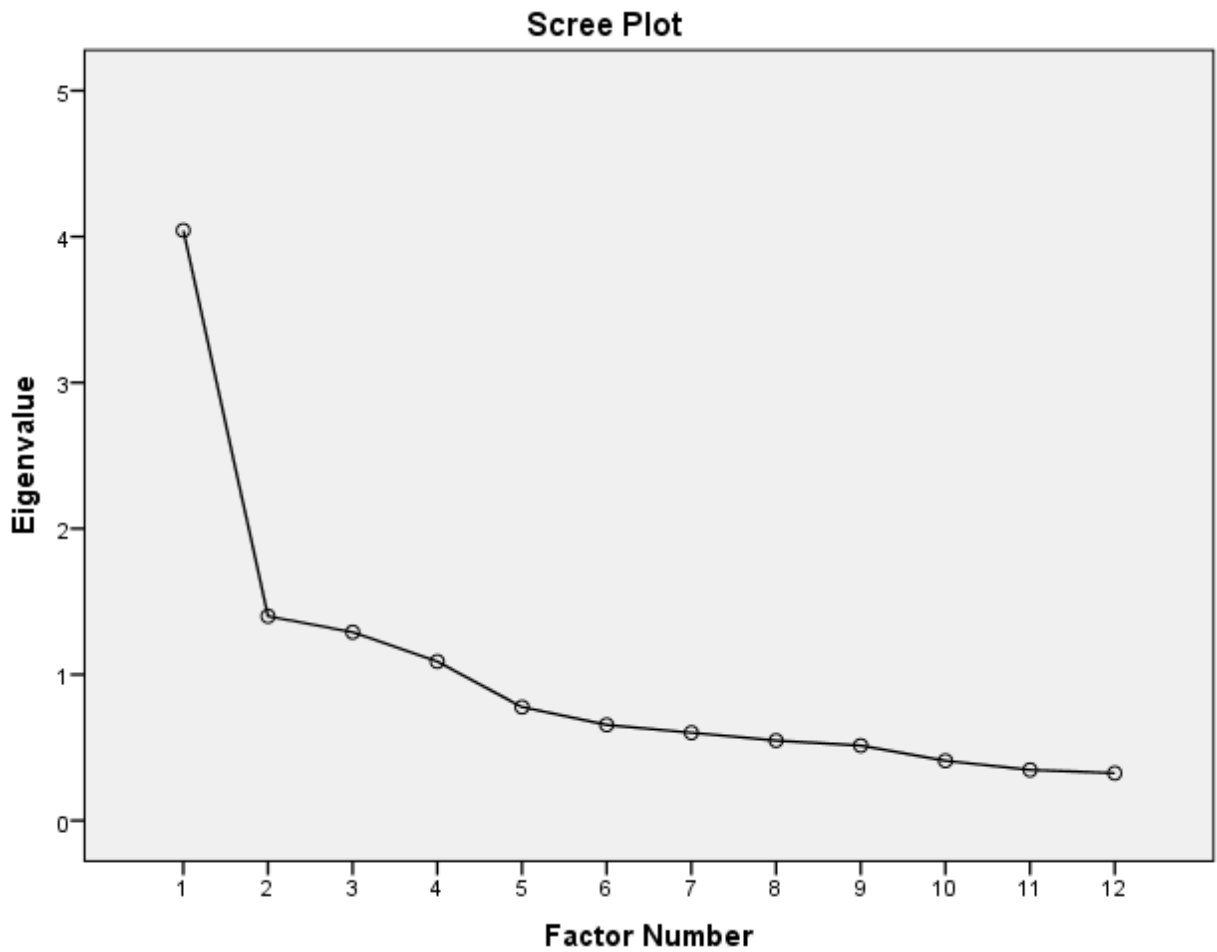


Figure 4.1. Scree plot for the initial principal axis factor extraction of the 12-item Reasons for Life Scale - Revised.

Table 4.2

*Factor Loadings From Initial Principle Axis Factor Analysis: Communalities, Eigenvalues, and Percentages of Variance*

Item	Factor Loading				Communality
	1	2	3	4	
1 (Religion)	.46	.53	.34	.07	.61
2 (Courage)	.47	-.14	.07	-.43	.43
3 (Good life)	.59	-.48	.35	.13	.72
4 (Strong/Caring)	.42	-.23	.08	.15	.26
5 (Solutions)	.53	-.03	-.03	-.23	.34
6 (Family needs)	.65	-.06	-.35	.16	.57
7 (Family proud)	.69	.08	-.39	-.01	.63
8 (Things work out)	.62	-.03	.17	-.35	.53
9 (Not hurt family)	.45	.18	-.48	.01	.47
10 (Others say good)	.46	-.30	.07	.23	.36
11 (God has place)	.55	.51	.27	.12	.65
12 (Influential people)	.56	.00	.02	.18	.35
Eigenvalue	4.04	1.40	1.29	1.09	
% of variance	33.69	11.67	10.76	9.08	

Table 4.3

*Summary of Items and Factor Loadings for One-Factor Solution to the Reasons for Life Scale-Revised*

Item	Factor Loading	Communality
7. I love my family and want them to be proud	.68	.51
6. My family depends upon me and needs me	.65	.45
8. I believe... working out for the best	.61	.39
12. Influential people... teach me that life is valuable	.58	.30
3. Other people say I live my life in a good way	.54	.44
5. I believe I can find solutions to my problems	.54	.29
11. I believe my God has a place for me	.50	.45
2. I have courage to face life	.46	.27
10. Other people say good things about me	.45	.29
4. Other people say I am strong willed and care...	.43	.23
9. I never want to hurt my family...	.43	.34
1. My religion...teaches me that life is valuable	.41	.42

#### 4.2 Convergent Validity

There was a large positive correlation between the seven-item RFLS-R and the RLI total score ( $r = .66, p < .001$ ; see Table 4.4). The RFLS-R demonstrated a significant relationship with the RLI subscales except for Fear of Suicide (see Table 4.5). The largest relationships were between the RFLS-R and Survival and Coping Beliefs ( $r = .58, p < .001$ ), Responsibility to Family ( $r = .59, p < .001$ ), and Moral Objections ( $r = .48, p < .001$ ). Moderate relationships were found between RFLS-R and Child Concerns ( $r = .38, p < .001$ ) and Fear of Social Disapproval ( $r = .32, p < .001$ ). Fear of Suicide had an insignificant but relationship with RFLS-R scores ( $r = .18, p = .06$ ).

Table 4.4

*Summary of Intercorrelations, Means, and Standard Deviations for Scores on the Reasons for Life Scale-Revised (RFLS-R), Reasons for Living Inventory (RLI), Adult Suicidal Ideation Questionnaire (ASIQ), Suicidal Behavior Questionnaire-Revised (SBQ-R), and the Balanced Inventory of Desirable Responding (BIDR)*

Measure	1	2	3	4	5	<i>M</i>	<i>SD</i>
1. RFLS-R	–	.66**	-.27**	-.33**	.30**	31.74	3.82
2. RLI		–	-.43**	-.47**	.24*	227.45	27.89
3. ASIQ <sup>a</sup>			–	.73**	-.31**	16.08	15.77
4. SBQ-R				–	-.24*	6.04	2.98
5. BIDR					–	12.77	5.95

<sup>a</sup> Correlations were calculated using the log transformed variable, while the mean and standard deviation shown represent the untransformed variable.

\* $p \leq .01$ . \*\* $p \leq .001$

The RFLS-R showed significant negative correlations with the ASIQ ( $r = -.27, p = .001$ ) and the SBQ-R ( $r = -.33, p < .001$ ). The moderate negative correlations indicated that as RFLS-R scores increased, SBQ-R and ASIQ scores decreased. This was expected in that stronger reasons for life should have an inverse relationship with suicidal ideation and risk. However, the relationships between reasons for life and suicidal ideation and risk were relatively weak, moderate correlations.

Table 4.5

*Summary of Intercorrelations Between Reasons for Life Scores and Reasons for Living Inventory Subscale Scores*

RLI Subscale	2	3	4	5	6	RFLS-R
1. Survival & Coping Beliefs	.52***	.26**	.18*	.15	.16	.58***
2. Responsibility to Family	–	.50***	.33***	.44***	.28**	.59***
3. Child-Related Concerns		–	.16	.22*	.32***	.39***
4. Fear of Suicide			–	.50***	.18*	.18
5. Fear of Social Disapproval				–	.39***	.32***
6. Moral Objections					–	.48***

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

The sample was broken up into groups based on Item 1 of the SBQ-R, with a score of 1 indicating no history of suicidal thoughts or behavior ( $n = 34$ ) and any other score indicating a history of ideation and/or attempts ( $n = 82$ ; see Table 4.6). A one-way ANOVA was conducted to analyze any potential difference in RFLS-R scores for participants with and without a history of suicidal ideation or behavior. The ANOVA was not significant,  $F(2, 27) = 3.74$ ,  $p = .06$ , (see Table 4.7).

Table 4.6

*Means and Standard Deviations of Reasons for Life Scores by Group*

Group	<i>M</i>	<i>SD</i>
History of Ideation and/or Behavior	31.30	4.11
No History of Ideation or Behavior	32.79	2.78

Table 4.7

*One-Way Analysis of Variance Summary Table for the Effect of History of Suicide Risk on Reasons for Life*

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between-group	1	53.31	53.31	3.74	.056

There were moderate negative correlations between the RLI and both the SBQ-R ( $r = -.47, p < .001$ ) and ASIQ ( $r = -.43, p < .001$ ). The RLI demonstrated the same inverse relationship between reasons for living and suicidal ideation and behavior as was seen with the RFLS-R, but the relationships were stronger for the former. As was expected, ASIQ scores showed a large correlation with SBQ-R scores ( $r = .73, p = .01$ ) as both instruments measure suicidality.

When the correlations between the RLI and RFLS-R and other measures of suicidality were compared, the RLI showed a stronger association with these measures (see Table 4.4). This difference becomes particularly apparent when the variance shared by the measures is examined. The RFLS-R accounts for 7.3% of the variance in the ASIQ while the RLI accounted for 11.2% more variance at 18.5%. For the SBQ-R, the RFLS-R accounts for 10.9% and the RLI accounts for 22.1%, or 10.2% more variance. The variance accounted for shows there is a difference in how well these measures are predicting suicidal ideation and suicide risk, and suggests that the RLI outperformed the RFLS-R in this regard.

Socially desirable responding (BIDR scores) showed a similar pattern of relationships with the measures of reasons for life or living and suicidality. There was a significant correlation between the RFLS-R and BIDR total score ( $r = .30, p = .001$ ), indicating a moderate relationship between endorsement of reasons for life and socially desirable response patterns. Similarly, there was a small correlation between RLI and BIDR ( $r = .24, p = .01$ ). Socially desirable responding demonstrated a medium negative correlation with ASIQ ( $r = -.31, p = .001$ ) and a small negative correlation with the SBQ-R ( $r = -.24, p < .01$ ). Desirable response patterns showed a similar,

fairly weak relationship with each of the measures. This result showed that each of the four suicide-related measures evoked roughly the same amount of socially desirable response sets in our sample, with relationships ranging from small to medium. Whether there was direct questioning about recent suicidal ideation (ASIQ) and suicidal behavior (SBQ-R), questioning about reasons for living and not committing suicide, or reasons for life with no mention of suicide, there was little difference in the effect of socially desirable responding. This may be the first indication that a positive approach to suicide risk assessment is not needed to overcome positive response biases that may be associated with perceived stigma among emerging adult college students, or it may mean that there is a baseline for socially desirable responding that is not lowered through the evaluation of positive rather than negative traits.

BIDR results for this sample were similar when compared to those of the original BIDR study (Paulhus, 1991). In the current study, both men ( $M = 7.0$ ,  $SD = 3.6$ ) and women ( $M = 6.4$ ,  $SD = 3.6$ ) scored somewhat lower on the SDE subscale than the original sample ( $M = 7.5$  and  $6.8$ ,  $SD = 3.2$  and  $3.1$ , respectively; Paulhus, 1991). On the IM subscale, men ( $M = 6.3$ ,  $SD = 3.9$ ) and women ( $M = 6.1$ ,  $SD = 3.5$ ) in the current sample scored somewhat higher than the original ( $M = 4.3$  and  $4.9$ ,  $SD = 3.1$  and  $3.2$ , respectively), though not nearly as high when the original sample was instructed to play up their good points ( $M = 10.5$  and  $10.9$ ,  $SD = 4.1$  and  $4.2$  respectively).

### **4.3 Mediation Analyses**

The inverse relationship between reasons for life (RFLS-R scores) and suicidal ideation (ASIQ) was examined for the potential mediating effect of socially desirable response patterns (see Figure 4.2). A bias-corrected bootstrapping approach was used in order to test the significance of the *ab* path (indirect effect). The mediation model accounted for a significant portion of the variance in suicidal ideation ( $R^2 = .13$ ,  $p < .001$ ). Scores from the RFLS-R were



found to be inversely related to recent suicidal ideation (*c* path;  $B = -.07$  [.02],  $t(115) = -2.99$ ,  $p < .01$ ). RFLS-R scores were found to have a positive relationship with socially desirable responding (*a* path;  $B = .46$  [.14],  $t(115) = 3.33$ ,  $p < .01$ ). Socially desirable response patterns were inversely related to suicidal ideation while controlling for RFLS-R scores (*b* path;  $B = -.04$  [.02],  $t(115) = -2.78$ ,  $p < .01$ ). Bias-corrected bootstrap results for the indirect effect (*ab* path) revealed that socially desirable responding was a significant mediator in the relationship between RFLS-R scores and recent suicidal ideation ( $z = -2.07$ ,  $p = .039$ ). After controlling for socially desirable responding the direct relationship between reasons for life and recent suicidal ideation remained significant (*c'* path;  $B = -.05$  [.02],  $t(115) = -2.11$ ,  $p < .05$ ), suggesting that social desirability did not completely mediate the association found between the RFLS-R and the ASIQ.

The potential for socially desirable response patterns to mediate the inverse relationship between reasons for life and history of suicidal behavior was also examined. The mediation model accounted for a significant portion of the variance in suicidal ideation ( $R^2 = .13$ ,  $p < .001$ ). Scores on the RFLS-R were found to be inversely related to history of suicidal behavior (*c* path;  $B = -.25$  [.07],  $t(115) = -3.77$ ,  $p < .001$ ). RFLS-R scores were found to have a relationship with socially desirable responding (*a* path;  $B = .46$  [.14],  $t(115) = 3.33$ ,  $p < .01$ ). Socially desirable response patterns were not significantly related with history of suicidal behavior when controlling for RFLS-R scores (*b* path;  $B = -.08$  [.05],  $t(115) = -1.72$ ,  $p = .089$ ). Bias-corrected bootstrap results for the indirect effect (*ab* path) revealed that socially desirable responding was not a significant mediator in the relationship between RFLS-R scores and history of suicidal behavior ( $z = -1.82$ ,  $p = .07$ ). After controlling for socially desirable responding the direct relationship between reasons for life and recent suicidal ideation remained significant (*c'* path;  $B = -.22$  [.07],  $t(115) = -3.11$ ,  $p < .01$ ).

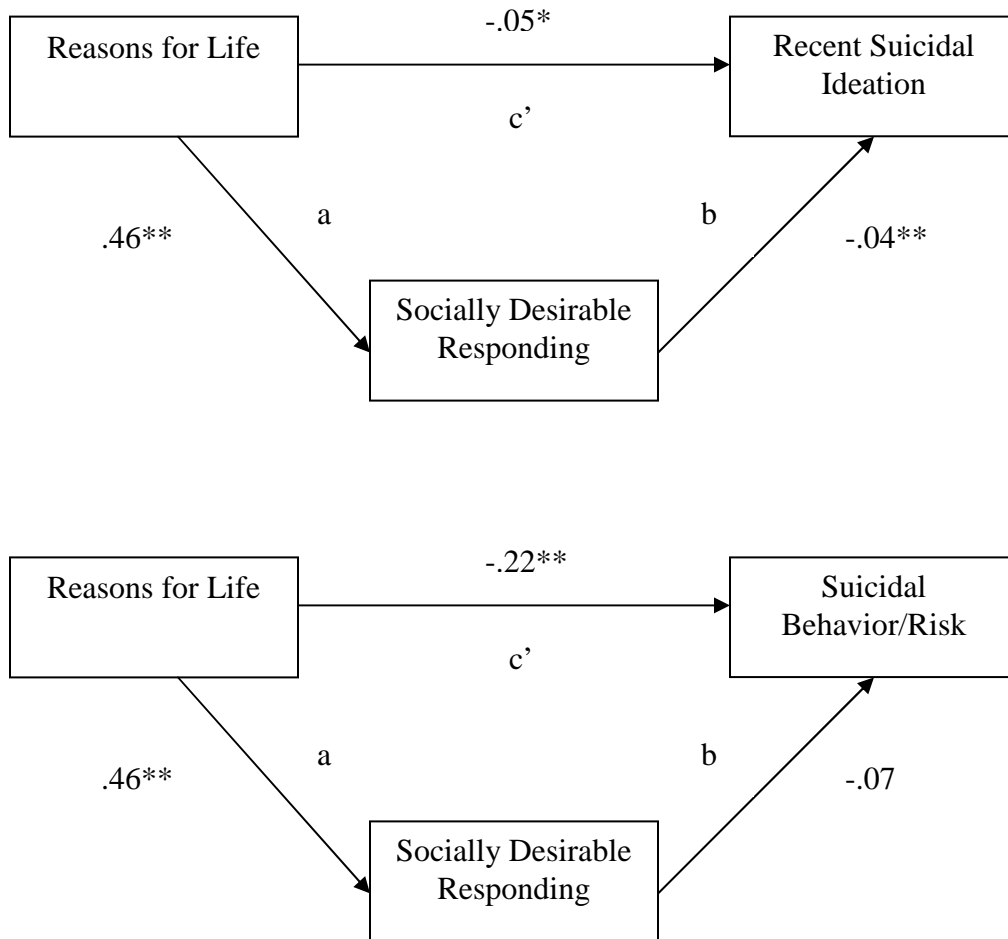


Figure 4.2. Mediating effect of socially desirable response patterns on the inverse relationships between reasons for life, recent suicidal ideation, and suicidal behavior/risk. Depicted above are the unstandardized regression coefficients for each path of the mediation models.

\*  $p < .05$ . \*\*  $p < .01$ .



## **Chapter 5**

### **Discussion**

#### **5.1 Functioning of Reworded RFLS Items**

The focus group provided rewording for the two RFLS items that are specific to Alaska Native culture. Alaska Native students appeared to describe their understanding of the items in a way that the non-Native students could understand, but it was challenging for non-Native students to find equivalent meaning for non-Native people.

The first item, “People say I live my life in a Native way,” was translated as “People say I live my life according to my cultural traditions.” The focus group felt that this was a reasonable rewording of the concept, but were unsure if all students would grasp the meaning. The majority of participants in the main study did not endorse this item, indicating that either the focus group was unable to capture an accurate translation or the concept of a culturally-oriented reason for life was not meaningful to our sample.

The other item revised by the focus group, “My Elders teach me that life is valuable,” was translated as the much longer “Influential people that helped me learn core values teach me that life is valuable.” This item performed well with emerging adult college students, with the fourth highest factor loading in the one-factor solution. It appears that this item was important for our sample of students.

#### **5.2 Factor Structure of the RFLS-R**

The RFLS was designed for use with Alaska Native youth. However, the only published research thus far describes its factor structure but provides no comparison to other measures. The original RFLS study found four factors with Alaska Native youth: Family Responsibility, Cultural and Spiritual Beliefs, Others’ Assessment of Me, and Personal Efficacy (Allen et al.,

2009). This was consistent with the intended design of the scale: to adapt items important to Alaska Native people in the measure of reasons for living, as put forth by the advisory group.

For emerging adult college students, 11 of the original 13 reasons for life were retained for use, with one additional item included that was reworded based on the input of the focus group. The new 12-item Reasons for Life Scale – Revised (RFLS-R) was found to have a one-factor structure with emerging adult college students, unlike the four-factor structure that was found with Alaska Native youth.

Age and culture likely played a part in the difference in factor structure between the two samples. The original research in which the RFLS's factor structure was assessed consisted of a sample of Alaska Native youth (ages 12 to 18), while the current sample was made up primarily of White college students. The difference in factor structure could be explained simply as the difference in belief patterns of Alaska Native adolescents and of mostly White emerging adult college students.

### **5.3 Convergent Validity of the Reasons for Life Scale – Revised (RFLS-R)**

**5.31 Relationship with reasons for living.** Reasons for life scores, as measured by the revised 12-item RFLS-R, showed a strong relationship with reasons for living, as measured by the total score on RLI. This relationship was consistent with the hypothesis that the two scales measure similar constructs. It is noteworthy that only one other study has examined the validity of any version of a “reasons for living” scale through comparison to the RLI. That study compared the Brief Reasons for Living Inventory (BRLI) with its longer parent measure, the RLI (Ivanoff et al., 1994); however, the BRLI is directly derived from the RLI items with no items added or modified. This makes it difficult to compare current results to previous findings. In the current study, the correlation between the RFLS-R and RLI was strong. These results suggest

that although the RFLS-R makes no direct reference to reasons for living in relation to not committing suicide, while the RLI does, the two scales are measuring a similar construct, despite differences in the content of these scales.

When comparing the RFLS-R to subscales of the RLI, no significant correlation was found with Fear of Suicide, while moderate correlations were found with Moral Objections, Child-Related Concerns, and Fear of Social Disapproval. The RFLS-R showed large correlations with the Survival and Coping Beliefs and Responsibility to Family subscales of the RLI. Interestingly, these two RLI subscales have been shown to have different levels of utility in predicting suicidal threats and self-reported future likelihood of suicidal behavior. A study with the RLI and the SBQ (an older version of the SBQ-R) showed that the Survival and Coping Beliefs subscale was negatively correlated with suicide threats ( $r = -.20, p < .01$ ) and self-ratings of participants' future likelihood of suicide ( $r = -.47, p < .01$ ), suggesting that this subscale of the RLI is particularly useful for indicating risk for suicidal behavior when compared with its other subscales (Osman et al., 1991). Given the RFLS-R's strong correlation with the Survival and Coping Beliefs subscale the RFLS-R may be measuring particularly important reasons for not engaging in suicidal behavior. However, the RFLS-R was also highly correlated with the RLI's Responsibility to Family subscale. This subscale has not been found to be significantly correlated with suicidal ideation, threats, or self-rated likelihood of suicide in the future (Osman et al., 1991). Previous findings regarding the differential utility of the RLI subscales to predict suicidal behavior suggests that some of the RFLS-R items may be more useful (those related to Survival and Coping Beliefs) in predicting suicidality than others (those related to Responsibility to Family), although future studies that directly examine the item functioning of the RFLS-R are needed.

Fear of Suicide, as measured by the RLI, was not significantly correlated with the RFLS-R. However, Fear of Social Disapproval had a moderate relationship with reasons for life. This indicates that though the RFLS-R does not directly reference fear-related items, as we would expect from a positively-worded scale, it still has some relationship with Fear of Social Disapproval in relation to reasons for living. This provides further evidence that the RFLS-R is relatively unique among measures of reason for living. It measures aspects of life that are generally considered positive, while appearing to maintain the ability to measure reasons for living/life. Overall, based on correlations with the RLI and item content, it appears that the RFLS-R is able to tap positive beliefs primarily related to the ability to survive and cope and a connection to family that are related to reasons a person would choose not to commit suicide when considering it.

**5.32 Relationship with suicide measures.** Consistent with the original hypothesis, the RFLS-R and recent suicidal ideation were inversely related, but the relationship was not as strong as found for reasons for living, as measured by the RLI. This suggests that reasons for life, as measured by the RFLS-R, did not perform quite as well as the RLI in identifying those with suicidal ideation. This same pattern was seen with reasons for life and suicide risk, as measured by the SBQ-R.

Scores on the RFLS-R were not significantly higher among participants with no history of suicidal ideation or behavior than for those with such a history. This shows that the RFLS-R was not able to clearly differentiate between people based on history of suicidal ideation and/or behavior in our sample.

Overall, with emerging adult college students it appears that the RFLS-R shows evidence of convergent validity; however, the results of this study bring into question the utility of this

scale relative to the RLI. While the RFLS-R was strongly related to the RLI, providing evidence that it does measure a similar construct to reasons for living, in this study it did not predict suicidal ideation or risk as well as the RLI. The RLI accounted for significantly more of the variance in scores on the suicide measures when compared with the RFLS-R, indicating that without direct reference to the concept of suicide there is the potential for a loss of predictive ability. This could be problematic in situations where suicide assessment needs to be as accurate as possible, such as in a mental health clinic or crisis center. However, it is not unexpected that the RFLS-R would show lower associations with suicide measures than the RLI, specifically because it does not mention suicide in any way. Despite the avoidance of any mention of suicide, the RFLS-R shows evidence of utility in suicide assessment. Context is very important to consider in regard to the utility of the RFLS-R. In situations where direct questioning is acceptable and risk needs to be measured more accurately, it would appear that more direct measures that assess suicide risk would be more appropriate to this task. However, in cases where directly asking about suicidal ideation and history of suicidal behavior, or asking about reasons for not committing suicide, is inappropriate or unacceptable, the RFLS-R may be the most appropriate measure.

This study represents a first look at the convergent validity of a measure to assess protective factors against suicide that contains no mention of suicide, an important new area in suicide research and assessment. These results suggest that the RFLS-R can be used as a tool for the assessment of suicide risk when direct questioning is not desirable; in fact it is the only such measure shown to have convergent validity. This may prove to be important in future research and assessment with communities who are concerned about suicide and do not believe that direct questioning or discussing suicide is appropriate. Further research on this type of suicide



assessment is warranted. Future studies may focus on developing similar instruments with other populations.

**5.33 Impact of socially desirable responding.** In this study, we found small to moderate associations between socially desirable response patterns and responses on measures of reasons for life, reasons for living, suicidal ideation, and suicide risk — with little difference in the magnitude of associations. This is noteworthy, as the RFLS-R avoids any reference to suicide and might be expected to be less associated with socially desirable responding than measures that directly mention or measure suicidal ideation or behavior. However, none of the measures appeared superior to the others in regard to socially desirable response patterns, indicating that for our sample of emerging adult students, directly mentioning suicide provoked no greater tendency for desirable responding than did the RFLS-R, which avoids the topic altogether.

There is very little research on the topic of socially desirable responding and suicide-related measures. The little research that does exist used quite different measures of *social desirability* (a somewhat different concept than socially desirable responding) and focused on patients in acute distress (Holden, Mendonca, & Serin, 1989) and prisoners (Ivanoff & Jang, 1991), samples that are clearly different than that of the current study. Due to the paucity of research for comparison, the typical relationship between social desirable responding and suicide self-report measures is presently unclear. However, the current study suggests that a small to moderate level of socially desirable responding may occur with any suicide-related self-report measure with emerging adult college students – regardless of the avoidance of any reference to suicide. This may suggest that college students are not provoked into higher levels of socially desirable responding when directly asked about suicidal thoughts and behavior. Future research could focus on socially desirable responding and suicide measures with groups that are more

sensitive to direct statements about suicide, such as Alaska Natives, to examine whether a measure such as the RFLS or RFLS-R does have a lesser association with socially desirable responding compared with measures that directly mention suicide.

It is also possible that the consistency among the instruments in relation to socially desirable responding in this study was due to conditions that caused some students to respond in a socially desirable manner across all measures. The presence of others and socially sensitive questions have been linked to socially desirable responding in some people (Aronson, Wilson, & Akert, 2005). In this study all participants were made aware that the research involved suicide-related topics, first during recruitment and again with the informed consent process; this may have resulted in defensive, socially desirable responding across measures. Further, even though the surveys were completed anonymously, there was always a researcher nearby who was instructed to routinely monitor participants visually for signs of distress. There also typically were other students at nearby computers who were also participating in the study. This may have been enough social contact to cause some students to respond in a defensive manner across measures.

Socially desirable response patterns partially mediated the negative relationship between reasons for life and recent suicidal ideation, as measured by the ASIQ. This indicates that part of the reason that RFLS-R scores and ASIQ scores were correlated was due to socially desirable responding. However, these variables were also significantly associated when the mediating effects of such responding were accounted for, with little change in the strength of this association. This suggests that socially desirable responding did not wholly account for the significant relationship between reasons for life and recent suicidal ideation. Interestingly, socially desirable response patterns were not a significant mediator in the relationship between

reasons for life (RFLS-R scores) and suicidal behavior/suicide risk (SBQ-R scores).

Unfortunately, there is no prior research for comparison, so these disparate results are difficult to interpret.

#### **5.4 Conclusions and Limitations**

It is important to note that in the original study with Alaska Native youth the RFLS was not compared to other suicide-related measures, including the measures of reasons for living, because direct measures of suicide risk were deemed culturally inappropriate. Because of this, other than its factor structure, little is known about the RFLS with the population for which it was designed. The current research with the RFLS-R is the first study to examine reasons for life in comparison to measures of suicidality, as well as the first to explore RFLS factor structure with a different population. It also is the first study to examine convergent validity in a scale of reasons for living that does not mention suicide.

The factor structure of the RFLS was different with this sample of emerging adult college students than with the original sample of Alaska Native adolescents. The RFLS-R showed one common factor, a general “reason for life” factor based on positive beliefs and a sense of connection with family and others, rather than the original four factors.

With the sample of emerging adult college students, the RFLS-R demonstrated evidence of convergent validity through its relationships with traditional suicide measures and its predecessor, the original Reasons for Living Inventory. Even with the absence of suicide-related language in the RFLS-R, it showed evidence of being a valid measure of suicide risk through examination of positive beliefs. However, it was also shown to not be as strong as the RLI in its associations with the measures of suicidal ideation and risk. The RFLS-R accounted for less of the variance than did the RLI on measures of suicidal ideation and risk with established

predictive validity. Although this scale avoids the use of the term suicide, which may help to avoid reactance associated with asking participants to think of suicide, this appears to weaken its potential as a measure to identify individuals who are at risk for suicide. Overall, based on these findings, the RFLS-R does not appear to improve on the measurement of reasons for living as a way to assess suicide risk among emerging adult college students. However, there may be circumstances in which a measure of reasons for living that does not mention suicide is desirable. This study suggests that the RFLS-R does evidence convergent validity with suicide-related measures.

One obvious problem with the new scale is that there may be other reasons for life for emerging adult college students that were not included as part of the RFLS-R. The CS-RLI is a measure of reasons for living that was specifically developed for college students using items adapted from the original RLI (Westfeld, Cardin, & Deaton, 1992). For the purposes of comparison in regard to item content and subscales, we will consider the CS-RLI in relation to the RFLS-R below.

The CS-RLI contains 46 reasons for living for college students, including items similar to three of the RFLS-R items: belief in ability to cope with problems, others depending on them, and not wanting to hurt family members. Five of the RFLS-R items have less clear connections to CS-RLI items, but may be related to CS-RLI subscales. One RFLS-R item reflects Responsibility to Friends and Family (“I love my family so much and want them to be proud”). Two others reflect Survival and Coping Beliefs (“I believe everything has a way of working out for the best”; “I have courage to face life”). Another item could be seen as a combination of a Survival and Coping Belief and a Responsibility to Friends and Family (“Other people say I am strong-willed and care about others”).

Two items appear to reflect moral concerns (“I believe my God has a place for me”; “My religion or personal beliefs teach me life is valuable”). However, these items are not clearly related to the Moral Objections subscale on the CS-RLI. Each of the Moral Objections subscale items include reference to suicide or ending life, while the RFLS-R items do not. This is one area where the two scales take a different focus on a similar construct.

Interestingly, three other RFLS-R items have less obvious connections to the CS-RLI subscales or items. One item could be seen as connected to family and friends (“Influential people who helped me learn core values teach me that life is valuable”). The others, “Other people say I live my life in a good way” and “Other people say good things about me” could be seen as distantly related to the CS-RLI subscale Fear of Social Disapproval, with the related topic of others’ thoughts. It appears that the Alaska Native community advisory group came up with other reasons for life/living that the CS-RLI research did not produce. This may represent a cultural difference in reasons for life, but given the results of this study, the CS-RLI and other reasons for life/living scales may have overlooked some reasons that may be important to college students and others, namely the positive impact of influential people and the belief that others see them as living a good life.

The CS-RLI does, however, contain items and subscales not directly referenced by the RFLS-R. The CS-RLI’s College and Future Related Concerns subscale contains items such as “I have my career to look forward to” and “I want to put my college degree to good use” (Westfeld, Cardin, & Deaton, 1992); items that are far more specific to college life than RFLS-R items. The CS-RLI also contains subscales based on fear (Fear of Social Disapproval and Fear of Suicide; Westfeld, et al., 1992) that are not directly tapped by the RFLS-R, with the possible exceptions noted above.

Future research could involve creation of a new and perhaps more complete scale of reasons for life among emerging adult college students based on a measure such as the CS-RLI, but that does not directly mention suicide. Given the greater number of items and domains (independent factors) tapped by the CS-RLI, this could provide a more comprehensive assessment of reasons for life.

The Reasons for Life Scale is an important new direction in how we think about assessing suicide risk with Alaska Native youth. However, the RFLS-R does not appear to be as effective as the RLI with emerging adult college students in Alaska based on the results of this study. There are occasions, however, when the RFLS-R may be useful. The RFLS-R and its predecessor, the RFLS, are the only known instruments designed to assess potential suicide risk without mentioning suicide. In situations where concerns regarding suicide-related stigma is a concern, the RFLS-R could be used as a way to avoid such stigma because suicide is never introduced as a topic. However, we did not find that socially desirable responding occurred less with the RFLS-R than with instruments that directly mention suicide, so this associated advantage may be limited.

The RFLS-R may have some clinical utility with patients who are assessed for suicide risk before being discharged from hospitals. Following discharge, the risk of death from suicide is significantly higher than average (Goldacre, Seagrott, & Hawton, 1993; Qin & Nordentoft, 2005). However, patients being discharged are often aware of the fact that their discharge depends on their denial of suicidality. The RFLS-R could be used as part of the discharge battery to help discern potential suicide risk without activating the patient's inclination to deny anything related to suicide. Further research in this area could test this theory and may assist in the development of discharge-specific "reasons for life."

Further, although the seven-item RFLS-R may not have widespread clinical utility, it may be useful for research purposes. The original RFLS was developed for use in communities where direct questioning about suicide risk is not considered appropriate. In such communities, a measure such as the RFLS or RFLS-R may be the only way to conduct suicide-related research. Similarly, a measure that does not directly mention suicide may make some suicide-related research more cost effective and timely. Research with direct measures of suicidal ideation and risk creates the need for more intensive interaction between the researcher and participant, as researchers are typically required to monitor participants for adverse reactions. The RFLS-R does not appear to pose any risk of this nature and, therefore, would likely be approved for use in studies without such monitoring requirements, freeing it for use in Internet studies.

The nature of the sample was one of several limitations of this study. The sample was composed of emerging adult college students in Alaska; therefore the results may not generalize to all American college students, particularly older, non-traditional students.

The study used a convenience sample of primarily psychology students participating for extra credit. Because our sample included mostly students seeking extra credit, the results may not generalize to all students in Alaska's colleges. Finally, our overall sample size was limited. We were not able to recruit a large sample due to limited resources (i.e., monetary incentives could not be offered) and the need to have participants supervised by a researcher given the nature of the study's measures, which had the potential to cause distress. This precluded the use of any type of remote data collection, such as the Internet, which would have facilitated greater participation rates. A larger, more academically diverse sample would have allowed for greater generalization of the study's results. Studies with larger samples are needed to further examine the factor structure of the RFLS-R.

Even with these limitations, this study provides a first look at the validity of a measure that could assess suicide risk without asking about suicide, as well as a rare examination of the effects of socially desirable responding on a variety of measures of suicidality. Future research in both of these areas may help refine our understanding of ways to assess suicide risk.





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