Suicidal ideation in emerging and young adults: Latent profile analysis of risk and protective factors in a nationally representative sample

by

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B.S., Arizona State University, 2011
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AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

Department of Family Studies and Human Services
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Abstract

Each year in the United States, 40,000 individuals die by suicide, 7,000 of whom are young adults between the ages of 25-34. For every death, it is estimated that another 25 suicide attempts are made and that over 8% of young adults experience thoughts of suicide each year. Suicide rates are climbing, but identification of protective factors to reduce suicide risk remains elusive. Using a sample of 4,208 young adults from the National Longitudinal Study of Adolescent to Adult Health, a latent profile analysis was used to test the number of profiles that best fit the data based on indicators that were hypothesized to be risk or protective features, and those profiles were analyzed using logistic regression to assess suicide risk. Hypothesized protective indicators included parent and romantic relationship quality, parental satisfaction, job satisfaction, and religiosity. Hypothesized risk indicators included parental demands, depressive symptoms, job demands, isolation, alcohol use, and adverse childhood experiences. A four-profile solution was optimal for this data and yielded four distinct profiles named: Satisfied with Life (n = 2,442), Relationship Stress (n = 669), Demanding Jobs (n = 658), and Challenging Childhood (n = 427). Individuals in the Satisfied with Life profile reported positive relationship quality with parents, partners, and children, and low depressive symptoms, isolation, and adverse childhood experiences. This profile was associated with a 60% decrease in risk for suicidal ideation. Participants in the Relationship Stress profile reported low relationship satisfaction, lack of confidence that their romantic relationship was going to be permanent, and high alcohol consumption. Individuals in this profile were 104% more likely to experience suicidal ideation compared to those not in this profile. The Demanding Jobs profile included individuals who felt their work interfered with their family time, and vice versa, but still had moderately high satisfaction in each area. This profile was not significantly associated with suicidal ideation. The

final profile, Challenging Childhood, included individuals who reported low quality of relationships with their parents, high levels of isolation and depressive symptoms, and significantly higher adverse childhood experiences than other individuals in this sample. Individuals in this profile were associated with 192% increase in risk for suicidal ideation than those not in this profile. The results of this study underscore the importance of positive relationships as a protective factor against suicide, and provide new information about how job satisfaction and demands can also serve as protective features. Therapeutic interventions that address improving social support, coping with traumatic events, and decreasing alcohol consumption are recommended to decrease suicidal thoughts.

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Approved by:

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Dedication

I dedicate this manuscript to my partner and family, all of whom were critical to my sanity and perseverance. I thank my partner for helping me keep my humor and patience during this program and for reminding me of what is most important. I thank my parents for instilling in me the compassion and work ethic necessary to do the work that I do. I thank my siblings for keeping me grounded and entertained. I appreciate my cats for their constant interruptions for cuddles, which I needed often.

I also dedicate this manuscript to my clients. I have learned so much about humanity, compassion, and myself in the past six years as I pursue my career in marriage and family therapy. My clients have an unlimited amount of bravery for sharing themselves with me, and I humbly thank every one of them for letting me be there with them on their journeys. You are all wonderful and worthy.

Finally, I dedicate this manuscript and the majority of my work to the lives we have lost to suicide. Their struggles were not unnoticed, and my efforts will always be in their service.

Chapter 1 - Statement of the Problem

Suicide in the United States is the second leading cause of death for individuals between the ages of 25 and 34 (CDC, 2016). Each year, over 7,000 of the total 40,000 who die by suicide in the U.S. are within this age bracket. Furthermore, for every person that dies by suicide, it is estimated that 25 attempts are made (CDC, 2016). Although precise prevalence rates are difficult to obtain, current estimates suggest up to 8.3% of young adults experience suicidal ideation each year (Han et al., 2018). However, this is likely an underestimate due to low reporting rates and lack of observable behaviors that indicate suicidal thoughts. Aside from the extremely high financial costs associated with suicide ($69 billion annually), suicide and attempted suicide severely impacts families, friends, and communities (CDC, 2016). Despite suicidal ideation and behaviors increasing in young adults in the U.S., their pursuit of mental health treatment has not increased (Han et al., 2018). Thus, this population is facing serious difficulties without professional support, leading to the need to discover other protective means.

Young adulthood is a tumultuous time for many as they are establishing their identities and relationships (Galambos, Barker, & Krahn, 2006; Schulenberg, Maggs, & O'Malley, 2003). The exit from adolescence, where social support and relationships are often ingrained and predictable, comes with transitions into new environments where structured social integration is significantly reduced, which can lead to real or perceived isolation (Durkheim, 1897/1951). Isolation, or lack of belonging, is identified as a significant motivation for suicide (Joiner, 2005); thus, identifying and incorporating additional protective factors that reduce isolation, such as increased feelings of belonging to parents, partners, and peers, remains a priority as a potential pathway to reduce the rate of suicide in individuals in emerging adulthood and young adulthood.

The proposed method of identifying protective factors for this high-risk age group is to create latent profiles of individuals who do and do not have suicidal ideation. This latent profile analysis will include individuals between the ages of 24-32 years old (N = 5,114) from the public-use National Longitudinal Study of Adolescent to Adult Health data set (Add Health; Harris et al., 2009). Risk factors have previously been identified in abundance (e.g., Han et al., 2016; McLean, Maxwell, Platt, Harris, & Jepson, 2008; WHO, 2014), but knowledge about how protective factors offset risk factors, or specific characteristics of individuals who are at greater or lesser risk, is less consistent. By including common risk factors and potential protective factors in this secondary analysis, latent profiles can be identified that describe to what extent protective factors outweigh risk factors and thereby may decrease the likelihood of future suicidal behaviors. This is an important area to study as new profiles of people can be identified who may be at greater risk, which can be helpful in preventing and treating those at various levels of risk. To date, no latent profile analysis has been conducted assessing risk and protective factors for suicidal ideation in the young adult population. This study will add to existing literature about suicide prevention in this population and will contribute helpful clinical implications for working with suicidal young adults.

Chapter 2 - Literature Review

In the past two decades, theoretical explanations have emerged that describe how and why individuals die by suicide. The most predominant suicide theory is the Interpersonal Psychological Theory of Suicide (IPTS; Joiner, 2005), which proposes motivations for and capability for suicide. Common risk and protective factors for suicidal thoughts and behaviors have been identified as a result of this theoretical framework. Demographic risk factors have been identified based on previous suicides and studies on those that have attempted or have ideation. I hope to add to existing literature on protective factors against suicidal ideation.

Theoretical Framework

Interpersonal Psychological Theory of Suicide

A leading theory of suicidal ideation and behavior is the Interpersonal Psychological Theory of Suicide (IPTS; Joiner, 2005). The IPTS explains that motivation for suicide stems from two primary domains, thwarted belongingness and perceived burdensomeness. The third domain, acquired capability, explains a person's capacity and propensity to make a suicide attempt. In this conceptualization, an individual is not perceived to be at risk for suicide unless they are experiencing all three of these domains (Joiner, 2005). For instance, an individual may be experiencing motivation for suicide (thwarted belongingness and/or perceived burdensomeness), but would not be theorized to act on this motivation without acquired capability. Similarly, an individual with acquired capability would not be assumed to act without also having motivation for suicide. Each of the domains of IPTS is expanded upon below.

Thwarted belongingness. Thwarted belongingness originates from the individual feeling alienated from family, a partner, peers, or society at large (Joiner, 2005). Individuals that are experiencing thwarted belongingness often report feeling lonely and socially isolated. This

feeling of disconnect has proven to be a strong motivator for suicidal behavior (Boardman, Grimbaldeston, Handley, Jones, & Willmott, 1999; Conner, Britton, Sworts, & Joiner, 2007). In young adult samples, thwarted belongingness is consistently related to suicidal ideation, particularly when perceived burdensomeness is also present (Joiner et al., 2009; Van Orden, Witte, Gordon, Bender, & Joiner, 2008). Lack of regular contact with others has been found to be a contributor for thwarted belongingness. For example, college students tend to experience higher rates of suicide during the summer months, when the campus is least active and they are more disconnected from their peers and no longer as involved in campus activities (Van Orden et al., 2008). More consistent and close connection to parents, romantic partners, and peers are hypothesized to be a significant protective factor of suicide ideation.

Perceived burdensomeness. Individuals who feel they are not contributing to others in some way, or feel they are actively detracting from their families, friends, or society, are expected to experience what has been labeled perceived burdensomeness (Joiner, 2005). The need to contribute to or enhance the lives of others is so strong that those who believe they are not contributing feel as though they are then burdening others. When perceived burdensomeness is present, individuals often feel as though their family or society would be better off if they were dead. Perceived burdensomeness has been associated with unemployment (Brown, Beck, Steer, & Grisham, 2000; Heikken, Aro, & Lönnqvist, 1994), impairment in functioning (Conwell et al., 2010; Conwell et al., 2000), and family discord (Duberstein, Conwell, Conner, Eberly, & Caine, 2004; Heikken et al., 1994) due to each of these having an impact on an individual's perception of their ability to contribute. Perceived burdensomeness as a desire for suicide was found in an evaluation of suicide notes (Joiner et al., 2002) and in studies examining current suicidal ideation and past attempts (Van Orden, Lynam, Hollar, & Joiner, 2006). In this study, job satisfaction and

demands and satisfaction in current relationships are included as potential protective factors against suicidal ideation in young adults.

Acquired capability. The domain of IPTS that describes how individuals act on suicidal motivation is acquired capability. Acquired capability is the result of prolonged or sustained exposure to psychological or physical pain, ultimately resulting in habituation to pain and decreased fear of death (Joiner, 2005). Acquired capability can stem from previous traumatic experiences, such as neglect, abuse, or exposure to war, but can also stem from habituation to methods that could lead to suicide, such as substance use, familiarity with firearms, awareness of toxic and/or lethal doses of medications (such as doctors or veterinarians), and ability to tie nooses (Joiner, 2005). What displays the highest degree of acquired capability is a previous attempt or rehearsal of a suicide. Previous suicide attempts remains one of the strongest indicators of a future attempt (Brown et al., 2000; Joiner et al., 2005; Van Orden et al., 2008) due to its indication that the individual has acquired capability (Joiner, 2005). When an individual has both the motivation for suicide (i.e., thwarted belongingness and perceived burdensomeness) and acquired capability, they are at high risk for suicide.

Risk and Protective Factors

Risk factors

Aside from the risk factors identified for motivation and capability for suicide identified by IPTS, such as isolation (Joiner, 2005; Joiner et al., 2009), there are also common demographic risk factors associated with suicides in young adult populations. Risk factors for dying by suicide include being male (CDC, 2016), being unemployed (Hooven, Snedker, & Thompson, 2012; McLean et al., 2008), being Native American or Hispanic (CDC, 2016), military service (Anglemyer, Miller, Buttrey, & Whitaker, 2016), and handgun ownership (Anestis & Houtsma,

2018). Other risk factors for suicide in young adulthood include specific mental health diagnoses, the most common of which are mood disorders, including major depressive disorder and bipolar disorder (Fleischmann, Bertolote, Belfer, & Beautrais, 2005; McLean et al., 2008; WHO, 2014), substance-related disorders (Goldston et al., 2009; Pompili et al., 2010), and disruptive behavior and personality disorders (Fleischmann et al., 2005).

Previously identified risk factors for suicidal ideation include being female, having low education and income (Nock et al., 2008; Turecki & Brent, 2016), and being unemployed (Olfson et al., 2017). However, recent increases in suicidal ideation in young adults have been identified in individuals that are higher in socioeconomic status (e.g., higher income, enrolled in college, and working full-time; Han et al., 2018), suggesting a change in circumstances or motivation for suicide compared to previous generations. As individuals are increasingly at risk even when they are involved in work, more information is needed regarding how or why that ceases to be a protective factor. Further, new prevalence rates identified more individuals without histories of major depressive disorders were experiencing additional attempts and ideation than previous generations (Han et al., 2018). These changes in circumstances and rates of suicide in previously undiagnosed individuals indicates that there may be a shift in what motivates individuals for suicide and a need for ongoing research into risk factors. Finally, living alone is risk factor for suicidal ideation in elderly adults (Chang, Chan, & Yip, 2017), but this is an untested in young adulthood and thus will be included in this study as a hypothesized risk factor.

A relatively new effort is being made to identify how childhood maltreatment is related to the development of suicidality later in life, particularly via the aforementioned disorders (Brent, 2011; Nock, 2012). Based on the impact child maltreatment has on attachment and feelings of

connection to others (Cook et al., 2017; Dunn, McLaughlin, Slopen, Rosand, & Smoller, 2013), it has significant implications for later relationships and the possible development of motivations for suicide outlined by IPTS, thwarted belongingness or perceived burdensomeness, as well as increased capability for suicide (Joiner, 2005; Van Orden et al., 2010). Adverse childhood experiences (ACEs) are common predictors of later suicidal thoughts or behaviors (Felitti et al., 1998; Fuller-Thompson, Baird, Dhrodia, & Brennenstuhl, 2016).

Protective factors

As described previously, protective factors against suicidal ideation that have consistently been identified are limited. The IPTS addresses the protective role of belonging and lack of perceived burdensomeness (Joiner, 2005; Van Orden et al., 2010), and multiple studies in young adulthood incorporate these concepts. For instance, connection with peers in college settings appears to buffer suicidal ideation (Van Orden et al., 2008). Social adjustment of young adults, including personal relationships and family life, is also associated with decreased suicidal thoughts (Kelly et al., 2018). Social support from friends, family, parents, or others is frequently found as a protective factor against suicide in young adult populations (Wetherall et al., 2018; WHO, 2014). Satisfaction in relationships, such as with a romantic partner (Till, Tran, & Niederkrotenthaler, 2016) and parenting (Qin & Mortensen, 2003), increase sense of belonging and thus are associated with decreased suicidality. Religiosity has also been found to be a significant protective factor against suicidality (Wu, Wang, & Jia, 2015), due to its potential for providing social support, organization or structure, empowerment, and/or a sense of purpose (Koenig, 2012).

Job quality is a relatively unstudied component of suicide in this population. Durkheim (1897/1951) proposed that jobs provide social integration and regulation and provide purpose in

life, which reduces motivation for suicide. Although numerous studies have been conducted examining job loss and suicide, few studies in recent years have included potential for job variables as protective factors against suicidality, such as job satisfaction, goals, and work-life balance. Job satisfaction has previously been associated with feelings of belonging (Collins & McDaniel, 2000), but has not yet been associated with other risk and protective factors for suicide in young adults, where jobs are likely to be their new structured social environment. One recent study examined Add Health participants' and found mediation effects of job variables and suicidal ideation via depression (Howard & Krannitz, 2017), suggesting the important role of jobs in individuals' emotional well-being and increasing the motivation for additional attention to this area.

Latent Profile Analysis

As research methods have become more sophisticated over time, analyses have progressed to become more robust and refined to match the needs of more complex topics and questions. For topics such as suicide, which have many contributing risk and protective factors, it can be difficult to find a method of analysis that takes into consideration a wide variety of influences, particularly when multiple time points are measured. To conduct the present study, a latent profile analysis was utilized due to its ability to incorporate many different facets of individuals' lives over time with a viable method to classify different types of people in respect to their propensity to suicide, and unique risk and protective factors associated with each of these typologies. Latent profile analysis is the process of identifying groups within the data presented. It is especially useful when there are ideas or assumptions about unique typologies in the population, but that classification has not been examined, nor has the covariates of the various typologies been tested (Oberski, 2016). The benefit of this analysis lies in its ability to highlight

otherwise hidden characteristics of subgroups to better understand how suicidal ideation is influenced and how it changes over time.

The Current Study

The current study sought to describe current and recent characteristics of individuals with and without suicidal ideation. It builds upon previous literature by incorporating known risk (e.g., depression, previous suicide attempts, isolation, and childhood maltreatment) and protective factors, including social support and adjustment (e.g., relationships with parents and partners). Further, this study proposed new potential protective factors, job satisfaction and demands, due to the social structure jobs frequently involve. Each of these variables were included in a latent profile analysis to determine how different risk and protective factors present in different latent profile of participants, and whether specific profiles are better protected against suicide risk than others. The research questions being addressed in this study were:

1. How many profiles of risk and protective factors are the best fit for this sample of young adults, and what are the characteristics of these profiles?
2. Are positive relationships with parents and partners, job satisfaction, low job demands, and low levels of isolation associated with being in a typology of lower suicide risk?
3. Is low relationship quality with parents in adolescence and young adulthood linked with typology of greater suicide risk?

Chapter 3 - Method

Data

This study used Waves 1, 3, and 4 of the public-use data from the National Longitudinal Study of Adolescent to Adult Health (Add Health; Harris et al., 2009). The Add Health project, currently in its fifth wave of data collection, was initiated in 1994 with the intention of collecting longitudinal data from adolescents into adulthood. The Add Health data consists of a nationally representative sample of students and began data collection when students were in grades 7-12 (Waves 1 and 2). The third wave was collected when participants were between the ages of 18-26 years old and the fourth wave was when participants were 24-32 years old. The most recently completed data collection, Wave 4, took place in 2008. Data from Waves 3 and 4 were collected during in-home interviews. Variables from Waves 1 and 4 were predominantly used in this analysis (including one item from Wave 3) to evaluate whether lower quality in relationships in adolescence and young adulthood were associated with increased risk or protective factors for suicidal ideation, and to evaluate how different characteristics of participants were associated with suicidal ideation at Wave 4. Wave 2 was not utilized in this study. For additional information about Add Health's sampling procedures, please reference http://www.cpc.unc.edu/projects/addhealth.

Sampling

Add Health purposefully included a diverse sample of adolescents. The initial 80 high schools targeted were identified based on size, type of school, census region, urbanization level, and the percentage of white students enrolled. Of the originally selected high schools, 52 out of 80 were eligible and agreed to participate. Therefore, an additional 28 schools were matched and included based on characteristics of the 28 that did not participate. High schools were selected

first to assist in identifying the middle schools that would eventually feed into the high schools, reducing potential for attrition at follow-up. Once all high schools and middle/junior high schools were identified and agreed to participate, there were 132 schools total participating with a total of 90,118 students. In the public use data set, participants were randomly selected from the entire data set, which is restricted from private use. This random selection yielded 6,504 participants in Wave 1, 4,834 participants in Wave 2, 4,882 participants in Wave 3, and 5,114 participants in Wave 4. Only participants that completed Waves 1 and 4 were included in this study. Parents who were not in a romantic relationship were excluded from the analysis. Number of children, including none, was included as a predictor of profiles. Sampling weights were applied to the analyses to more closely approximate nationally representative results. More information about the sampling procedures can be found in Harris (2013).

Participants

Participants that completed Wave 4 (and therefore preceding waves of Add Health) were included in the present study to identify characteristics from current and previous relationships since entering adulthood. Wave 4 public use data includes 4,208 participants from the ages of 25-34. Participants were 55.4% women (*n* = 2,332), 68.2% White (*n* = 2,862), 24.0% Black or African American (*n* = 1,007), 3.9% Asian (*n* = 164), and 3.8% American Indian or Native American (*n* = 158). Over half of the sample at Wave 4 had completed college (21.1%) or taken some college courses (32.6%). In Wave 4, 264 participants (6.3%) endorsed suicidal thoughts in the past year.

Measures

Suicidal ideation. Suicidal ideation was measured using a single item question in Wave 4. Participants were asked, “During the past 12 months, did you ever seriously think about

committing suicide?" Participants responded *yes* (1) or *no* (0), yielding a dichotomous outcome variable for this study. This variable was included as an outcome at Wave 4 to assess for how participants' characteristics were associated with suicidal ideation.

Depressive symptoms. Depressive symptoms were assessed using seven items from the Center for Epidemiologic Studies Depression Scale (Radloff, 1977). Participants responded how frequently they experienced each symptom on a 4-point Likert scale from 0 (*rarely or never*) to 3 (*most or all of the time*). Examples from this scale included, "You were bothered by things that don't usually bother you" and "You felt that you were too tired to do things." A mean score was calculated to reflect depressive symptoms at Wave 4 ($\alpha = .81$). Depression is included as a potential risk factor for suicidal ideation.

Job satisfaction. One item was utilized to assess job satisfaction at Wave 4. Participants rated their job satisfaction from 1 (*extremely satisfied*) to 5 (*extremely dissatisfied*). This item was reverse-coded for higher scores to indicate higher job satisfaction.

Job goals. In Wave 4, participants were asked to rate how their current job relates to their long-term career goals. Participants responded 1 (*it is part of my long-term career goals*), 2 (*it is preparation for my long-term career goals*), 3 (*it is not related to my long-term career goals*), or 4 (*I do not have long-term career or work goals*). This item was reverse coded so that higher scores indicated greater relation to long-term career goals.

Job demands. At Wave 4, three variables were included to assess the individuals' work and family balance. One item asked participants about the frequency with which they spent less time with their families than desired due to work demands. The second item asked how frequently family responsibilities interfered with work. The third item asked how often the

individual cut hours at work because of family commitments. These items were scored on 5-point Likert scales from 1 (*frequently*) to 5 (*never*) and were reverse-coded for this study.

Isolation. At Wave 4, participants were asked to respond to, "How often do you feel isolated from others?" This item was scored on a 4-point Likert scale from 0 (*never*) to 3 (*often*).

Mother relationship. Participants' perceptions of their relationship with their mother or mother figure were assessed at Waves 1 and 4. If the participant did not consider their biological mother to be their mother figure, they responded to these items about other mother figures that served a mothering role. Biological mothers were most commonly included (87.0%), followed by stepmothers (2.3%), grandmothers (1.8%), adoptive mothers (1.0%), aunts (0.7%), and sisters (0.3%). A small portion of the sample (5.7%) did not report a mother figure.

At Wave 1, two items assessed the participants' perception of their relationship with their mother figure. The first item asked the participant how close they were to their mother from 1 (*not at all*) to 5 (*very much*). The second item asked if respondents agreed to the following: "You are satisfied with the way you and your mother communicate with each other." They responded on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). A mean score for these two items was computed to create one overall measure of the mother relationship at Wave 1 ($\alpha = .70$).

At Wave 4, two items were included to assess the participant's perceptions of the quality of relationship with their mother figure. Participants were asked to what extent they agreed or disagreed with the following statement: "You are satisfied with the way your mother and you communicate with each other." This item was scored on a 5-point Likert scale from 1 (*strongly agree*) to 5 (*strongly disagree*) and was reverse-coded for this study. The second item was: "How close do you feel to your mother?" This was measured on a 5-point Likert scale from 1 (*not at all*

close) to 5 (*very close*). The mean of these two items was created to represent the participant's perception of their relationship with their mother figure at Wave 4 ($\alpha = .77$).

Father relationship. Participants' perceptions of the quality of relationship with their father or father-figure were also assessed at Waves 1 and 4. As with mothers, father figures were biological fathers (59.8%), stepfathers (9.7%), adoptive fathers (1.3%), or another family member serving this role, such as a grandfather (0.8%) or uncle (0.5%). A larger percentage of participants did not report information about a father figure (16.5%) compared to mother figures. The same items used to measure quality of mother relationship were included in the present study about fathers, and the same reverse-coding and mean computation for the variables apply for Waves 1 ($\alpha = .76$) and 4 ($\alpha = .77$).

Relationship satisfaction. Participants in a romantic relationship at Waves 4 were asked about relationship satisfaction. Wave 4 relationship satisfaction consisted of seven items, all scored from 1 (*strongly disagree*) to 5 (*strongly agree)*. Participants were asked to rate their agreement with the following statements: 1) We enjoy doing ordinary, day-to-day things together; 2) I am satisfied with the way we handle our problems and disagreements; 3) I am satisfied with the way we handle family finances; 4) My partner listens to me when I need someone to talk to; 5) My partner expresses love and affection to me; 6) I am satisfied with our sex life; and 7) I trust my partner to be faithful to me. A mean of these seven items was computed to make one score for relationship satisfaction at Wave 4 ($\alpha = .89$).

Relationship permanence. Participants at Wave 4 were asked how likely the romantic relationship they were currently involved in was to be permanent. This item was scored on a 5-point Likert scale from 1 (*almost certain*) to 5 (*almost no chance*), and was recoded so higher scores indicated greater expected relationship permanence.

Parental satisfaction. At Wave 4, participants with children were asked about their satisfaction in parenthood using two items. Participants responded to whether they were happy in their role as a parent and whether they felt close to their children. They responded to these items from 1 (*strongly disagree*) to 5 (*strongly agree*). These items were meaned to reflect higher scores indicating greater parental satisfaction ($\alpha = .82$).

Parental stress. At Wave 4, participants with children were asked about their stress associated with parenthood using two items. Participants responded to whether they perceived their children to be a major stress and whether their parental responsibilities were overwhelming. They responded to these items from 1 (*strongly disagree*) to 5 (*strongly agree*). These items were reverse-coded and meaned, in which higher scores indicated greater parental stress ($\alpha = .69$).

Adverse childhood experiences. Six items were included that resemble items from the Adverse Childhood Experiences (ACE; Felitti et al., 1998) study. Items included in the present study asked whether participants had experienced any of the following before their eighteenth birthday: physical, sexual, or emotional abuse by the caregiver; neglect at the hands of their caregiver; removal from caregiver's home; or caregiver was jailed or imprisoned. These items were responded to on a 5-point Likert scale regarding frequency of these experiences from 1 (*one time*) to 5 (*more than 10 times*). Responses that indicated the participant had never had that experience was re-coded to 0. These three items were meaned to include an average total score of ACEs to reflect experiences of childhood trauma.

Alcohol use. At Wave 4, participants were asked how many alcoholic drinks they consumed on average at a time within the last 30 days. Participants reported a number response to this question and responses ranged from one drink at a time to up to 18 drinks at one time in the past 30 days.

Religiosity. At Wave 4, participants were asked, "How important is religion to you?" Participants responded on a 4-point Likert scale from 1 (*very important*) to 4 (*not important at all*). This item was reverse-coded to reflect higher religiosity with higher scores.

Demographics. Demographic characteristics were included as predictors of profiles in this study. Race was assessed as six different groups and was dummy coded: White/Non-Hispanic (reference), White/Hispanic, Black/African American, Indian American, or Asian. Gender was dummy coded as 1 (*male*) or 0 (*female*). Number of children was also included as a predictor of profiles.

Covariates. Due to their potential for independently being associated with suicidal ideation, three covariate items were included as independent predictors of suicidal ideation at Wave 4. These variables included handgun ownership at Wave 3, whether the individual had ever served in the military, and whether the individual was currently living alone at Wave 4. These variables were not included as indicators of profiles. Each variable was dummy coded as 1 (*yes*) or 0 (*no*).

Analytic Plan

Preliminary analyses were conducted in SPSS (version 25) to obtain descriptive data and to examine correlations between the variables. This study used latent profile analysis (LPA) and logistic regression to identify profiles amongst participants based on their shared characteristics, and those profiles were then used as predictors of suicidal ideation at Wave 4 (see Figure 1 for theoretical model). The LPA was conducted in Mplus 8.0 (Muthén & Muthén, 1998-2017) using maximum likelihood estimation (Little & Rubin, 1987) to define the latent profiles while simultaneously estimating the overall model. To discern the optimum number of profiles and to ensure best fit, profiles were added iteratively and each model was evaluated. Model fit was

evaluated using recommended LPA criteria, including entropy, Lo-Mendell-Rubin Adjusted Likelihood Ratio Test (LMRT; Lo, Mendell, & Rubin, 2001), Bootstrapped Likelihood Ratio Test (BLRT; Arminger, Stein, & Wittenberg, 1999; McLachlan & Peel, 2000), and sample size-adjusted Bayesian information criteria (sBIC; Schwarz, 1978). Both LMRT and BLRT compare the target model's fit to a comparison model with one less class, and indicate whether more profiles yields a better model fit than one less profile. The sBIC is a descriptive fit index and a smaller value indicates better model fit. In addition to model fit indices, the number of profiles was theoretically evaluated to discern whether unique and interpretable classes truly exist. After profiles were created, ANOVA and logistic regression were used to examine the association between profile membership and suicidal ideation. The ANOVA compared the different profiles to assess significant differences in the means of the risk and protective variables. The logistic regression was analyzed with suicidal ideation as an outcome variable to assess each profile's likelihood of experiencing suicidal ideation, along with the covariates.

Chapter 4 - Results

Preliminary Analyses

Means, standard deviations, and correlations among study variables can be found in Tables 1, 2, and 3. Suicidal ideation was significantly positively correlated with isolation, depression, and childhood trauma, and was negatively correlated with relationship satisfaction, job satisfaction, and relationships with parents at Wave 4. On average in this sample, mean levels of quality of relationship with parents was high, whereas depression, isolation, and childhood trauma scores were low. Relationship satisfaction and permanence fluctuated from medium to high among participants, as did job satisfaction. Job goals ranged from low to medium. Job demands balances were low on average. Parenting satisfaction ranged from low to high, as did parental stress. Alcohol use was overall low, but with high standard deviation. Religiosity was overall average among participants.

Latent Profile Analysis

A latent profile analysis was utilized to identify the optimal number of profiles for young adults in this sample using the 18 indicators described in the method section (participants' relationship with parents and romantic partners, depression, isolation, job demands and goals, job satisfaction, parental satisfaction, alcohol use, and religiosity). Profiles were iteratively estimated from one- to five-profile solutions. To evaluate each profile solution, fit indices, theoretical match, and interpretability were assessed with each additional profile (see Table 4). The four-profile solution was optimal due to the acceptable fit indices, the satisfactory proportion of participants in each profile, the interpretability of the solution, and the theoretical feasibility of the profiles. Moreover, the LRT and BLRT were each significant for four classes, but no longer significant at five or six classes; thus, indicating that four classes fit better than the three-class

model, but the five-class model was not a significant improvement from the four-class model. Figure 2 displays the four latent profiles and their estimated means for each indicator. The four profiles were labeled Satisfied with Life (n = 2,442), Relationship Stress (n = 669), Demanding Jobs (n = 658), and Challenging Childhood (n = 427) to reflect the defining characteristics of each profile. Tables 5 and 6 display means for each indicator per profile and Table 7 displays defining information for each profile.

Satisfied with Life

The first profile, labeled Satisfied with Life, included 58.2% (n = 2,442) of the participants. This group included the highest relationship satisfaction with mothers and fathers at both Waves 1 (M = 4.44; M = 4.28) and 4 (M = 4.64; M = 4.32), and the highest romantic relationship satisfaction (M = 4.40) and permanence (M = 4.68) at Wave 4. This profile also had the lowest depression (M = 0.42), isolation (M = 0.68), ACES (M = 0.41), and parental stress (M = 1.93) scores out of all four profiles. This group included the highest parental satisfaction (M = 4.85), job satisfaction (M = 4.05), and job goal consistency (M = 3.11). This profile had moderately low levels of alcohol use (M = 3.53) and job demands (cut hours due to family: M = 1.17; family time decreased due to work: M = 2.03; family interferes with work: M = 1.79). Overall, this group was highly rated on positively coded items, indicating excellent well-being. This profile was majority White/not Hispanic (66.3%) and Black/African American (21.2%), nearly all heterosexual (88.3%), and nearly even in gender. This profile had the highest household income and participants in this profile had the highest educational compared to the other profiles. This profile included the lowest percentage of suicidal thoughts (2.6%) at Wave 4.

Relationship Stress

The second identified profile was labeled Relationship Stress and included 15.9% (n = 669) of the participants in the total sample. As the label indicates, this profile indicated lower relationship satisfaction (M = 3.17) than the other three profiles. Further, their perception of the permanence of their romantic relationships were significantly lower than that of the other profiles (M = 1.98). This profile had the highest alcohol use (M = 4.72) in the past 30 days. This profile had moderate levels of all other indicators. This group was majority male (56.8%) and had fewer White/not Hispanic individuals than the other profiles (54.5%). This profile included the highest number of Black/African American participants (36.1%). A significant amount of participants in this profile lived alone at Wave 4 (23.7%) and had served in the military (8.6%) compared to the other three profiles. This profile also had the highest rates of handgun ownership at Wave 3 (11.5%). Participants in this profile were second most likely to endorse thoughts of suicide at Wave 4 (11.7%).

Demanding Jobs

The third profile identified was labeled Demanding Jobs and included 15.7% (n = 658) of participants. This profile indicated significantly higher reports of family obligations interfering with work (M = 3.37), cutting work hours due to family (M = 3.16), and a decrease in time with their family due to work (M = 2.86) compared to the other three profiles. However, job satisfaction (M = 3.81) and consistency of job goals (M = 2.91) were similar to other profiles. This profile indicated the lowest reports of alcohol use (M = 3.37) and the highest religiosity (M = 2.64) scores out of all the profiles. This profile was majority White/not Hispanic (61.6%) and female (69.3%). This profile was the least likely to report living alone at Wave 4 (3.9%) and 7.9% endorsed suicidal thoughts at Wave 4.

Challenging Childhood

The fourth and final profile was labeled Challenging Childhood. This profile included the fewest proportion (10.2%; n = 427) of participants in this study. Participants in this profile reported significantly lower quality relationships with mothers at Waves 1 (M = 3.42) and 4 (M = 3.33), and with fathers at Waves 1 (M = 3.28) and 4 (M = 3.12). This was the only profile to report a decline in their quality of relationship with their mother from Wave 1 to Wave 4. This profile's participants reported the highest depression (M = 0.97), isolation (M = 1.66), and traumatic experiences in childhood (M = 1.71), as well as moderately high parental stress (M = 2.34). This profile was majority female (68.6%), White/not Hispanic (66.3%) but with higher American Indian (6.5%) and Asian (9.7%) participants than other profiles. Participants in this profile reported high rates of having been to counseling (21.7%), been diagnosed with depression (35.9%), and living alone (12.3%). More participants in this profile indicated suicidal thoughts at Wave 4 (17.0%) than the other profiles.

Covariates

Gender, race, and number of children were each added as covariates to determine the likelihood of which genders and races would belong in which profiles and if number of children was linked with profiles. Profile 1 (Satisfied with Life) was used as the reference category in the calculation of odds ratios. Being female was a significant predictor of profiles 3 (Demanding Jobs; B = .53, p < .01) and 4 (Challenging Childhood; B = .51, p < .01) compared to profile 1 (Satisfied with Life), while being male was a significant predictor of profile 2 (Relationship Stress; B = -.41, p < .01) membership. Being White was not a significant predictor of any of the profiles. Black/African American individuals were more likely to be represented in profile 2 (Relationship Stress; B = .63, p < .01) than any other profile. Profile 4 (Challenging Childhood

was significantly more likely to have individuals that identified as Asian ($B = 1.07$, $p < .01$). Profile 3 (Demanding Jobs) had more children than other profiles ($B = .59$, $p < .001$), followed by Profile 4, Challenging Childhood ($B = .29$, $p < .01$).

Profiles Associated with Suicidal Ideation

To assess which profiles were associated with suicidal ideation at Wave 4, a logistic regression was conducted using the four profiles (see Table 8). Only one profile, Demanding Jobs, was not significantly associated with suicidal ideation at Wave 4 ($B = 0.21$, $p > .05$, $OR = 1.23$). Individuals in the Satisfied with Life profile were 60.0% less likely to experience suicidal ideation ($B = -0.91$, $p < .001$, $OR = 0.40$) than individuals not in this profile. The second profile, Relationship Stress, was significantly associated with over two times higher odds of suicidal ideation in Wave 4 ($B = 0.71$, $p < .001$, $OR = 2.04$). The final profile, Challenging Childhood, was 192% more likely to experience suicidal ideation than the other profiles ($B = 1.07$, $p < .001$, $OR = 2.92$).

Three risk factors were analyzed as covariates of the profiles for suicidal ideation. Owning a handgun at Wave 3 was not significantly associated with suicidal ideation at Wave 4 ($B = -0.06$, $p > .05$, $OR = 0.94$). Military service at some point in participants' lives was modestly associated with suicidal ideation ($B = 0.62$, $p < .05$, $OR = 1.86$). In other words, individuals who served in the military were 86% more likely to experience suicidal thoughts at Wave 4 after controlling for profile membership, handgun ownership, and living alone. Living alone was not significantly associated with suicidal thoughts ($B = -0.3845$, $p < .05$, $OR = 0.69$).

Chapter 5 - Discussion

The results of this study provide a unique view of risk and protective factors for suicide for a large, representative sample of young adults in the United States. This is one of the first studies to examine individual profiles and association with suicidal risk, which provides a richer understanding of which risk and protective factors are most salient and can be utilized when designing prevention and intervention efforts.

Research Questions

Research Question 1

The first research question for this study was: How many profiles of risk and protective factors are the best fit for this sample of young adults, and what are the characteristics of these profiles? Model fit indices and theoretical understanding indicated an optimal four profiles for this sample. These profiles differed significantly in the majority of their indicators, and each varied in their association with suicidal ideation at Wave 4.

The majority of participants in this study belonged to the Satisfied with Life profile, which was at a significantly decreased risk for suicidal ideation than the other profiles. Participants in the Satisfied with Life profile were 60% less likely to experience suicidal ideation than participants not in this profile. Those in this profile (n = 2,442) reported high satisfaction in all of their interpersonal relationships and at work. They did not endorse depressive symptoms or frequent experiences of isolation. This group included a similar proportion of males and females, but had a much higher proportion of Whites than other racial identities. These were also the wealthiest participants in this study with high educational attainment. It is important to note these participants also reported the fewest ACES, suggesting positive home environments growing up.

The second highest proportion of participants belonged to the second highest risk for suicide profile, Relationship Stress (n = 669). Participants in this profile were associated with twice as much risk for suicidal ideation than individuals not in this profile, suggesting a significant amount of risk. These participants were not satisfied in their romantic relationships and were very unlikely to think their relationship was going to be permanent. They also had higher than average reports of isolation, likely related to their relationship difficulties. However, their parental satisfaction and stress were similar to other profiles. These individuals reported the highest rates of alcohol use in the past 30 days, which may be used as a coping mechanism for the loneliness and partner difficulties. Conversely, high alcohol use may be due to being depressed or suicidal, thus contributing to low relationship quality. This profile included the highest proportion of Black/African American individuals and also had the lowest household incomes out of all the participants.

The third highest proportion of participants belonged to the Demanding Jobs profile (n = 658). This profile did not have a significant association with suicidal thoughts at Wave 4, indicating a certain amount of stability among its participants. Although participants reported significantly more difficulty with work and life balance, they also reported high job, relationship, and parental satisfaction. Participants in this profile had more children, on average, than the other profiles, likely contributing to their increased difficulties with work-life balance. Participants in this group also endorsed higher religious importance. A potential implication from this profile is that individuals who experience stress related to jobs and families on a regular basis are not at risk for suicidal ideation as a result. These individuals may be sufficiently challenged and thus experience positive growth, as opposed to feelings of overwhelm. It is interesting to note that this

group was most likely to be female, had relatively high household incomes, and was racially diverse.

The profile that encompassed the smallest proportion of individuals (n = 427) but was at the highest risk for suicidal ideation was the Challenging Childhood profile. This profile was associated with a 192% odds increase in experiencing suicidal ideation. The individuals in this profile reported significantly lower quality relationships with their own parents at Waves 1 and 4. Notably, this was the only profile that reported a decrease in quality of mother relationships from Wave 1 (M = 3.42) to Wave 4 (M = 3.33). These participants also experienced the greatest decrease in the quality of their father relationships from Wave 1 (M = 3.28) to Wave 4 (M = 3.12). These participants reported high isolation, depression, and childhood traumatic experiences, suggesting a poorer childhood experience than participants in the other profiles. However, these participants also reported moderately high levels of current romantic relationship satisfaction and permanence, along with positive parenting satisfaction with their children, although they also reported the highest parental stress. Participants in this profile reported lower than average importance on religion compared to the other profiles. These participants also indicated lower levels of job satisfaction and a lack of consistency with their current job aligning with their career goals. This profile predominantly included females, had the highest proportion of Asian participants, and were the most likely to have been diagnosed with depression and attended counseling at some point in their lives.

Research Question 2

The second research question addressed was: Are positive relationships with parents and partners, job satisfaction, low job demands, and low levels of isolation associated with being in a typology of lower suicide risk? Based on the characteristics of the identified profiles, positive

relationship quality with parents *and* a romantic partner were affiliated with profiles that had no greater risk (Demanding Jobs) or even a decreased risk (Satisfied with Life) for suicidal thoughts relative to the other classes. Higher levels of job satisfaction and low levels of isolation were found in the same profiles. It is important to note that the profile with the highest job demands (Demanding Jobs) did not include a significant risk for suicide. This indicates that high job demands may not be a perceived risk factor if other characteristics (e.g., positive relationships and job satisfaction) remain high.

Research Question 3

The third and final research question addressed was: Is low relationship quality with parents in adolescence and young adulthood linked with a typology of greater suicide risk? For this research question, parent relationships were examined at Wave 1, when the individuals were adolescents, and Wave 4, when they were in early adulthood. The profile that had the highest association with suicidal risk at Wave 4 (Challenging Childhood) reported the poorest quality of relationships with their own parents at both waves. Furthermore, these participants experienced declines in their relationships with both parents from Wave 1 to 4. This was the only profile that showed a decline in quality of mother relationship from Wave 1 to 4; all other profiles experienced an increase in quality of mother relationships. Additionally, participants in this profile reported the steepest decline in quality of father relationships from Wave 1 to 4 compared to the other three profiles. As membership in this profile was associated with significantly greater odds of experiencing suicidal ideation than those not in this profile, these declines in parental relationship hold significant implications for the emotional well-being of adult children. However, it is relevant that participants in this profile also reported the most experiences of childhood traumatic events. If parents perpetrated violence, abuse, or mistreatment towards the

participants when they were children, it may be that a declined relationship in adulthood is a result of the parent's behaviors and is preferable to the participants. Positive relationships with significant others at Wave 4, however, did not appear to offset suicidal risk, highlighting the importance of early negative life experiences and continued difficulties with parents.

Theoretical Implications

This study provides support for the Interpersonal Psychological Theory of Suicide (IPTS; Joiner, 2005) and adds information to how the domains of this theory may interact when individuals have multiple risk and protective features. Thwarted belongingness, in which an individual feels they are isolated or do not belong, can stem from poor relationships with those closest to them, such as parents, romantic partners, and children. This study revealed that individuals with low quality parent relationships belonged to the profile with the greatest risk for suicide, while individuals with the lowest romantic relationship satisfaction and low confidence that the relationship would be permanent were in the profile with the second highest risk for suicidal ideation. Experiencing frequent isolation was also a characteristic of the highest risk profile (Challenging Childhood). Living alone did not significantly increase risk of suicidal ideation when the profile characteristics were taken into account, indicating that living alone by itself is not a risk factor for suicide if the individual does not perceive themselves to be isolation and has positive relationships. Each of these characteristics provides additional evidence for thwarted belongingness as a strong motivator for suicidal ideation.

Perceived burdensomeness, or the perception that the individual is not contributing to their family or society (or is actively detracting from family or society), was assessed primarily through the job related variables. Participants in the Demanding Jobs profile were not associated with risk for suicidal thoughts; however, these individuals also reported positive relationships

with their parents and romantic partners as well as high satisfaction in parenting. The individuals in this profile likely did not feel as though they were burdens due to their satisfaction at work and at home, even if they felt their job created stress in their family and vice versa. The profile with the greatest odds of risk for suicide (Challenging Childhood) included participants that reported the second highest job demands, but also reported lower job satisfaction and less alignment of the current job with their career goals. This profile may indicate that for individuals that are less satisfied in their current careers, their perceived burdensomeness increases when their job demands are high. Further, individuals in this profile had lower quality relationships with their partners, less parental satisfaction than other participants, and more children on average than other participants, indicating that high job demands and difficulty in relationships together intensify individuals' beliefs that they are a burden.

Although not directly tested, several variables included in this study could be related to the development of acquired capability. Acquired capability is theorized to stem from either habituation to painful experiences (physical or emotional) to the point that death is no longer feared, or the idea that death would be a preferable option to living. This study theorized that individuals with potential for trauma histories, such as those with high ACES or military experience, would belong to profiles at increased risk for suicide. Individuals with the highest ACES scores were in the profile most associated with significant risk for suicidal ideation (Challenging Childhood), giving credit to acquired capability in this sample. Military service was included as a covariate of the profile, and was also significantly associated with risk for suicidal thoughts. Because it is assumed that individuals with acquired capability will not act on suicidal urges without motivation (i.e., thwarted belongingness and perceived burdensomeness), military service alone is not typically considered high risk. On the other hand, the individuals in the

Challenging Childhood profile (with high ACES, high isolation, low parental support, and high work demands/low job satisfaction) are assumed to be at critical risk for suicide due to possessing all three domains of IPTS.

Clinical Implications

The results of this study hold several implications for prevention and intervention with clients at risk for suicide. Prevention efforts would be directed towards the individuals who present similarly to the profiles that are significantly less likely to experience suicidal thoughts (Satisfied with Life), or those of the profile that are not associated with suicidal thoughts (Demanding Jobs). Intervention efforts would be targeted towards individuals whose circumstances are similar to the profiles associated with higher risk for suicide, Relationship Stress and Challenging Childhood.

Prevention

In the first profile, Satisfied with Life, participants are benefitting from a number of protective factors. They exhibit high social support from parents, their significant others, and their children. They experience satisfaction in their jobs and feel their jobs are in line with the career goals they have set for themselves. They have moderate levels of religiosity and drink an average amount of alcohol. Prevention efforts for individuals that are similar to those in the Satisfied with Life profile would include monitoring changes to the individual's life circumstances and providing education about risk factors. Changes that would have the potential to increase risk for individuals similar to this profile would include loss (e.g., job, death of a loved one, divorce/separation), trauma, existential crisis, or increase in substance use (Han et al., 2016; McLean et al., 2008; WHO, 2014).

For individuals whose circumstances are similar to the Demanding Jobs profile, which is not significantly associated with suicidal risk (but is not at decreased risk, either), prevention efforts could be more targeted. This profile includes similar protective factors as the previous profile (e.g., high social support, high religiosity, and high job satisfaction), but also includes risk factors (e.g., moderate ACES and depression). Prevention efforts for individuals similar to this profile's characteristics may include the same as the previously listed efforts, but could also include treatments that focus on treating depressive symptoms early on, stress management, time management, and family therapy. The frequent difficulties with balancing work and family have potential to intensify if the individual experiences any additional stressors, and prevention efforts may focus on helping the individual and their families manage their adaptability.

Interventions

Extrapolating from these results, several general clinical applications can be suggested. For the two profiles that were at increased risk for suicide, two different intervention methods may be utilized based on the differing needs of each profile. For the Relationship Stress profile, suggested interventions to reduce suicidal behaviors would target motivations for dying by suicide. This could be done through formalized procedures, such as the Collaborative Assessment and Management of Suicidality (CAMS; Jobes, 2012) or less formal procedures, such as a safety plan with exploration of motivations. If relationship dynamics was an influencing factor for suicide, as suggested by the profile characteristics, intervention efforts might include couples therapy, such as Emotionally Focused Therapy (Johnson, 2012) or discernment counseling, depending on goals for the individual/couple. Based on the low likelihood of relationship permanence reported by the participants in this profile, therapy that supports the individual through a potential break-up would likely be required. Addressing the

individual's alcohol use would also be a critical component of therapy, as alcohol consumption is a frequent precipitating event prior to suicide (Kaplan et al., 2014; Wilcox, Conner, & Caine, 2004)

For individuals similar to the Challenging Childhood profile, intervention efforts are recommended to begin with trauma-focused therapy to address childhood traumatic experiences (and potentially experiences of trauma that occurred since childhood) and relationships with their parents, if parents were involved in the childhood traumas. Trauma-focused approaches may include Eye Movement Desensitization and Reprocessing therapy (Shapiro, 2017), Emotion-focused therapy for complex trauma (Paivio & Pascual-Leone, 2010), trauma-focused cognitive behavioral therapy (Harvey, Bryant, & Tarrier, 2003), or other trauma-specific treatments based on individual needs (Foa, Keane, Friedman, & Cohen, 2008). Individuals with characteristics similar to this profile may also benefit from inviting a safe support person to therapy, such as their romantic partner, a friend, or sibling; this has potential to strengthen an existing relationship and provide an additional support outside of the therapy setting. This person could also be utilized in the development of and implementation of a safety plan, or as an emergency contact if the client presents at imminent risk for suicide. Decreasing isolation and increasing social support via the therapeutic bond and therapeutic intervention would be theorized to decrease the individual's motivation for suicide.

Implications for Future Research

The results of this study provide insights for future research on identifying risk and protective features for suicidal ideation. These results offered consistency with previous research on which protective factors reduce suicidal motivation, such as those affiliated with belongingness (e.g., social support, religiosity, and parental satisfaction) and contributions to

family and society (e.g., job satisfaction, job goals aligning with career goals, low parental stress, work-life balance). These protective factors appear to prevent individuals from experiencing the motivations for suicide, thwarted belongingness and perceived burdensomeness. Military services and high ACES both indicate acquired capability and both were aligned with increased risk for suicide in this sample. These consistent findings provide additional support for IPTS and contribute to the literature in a specific sample with profiles for each.

Additional research is recommended to examine the risk and protective factors in more depth, preferably by more distinguishable features (e.g., race, gender, relationship type, or other means). The profiles identified in this study provide comprehensive ideas of risk and protective factors and their associated risk, but more nuanced examinations of individuals with other commonalities would allow for more precise prevention and intervention efforts. Future research may also attempt to replicate these findings in higher-risk samples, such as those with high suicidal ideation or behaviors. Additionally, analyzing help-seeking behaviors of individuals in similar profiles would provide clinicians and policy-makers direction on how to target individuals at risk.

Limitations

Several limitations of this study exist that may influence the results and implications. First and foremost, the majority of data used in this analysis were from the same time point (Wave 4), limiting some understanding of how these variables may influence individuals over time. Further, many items included in this analysis were single items to represent entire constructs. These variables are assumed to lack the accuracy and consistency that are included in multiple item scales. The ages of the participants were all within the same range (24-32 years old), which provides consistency amongst profiles but may not be generalizable to individuals

outside of this age range, even those with similar characteristics. Also, participants were asked about their mother and father figures at each wave; this leaves potential for participants that had alternative family structures, such as same-sex or single parent households, to experience ambiguity about which parent figures to report and with what level of quality of relationship. Although number of children was included as a predictor of profile membership, this number ranged from zero to six, meaning those without children had several variables (parenting satisfaction and stress) estimated based on other their responses to other items. The majority of participants were partnered or dating in this study, but those that were not also had relationship variables (relationship satisfaction and permanence) estimated. Several other potentially influencing factors, such as ages of children, length of and type of current relationship, and length of employment at current job were not included in this analysis. Finally, the number of participants in the total sample that reported any suicidal ideation was quite low (n = 265), and only suicidal thoughts, not behaviors, were measured as an outcome.

Conclusion

This is one of the first studies to include a nationally representative sample of young adults that examined profiles of suicidal risk. The results of this study add to existing literature about risk and protective factors, and provide insight for prevention and intervention efforts based on differing characteristics of individuals. Trauma-focused therapy, alcohol reduction, and increasing social support are encouraged based on needs described in the profiles from this study. This research contributes to the field by expanding the nuance with which people can be categorized, and unique risks for suicide ideation in various groupings of people can be identified. Future research can build upon these results by identifying more helpful ways to intervene with each group in a more person-specific kind of way. People are different, with

different lives and levels of risk. This study used a person-centered approach to identify unique typologies of people informed by theory, linked these typologies with the odds of endorsing suicide ideation, and expanded what is known about identifying types of people who may be at greater risk of committing suicide. Suicide is a deadly serious issue that can be prevented. These results contribute to refining the way we identify those who may at the greatest risk.

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Table 1. Descriptives table (*N* = 4,208).

	M or %	*SD*	*Range*	α
Demographics				
Age	29.00	1.78	24 – 32	-
Gender – Female	51.1%	-	-	-
White, Not Hispanic	70.5%	-	-	-
White, Hispanic	4.7%			
African American	15.9%	-	-	-
Asian/Pacific Islander	3.8%	-	-	-
American Indian	3.2%	-	-	-
		-	-	-
Household Income		-	-	-
$0 – 24,999	17.0%	-	-	-
$25,000 – 49,000	28.6%	-	-	-
$50,000 – 74,999	23.8%	-	-	-
$75,000 – 99,999	15.0%	-	-	-
$100,000 – 149,000	10.3%	-	-	-
$150,000 or above	5.2%	-	-	-
Highest Education				
Less than high school	7.0%	-	-	-
High school	15.7%	-	-	-
Some college or vocational school	42.6%	-	-	-
College	21.1%	-	-	-
Some graduate school or beyond	13.7%	-	-	-
Mental Health				
Ever been diagnosed with depression	16.0%	-	-	-
Ever been to counseling	10.2%	-	-	-
Suicidal ideation W4	6.3%	-	-	-
ACES	0.66	0.95	0 – 5	-
Depression W4	0.58	0.46	0 – 3	0.81
Isolation W4	0.94	0.90	0 – 3	-

Table 2. Descriptives table continued (*N* = 4,208).

	M or %	*SD*	*Range*	α
Relationships				
Mother Relationship W1	4.28	0.82	1 – 5	0.70
Father Relationship W1	4.10	0.90	1 – 5	0.76
Mother Relationship W4	4.44	0.79	1 – 5	0.77
Father Relationship W4	4.11	1.00	1 – 5	0.77
Relationship Satisfaction W4	4.09	0.80	1 – 5	0.89
Relationship Permanence W4	4.24	1.16	1 – 5	-
Parent Satisfaction W4	4.71	0.61	1 – 5	0.82
Parent Stress W4	2.13	0.97	1 – 5	0.69
Lives Alone W4	11.2%	-	-	-
Number of Children	0.91	-	-	-
In a Romantic Relationship	97.1%	-	-	-
Work				
Job Satisfaction W4	3.87	0.93	1 – 5	-
Job Goals W4	2.96	0.99	1 – 4	-
Ever been Military	6.1%	-	-	-
Family Responsibilities Interfere with Work W4	2.11	1.16	1 – 5	-
Often Cut Hours because of Family W4	1.52	0.85	1 – 4	-
Family Time often Decreased because of Work W4	2.19	1.10	1 – 4	-
Other				
Own a Handgun W3	10.0%	-	-	-
Religiosity W4	2.48	0.89	1 – 4	-
Number of Usual Alcoholic Drinks Past 30 days	3.73	2.92	1 – 18	-
Heterosexual	86.0%	-	-	-

Table 3. Correlations (*N* = 4, 208).

Observed Variables	1	2	3	4	5	6	7	8	9	10	11
1. Mother Rel. W1	–	–	–	–	–	–	–	–	–	–	–
2. Father Rel. W1	.50**	–	–	–	–	–	–	–	–	–	–
3. Mother Rel. W4	.29**	.15**	–	–	–	–	–	–	–	–	–
4. Father Rel. W4	.15**	.26**	.36**	–	–	–	–	–	–	–	–
5. Depression W4	-.12**	-.12**	-.18**	-.16**	–	–	–	–	–	–	–
6. Rel. Sat. W4	.12**	.13**	.11**	.13**	-.28**	–	–	–	–	–	–
7. Rel. Perm. W4	.04*	.05*	.04*	.08**	-.18**	.62**	–	–	–	–	–
8. Isolation W4	-.13**	-.10**	-.21**	-.16**	.45**	-.24**	-.16**	–	–	–	–
9. Lives Alone W4	.01	-.00	.00	-.01	-.03*	-.11**	-.23**	.06**	–	–	–
10. ACES	-.19**	-.21**	-.31**	-.29**	.22**	-.12**	-.07**	.21**	.02	–	–
11. Job Sat. W4	.07**	.07**	.15**	.13**	-.23**	.15**	.12**	-.18**	-.03	-.11**	–
12. Job Goals W4	.03*	.05*	.06**	.09**	-.18**	.11**	.11**	-.11**	.03	-.06**	.38**
13. Number Children	-.04**	-.07**	-.04**	-.05**	.12**	-.04*	.06**	-.03	-.22**	.07**	-.01
14. Ever Military	-.01	-.01	.01	.00	-.01	-.03*	-.04*	.03*	.04**	.03	-.02
15. Family Int. Work W4	-.07**	-.09**	-.11**	-.09**	.19**	-.05**	.12**	.10**	.13**	.13**	-.06**
16. Hours Work/Fam W4	-.06**	-.09**	-.06**	-.05**	.15**	-.05**	.06**	.08**	-.12**	.09**	-.08**
17. Family Time Dec Work W4	-.07**	-.06**	-.07**	-.04**	.11**	-.02	.02	.07**	-.10**	.07**	-.08**
18. Alcohol Use	.01	.03	-.02	.03	.05**	-.07**	-.13**	-.02	-.04	.04	-.03
19. Religiosity	.07**	.09**	.11**	.10**	-.01	.04**	-.13**	-.02	-.03*	-.05**	.04*
20. Parent Sat W4	.04	.08**	.14**	.16**	-.20**	.21**	.23**	-.17**	-.14**	-.11**	.13**
21. Parent Stress W4	-.03	-.08**	-.08**	-.07**	.23**	-.09**	-.08**	.15**	-.01	.06*	-.06*
22. Own Handgun W3	.03	.04*	.02	.03	-.01	-.01	-.03	.03*	.04**	.03	.04**
23. Suicidal Ideation W4	-.07**	-.05**	-.10**	-.10**	.31**	-.16**	-.11**	.22**	-.01	.18**	-.10**

Table 4. Correlations continued (*N* = 4, 208).

Observed Variables	12	13	14	15	16	17	18	19	20	21	22
13. Number Children	-.14**	–	–	–	–	–	–	–	–	–	–
14. Ever Military	-.03	.02	–	–	–	–	–	–	–	–	–
15. Family Int. Work W4	-.07**	.28**	-.03*	–	–	–	–	–	–	–	–
16. Hours Work/Fam W4	.02	.30**	-.02	.52**	–	–	–	–	–	–	–
17. Family Time Dec Work W4	.02	.17**	-.01	.27**	.31**	–	–	–	–	–	–
18. Alcohol Use	-.11*	.05*	.04	-.04*	-.03	-.05*	–	–	–	–	–
19. Religiosity	.02	.12**	-.01	.04*	.06**	.04**	-.09**	–	–	–	–
20. Parent Sat W4	.13**	-.03	-.05*	-.02	.01	-.04	-.10**	.06*	–	–	–
21. Parent Stress W4	-.08**	.13**	-.06**	.23**	.14**	.03	.04	-.04*	-.18**	–	–
22. Own Handgun W3	.01	.05**	.07**	.02	.01	.04**	.06**	.03	-.04	-.01	–
23. Suicidal Ideation W4	-.07**	.03*	.04*	.06**	.04**	.03*	.04	-.06**	-.08**	.05*	.01

Notes: Rel = Relationship. Sat = Satisfaction. ACES = Adverse childhood experiences. Family Int. Work = Family responsibilities interfered with work. Hours Work/Fam = Reduced hours at work to spend time with family. Family Time Dec Work = Family time was often decreased because of work. *$p < .05$. **$p < .01$.

Table 5. Criteria for assessing fit for number of profiles (*N* = 4,148).

Profiles	LL	AIC	BIC	sBIC	LMR-RT *p value*	BLRT *p* value	ENT	P1%	P2%	P3%	P4%	P5%
1	-99678.52	199457.04	199774.28	199615.40	-	-	-	1.00	-	-	-	-
2	-86132.56	172389.13	172782.33	172585.32	< .001	< .001	.93	.81	.19	-	-	-
3	-85112.00	170400.01	170958.09	170678.45	< .001	< .001	.83	.12	.70	.18	-	-
4	**-83706.14**	**167640.27**	**168363.25**	**168001.01**	**< .001**	**< .001**	**.87**	**.10**	**.16**	**.16**	**.58**	**-**
5	-83183.89	166647.78	167535.64	167090.78	.25	.25	.86	.12	.55	.09	.14	.10

Note: LL = Log likelihood, AIC = Akaiken Information Criterion, BIC = Bayesian Information Criterion, sBIC = Sample-size adjusted BIC, LMR-RT = Lo-Mendell-Rubin Adjusted Likelihood Ratio Test, BLRT = Bootstrapped Likelihood Ratio Test, ENT = Entropy, P1%= Percentage of Sample in Profile 1 and so forth. Bold indicates number of profiles selected.

Table 6. Means by profile (*N* = 4,196).

Profiles	Profile 1: Satisfied with Life *(n = 2,442)*	Profile 2: Relationship Stress *(n = 669)*	Profile 3: Demanding Jobs *(n = 658*)	Profile 4: Challenging Childhood *(n = 427)*
Observed Variables	Mean			
Mother Relationship W1 (R = 1 – 5)	4.44	4.31	4.22	3.42
Father Relationship W1 (R = 1 – 5)	4.28	4.09	3.93	3.28
Mother Relationship W4 (R = 1 – 5)	4.64	4.50	4.22	3.33
Father Relationship W4 (R = 1 – 5)	4.32	4.07	4.04	3.12
Depression W4 (R = 0 – 3)	0.42	0.72	0.70	0.97
Relationship Satisfaction W4 (R = 1 – 5)	4.40	3.17	4.06	3.88
Relationship Permanence W4 (R = 1 – 5)	4.68	1.98	4.37	4.34
Job Satisfaction W4 (R = 1 – 5)	4.05	3.65	3.81	3.29
Job Goals W4 (1 – 4)	3.11	2.68	2.91	2.71
Cut Work Hours due to Family W4 (R = 1 – 4)	1.17	1.21	3.16	1.36
Family Time Dec. due to Work W4 (R = 1 – 4)	2.03	1.95	2.86	2.42
Family Interferes with Work W4 (R = 1 – 5)	1.79	1.82	3.37	2.36
Parental Satisfaction W4 (R = 1 – 5)	4.85	4.25	4.76	4.40
Parental Stress W4 (R = 1 – 5)	1.93	2.27	2.36	2.34
Isolation W4 (R = 0 – 3)	0.68	1.28	1.06	1.66
Adverse Childhood Experiences (R = 0 – 5)	0.41	0.64	0.80	1.71
Alcohol Use (R = 1 – 18)	3.53	4.72	3.37	3.76
Religiosity (R = 1 – 4)	2.50	2.37	2.64	2.31

Table 7. Profile response percentages within variables at Wave 4.

Profiles	Profile 1: Satisfied with Life *(n = 2,442)*	Profile 2: Relationship Stress *(n = 669)*	Profile 3: Demanding Jobs *(n = 658*)	Profile 4: Challenging Childhood *(n = 427)*
Proportion	0.57	0.16	0.16	0.10
Gender				
Male	47.2	56.8	30.7	31.4
Race[a]				
White, not Hispanic	66.3	54.5	61.6	66.3
White, Hispanic	4.4	3.4	4.5	6.2
Black or African American	21.2	36.1	27.4	14.0
American Indian	3.6	3.3	3.3	6.5
Asian	3.6	2.3	3.3	9.7
Sexual Orientation				
Heterosexual	88.3	82.6	84.9	74.8
Bisexual	9.7	15.0	13.5	23.7
Gay or Lesbian	1.1	1.4	0.7	1.5
Average Number of Children	0.7	0.7	1.7	1.0
Highest Education				
Less than high school	5.6	8.9	9.4	8.5
High school	15.8	16.5	15.3	13.2
Some college/vocational school	38.8	46.3	49.7	46.1
College	23.5	19.1	14.6	21.2
Some graduate school or beyond	16.2	9.2	10.8	10.9
Household Income				
Less than $24,999	13.1	25.0	20.0	22.9
$25,000 - $49,000	27.4	33.0	29.8	26.7
$50,000-$74,999	24.5	20.4	24.1	25.3
$75,000-$99,999	17.0	10.6	13.4	12.8
Greater than $100,000	18.0	11.0	12.9	12.5

Table 8 (continued). Profile response percentages within variables at Wave 4.

Profiles	Profile 1: Satisfied with Life *(n = 2,442)*	Profile 2: Relationship Stress *(n = 669)*	Profile 3: Demanding Jobs *(n = 658*)	Profile 4: Challenging Childhood *(n = 427)*
Mental Health				
Been to counseling in past year	6.8	12.7	12.6	21.7
Ever diagnosed with depression	10.6	18.4	21.6	35.9
Lives alone W4	10.4	23.7	3.9	12.3
Owned handgun W3	9.1	11.3	9.0	6.8
Ever been in the military	5.5	8.6	4.5	6.0
Thoughts of suicide	2.6	11.7	7.9	17.0

[a]*Note:* Participants selected as many races as applied.

Table 9. Odds ratios for suicidal ideation at Wave 4.

	Suicidal Ideation W4		
Predictors	*B*	*SE B*	e^B
Profiles			
Profile 1: Satisfied with Life	-0.91***	0.15	0.40
Profile 2: Relationship Stress	0.71***	0.17	2.04
Profile 3: Demanding Jobs	0.21	0.15	1.23
Profile 4: Challenging Childhood	1.07***	0.15	2.92
Risk Factors			
Owned Handgun W3	-0.06	0.25	0.94
Ever been in Military	0.62*	0.25	1.86
Lives Alone W4	-0.38	0.24	0.69

Note: * $p < .05$. *** $p < .001$.

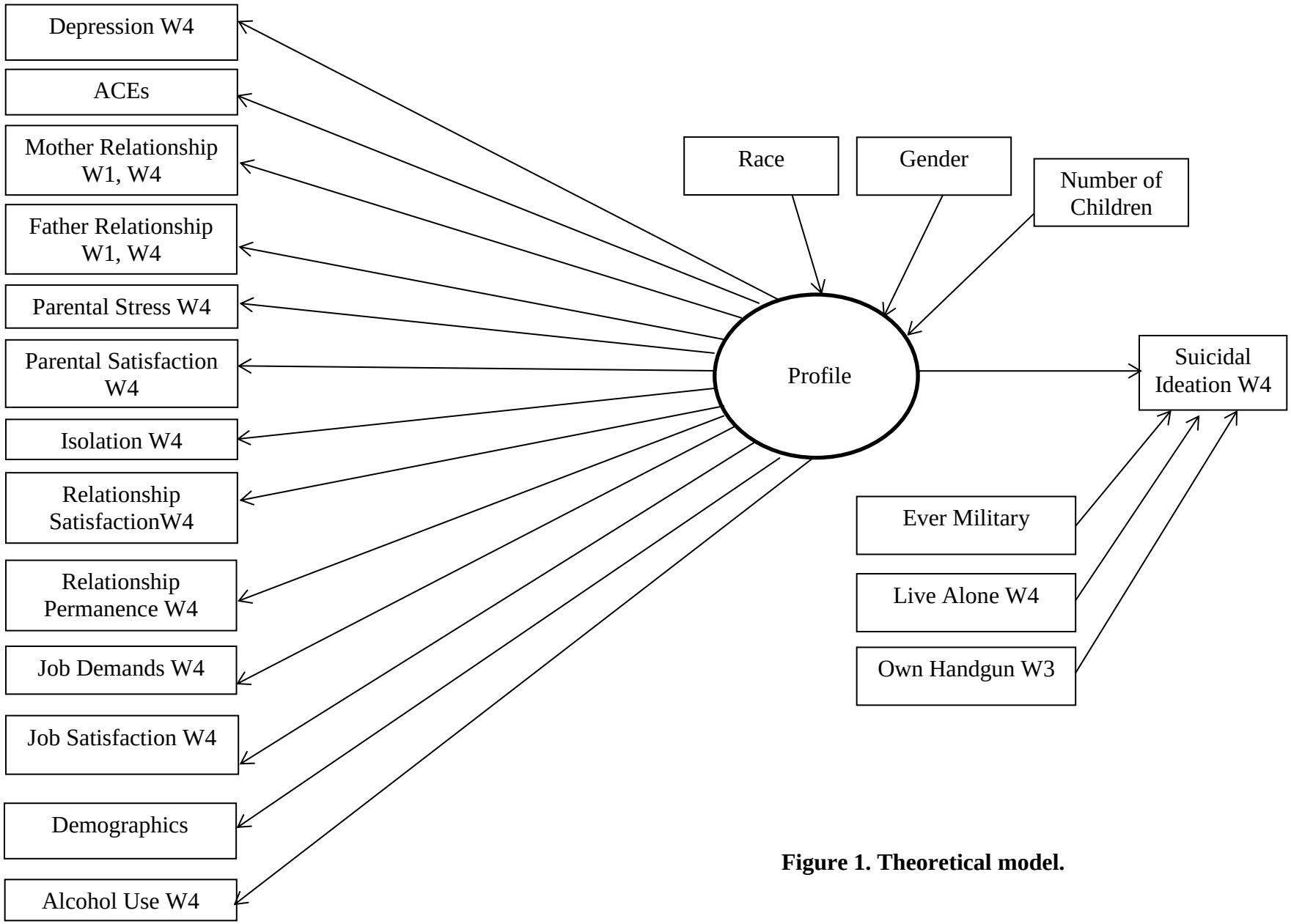

Figure 1. Theoretical model.

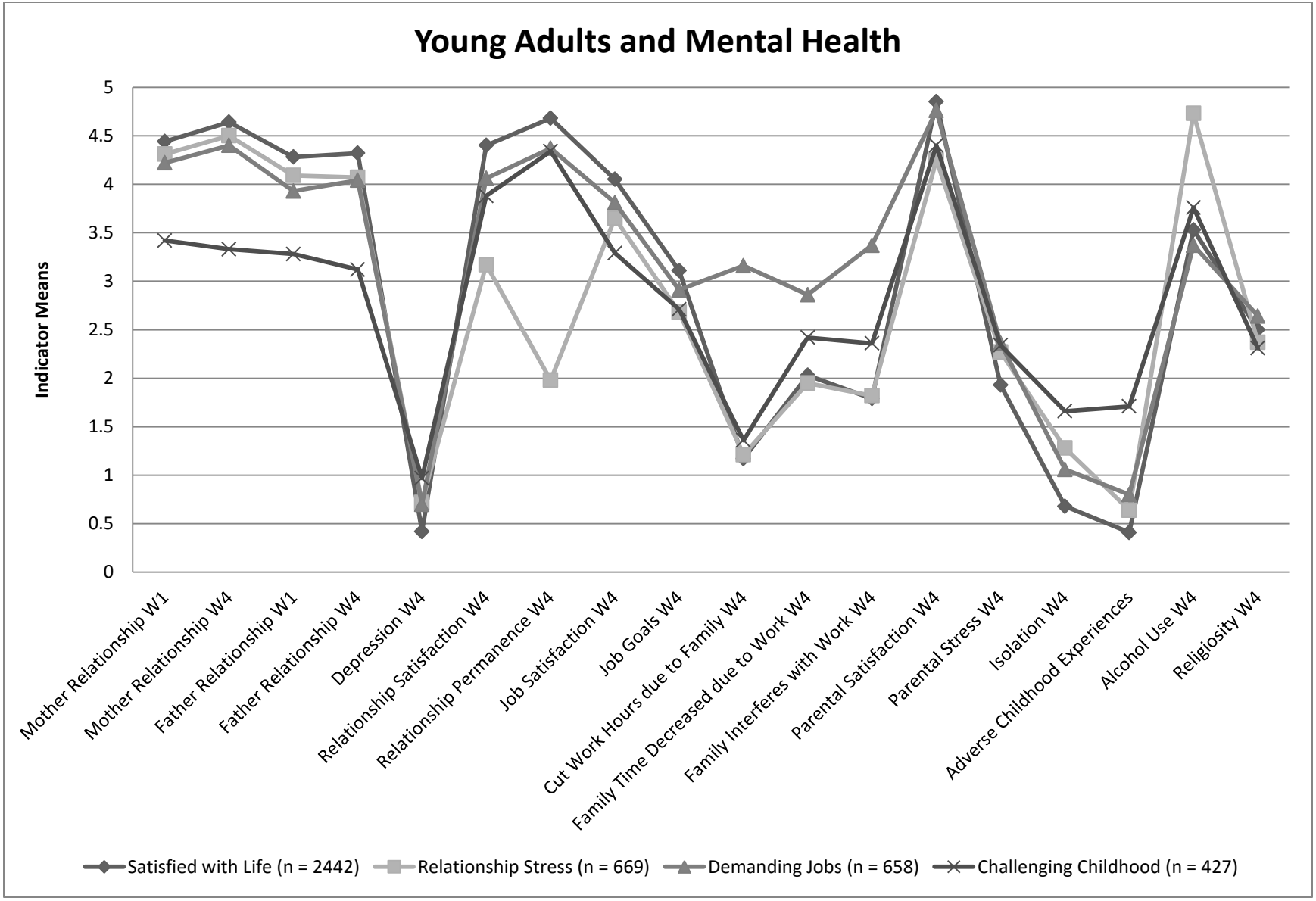

Figure 2. Profiles of Young Adults and Mental Health

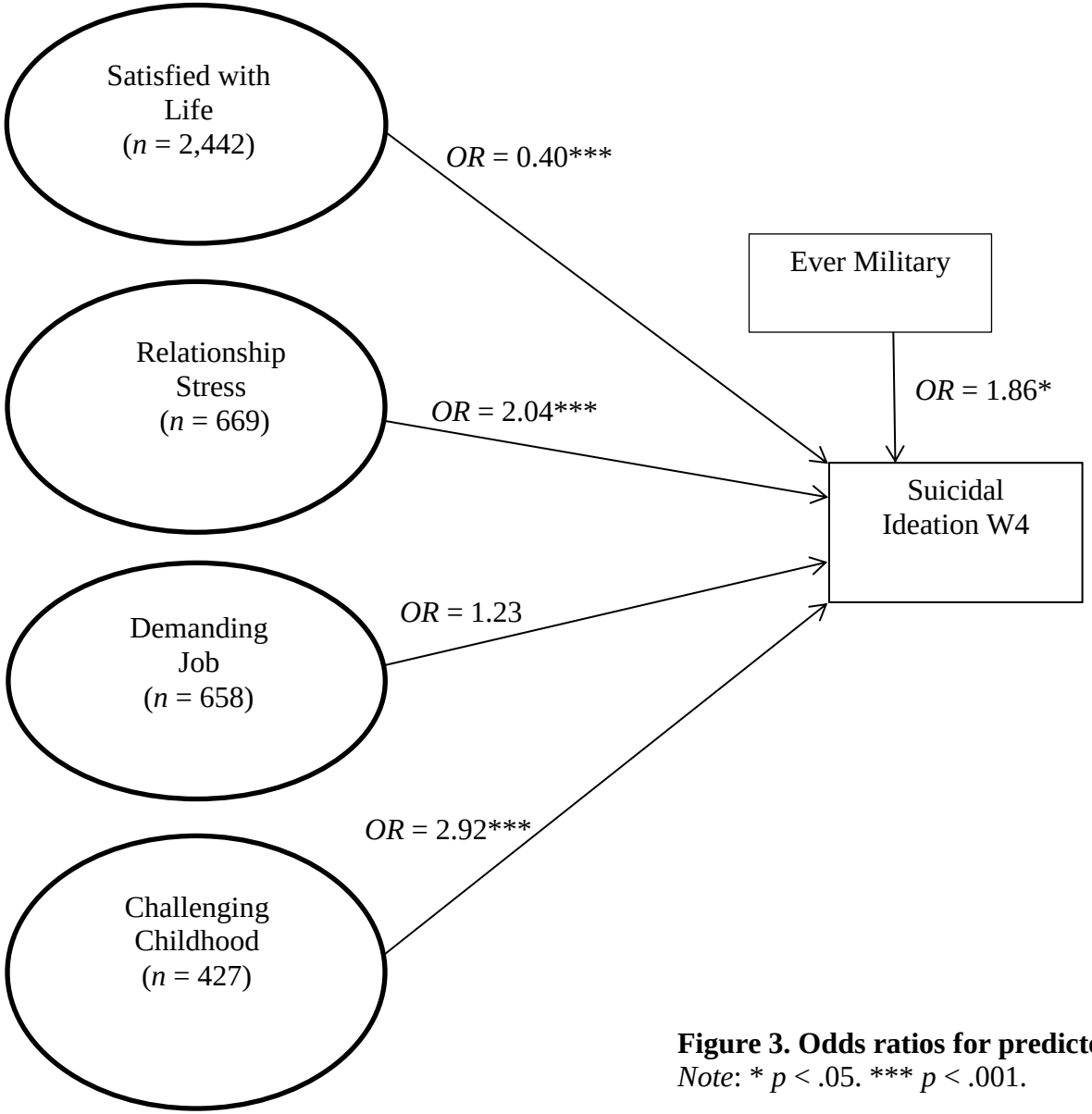

Figure 3. Odds ratios for predictors to suicidal ideation at W4.
Note: * $p < .05$. *** $p < .001$.