

**Framing Standards of Care for STB Intervention in Young Adults Within a Compounding,
Psychosocial Analysis of Stress and Protective Factors**

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Framing Standards of Care for STB Intervention in Young Adults Within a Compounding, Life-long Psychosocial Analysis of Stress and Protective Factors

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Living through a traumatic event is neither a rare nor an isolated experience. Although sources like the American Psychological Association and the National Institute of Mental Health posit that about one half of individuals in United States of America will experience at least one trauma event in their lives, the role of protective factors in long-term outcomes is often shrouded in mystery, and the idea of what ‘counts’ as a traumatic experience, often considerably abstract. Out of a plethora of broad goals to alleviate trauma symptoms in those that experience them, the role of protective and risk factors has been foundational in empirical and therapeutic practice. Despite social stigmatization of both mental health and trauma experience, there is recognition that suicide ranks among the ten leading causes of death in the United States and is the second leading cause of death in youths.

However, the variability that is intrinsic to human diversity can make it more complex to predict suicidal behavior based on life history alone, often preventing early identification and intervention; similarly, little is known regarding how protective and risk factors functionally contribute to suicidal thoughts and behaviors, or other long-term psychological imbalances. Consequently, there is a burgeoning interest into a more holistic investigation of the suicide crisis that acknowledges intersecting social and psychological factors as contributors to suicidal thoughts and behaviors (STBs), better representing the overlapping and compounding factors that comprise a human life.

Through an understanding of theoretical frameworks foundational to social work practice (ie systems theory and ecological theory), protective factors, and integrative data spanning a variety of self-indicated stressors from adolescents with suicidal attempt or ideation history compared to healthy controls in Dr. Nadine Melhem's PROMISE study, the research attempts to better understand the impact of life events in suicidal behavior to better contribute to more effective prevention, intervention, and continued care for all those who deal with long term effects of trauma.

The primary research goal was to determine the relationship between the independent external variables (specific SLEs and defined protective factors), and the dependent internal variable (STBs); the expectation was that as external risk factors increased, there would be a correlation correlating to higher chance of STB behavior. As such, the proposed stance is that as the severity of internal disturbance in the form of STBs increases from healthy control to attempter, a pattern of increased stressful life events (SLEs) and decreasing protective factors will be observed in a statistically significant manner.

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Preface

The author would like to acknowledge principal investigator Dr. Nadine Melhem for support in developing a thesis centered on understanding and supporting those who experience suicidal thoughts and behaviors, biostatistician Emily Hone for development of the graphical representations and partnership in finding relevant variables in the PROMISE data freeze, and Dr. Yodit Betru for allowing for pursuit of this study through a social work lens. Additionally, tremendous thanks is given to the entirety of the defense committee, including Dr. Allison Norful for her contributions to the field and guidance as well as the University of Pittsburgh Honors College for support of this thesis. The author is grateful for the opportunity to combine a learned love of intersecting clinical epidemiology with social work environmental theories.

The reader will encounter several shorthand terms in the text, the most common used being the following:

STBs- suicidal thoughts and behaviors

SLEs- stressful life events

1.0 Review of the Literature

Impact Statement

Following a period of stability from 2000 to 2007, the suicide rate among adolescents and young adults aged 10–24 in the United States increased 57.4% from 6.8 per 100,000 in 2007 to 10.7 in 2018 (Curtin, 2020). In 2020, suicide was named the twelfth leading cause of death overall in the United States, claiming the lives of over 45,900 people, with an increase the next year resulting in 48,183 total deaths, about one death every eleven minutes (CDC WISQARS, 2023; NSDUH Annual National Report 2021). That same year, the Centers for Disease Control and Prevention (CDC) declared suicide the second leading cause of death among individuals between the ages of 25-34 and the third leading cause of death among individuals between the ages of 15-24 (CDC WISQARS, 2023), expressing a particular vulnerability to suicidal ideation and behavior in young adults.

As stress measures such as isolation increased during the pandemic, mean Emergency Department visit counts for suspected suicide attempts among girls peaked at a value 50.6% higher compared with visits within the same time-period for this demographic in 2019 (Yard et al, 2021). In terms of suicidal ideation and behaviors that precede an attempt, trends indicate that this is a process that may emerge gradually throughout development. A US population-based study of 9- and 10-year-olds found rates of suicidal ideation, self-harm, and suicide attempts were 6.4%, 9.1%, and 1.3%, respectively (Whalen et al., 2021). Moreover, suicidal ideation tends to increase between the ages of 11 and 17 years, with some evidence of a peak in incidence at 15–16 years in girls and a steady increase over those years in boys (Whalen et al., 2021).

Despite a steady rise in suicide rates across the nation, our ability to predict suicidal behavior is limited. Studies have shown that childhood trauma can potentially differentiate suicide attempters from those with suicidal ideation (*Journal of the American Academy of Child & Adolescent Psychiatry*, 2022). However, we have limited understanding of the mechanisms through which childhood trauma impacts suicidal behavior and the role of protective factors in potentially buffering against its impact. Little is known regarding what triggers the transition from suicidality, defined by the American Psychological Association as the overall risk of suicide, to a physical suicide attempt, though literature suggests that suicidal ideation and behaviors can predict a later suicide attempt in adolescents (*Journal of the American Academy of Child & Adolescent Psychiatry*, 2022). What is not disputed is the evident traumatic effect both behavior and death by suicide have not only on a human life, but the network of loved ones and community members who feel the ripple of grief and distress accompanying the pathology.

Around 85% of United States citizens are estimated to personally know someone who has completed suicide (*Healing conversations: Personal support for survivors of suicide loss*, 2020) and of those that survive the decedent, an estimated 10-20% will develop complicated grief, or CG (Shear et al, 2011). Not only does CG result in worsened psychological, physical, and emotional well-being, it also represents a lengthened state of grief that interferes with normal functioning (Shear et al, 2011).

Suicidal behavior often occurs in the context of stressors. In order to better understand the impact of environmental factors on suicide risk, there is a prominent focus in this review on the impact of life stressors and protective factors on risk for suicidal behavior. The literature will be focused on several theories of suicide as well as risk and protective factors for suicidal

behavior in order to contextualize eventual analysis of young adult STB data through the lens of risk and protective factor interactions.

1.1 The Relationship Between Stressful Life Events (SLEs) and Suicidal Thoughts and Behaviors (STBs)

Life stress is central to most major theories of suicide, with stress defined as anything from acute to chronic stressful life events (SLEs) broadly correlated with both suicidal ideation and attempt alike (Liu and Miller 2014). In order to assess trajectory of risk to attempt, general frameworks like Interpersonal Theory of Suicide (ITS) (Chu et al., 2017), Integrated Motivational Volitional Theory of Suicide (IMV) (Stewart, 2019), Stress Diathesis Theory (SDT) (Stewart, 2019), and Three-Step Theory of Suicide (3ST) (Klonsky et al, 2016) offer differing views on whether certain categories of life stressors are more strongly related to SLEs than others, though this relationship has still yet to be extensively measured (Stewart, 2019).

The ITS, which has received the most empirical support as a STB predictive measure (Chu et al., 2017) posits that experiences constituting interpersonal loss or humiliation lead to a desire to die, both a compulsory prerequisite to an attempt and subsequent reflection of this theory's focus on a lack of perceived social belonging among attempters. This can contribute to a general assumption that certain traumatic experiences are more salient, or related to long term physiological and emotional symptoms, when clinical standards of care and research alike have shown that the impact of traumatic experiences vary by "characteristics of the individual, the type and characteristics of the event(s), developmental processes, the meaning of the trauma, and sociocultural factors" (Center for Substance Abuse Treatment, 2014). Stress Diathesis Theory

and IMV offer a broader theorization that any sort of psychiatric or psychosocial stressor, along with a ‘vulnerability’ to suicidal behavior (SDT) or the means to attempt (IMV), can lead to an eventual suicide (Stewart, 2019). This ‘vulnerability’ is often psychiatric disease prior to attempt, while means to attempt insinuates and includes access to lethal means. Three Step Theory (3ST) retains the hypothesis that any sort of SLE can contribute to an attempt, so long as it is personally disturbing enough to cause concurrent hopelessness and pain along with said hopelessness exceeding a sense of connectedness, the final ‘step’ being the individual’s capability to make the attempt (Klonsky et al, 2016).

While several studies did not find specific SLEs to predict future attempt after controlling for psychiatric symptoms and the severity of suicidal ideation (Daniel et al. 2017; Massing-Schaffer et al. 2019; Stone et al. 2014), others have found a predictive relationship between categories of SLEs, particularly childhood abuse, and an attempt later in life (Melhem et al. 2019). Some studies have consequently looked to examine these specific life stressors and overall risk for ideation and attempt by separating SLEs into acute and chronic stressors.

Thus far, only -SLEs categorized as interpersonal loss events have distinguished attempters from psychiatric controls (OR= 2.27, likelihood of attempters experiencing interpersonal loss demonstrated at a rate of 2.27 times higher than control group) and ideators (OR=1.49, likelihood compared to control). Interestingly, no chronic stressors (observed as family or close friend relationships as well as long term physical health) statistically differentiated ideators versus those who made attempts (Stewart, 2019). Rather, chronic stressors specific to long-term friendship stress have been shown to differentiate ideators and attempters, combined, from psychiatric controls in some studies (Stewart, 2019), or associated with ideation but not attempts in others ([Pettit et al. 2011](#)) .

In one study examining SLEs in all -patients with a primary complaint of STBs in a pediatric emergency department, 79.6% of suicide risk patients reported a recent life stressor, with said stressor increasing their odds of suicide risk by a factor of three for psychiatric chief complaints, and five times for those presenting with a chief general medical complaint (Stanley, 2013). The most common stressors were concerns about interpersonal relationships, health of self or loved ones, violence and harassment, school and activities, as well as death of loved ones.

Going forward, interest in compiling lifetime and recent SLEs for all STB patients has continued to be a primary clinical interest and investment in light of these and continued findings.

1.2 Interactions between SLEs and Other STB Risk Factors

Studies have identified impulsivity, agitation and anxiety, impaired decision-making, and lifetime aggression as important predictors for suicidal thoughts and behaviors (Fehling, 2021; Athey, 2018; Melhem et al. 2019). Several of these, particularly impulsivity and aggression in the adolescent population, represent what is commonly referred to as risk-taking behaviors, which, separate from SLEs, have also demonstrated a relationship to lifetime attempts, usually as a comorbidity to psychiatric or behavioral health diagnoses (Hallfors et al., 2004; Hantouche et al., 2010; Pena JB et al., 2012).

Impulsivity and aggression do not represent negative life events, but when combined with SLE history may interact with risk of attempt when impulsivity and aggression affect coping and tolerance to stressful environments and events (Fehling, 2021). While some of these so-called

impulsive or aggressive behaviors may be isolated in nature, many are correlated with diagnosable psychiatric diseases whose symptomatology includes the aforementioned behaviors, making psychiatric disease and aggressive or impulsive behaviors a common screening item in clinical suicide risk assessments.

Psychiatric disease is also widely recognized for its correlation to STBs. Notably, around 80% of American adult attempters exhibit previously diagnosed psychiatric risk, most frequently within alcohol abuse disorder (34%), depression (16%), and schizophrenia (10%), with depression being the diagnosis resulting in the most re-attempts 30 days post-discharge (32%) (Fehling, 2021). Despite this, the definition of which risk factors are leading to the ideation, behavior, or attempt itself remains broadly inconclusive, as mental illness is a well-researched risk factor, but does not differentiate between length of time with the psychiatric diagnosis, the patient's disposition or motivation to seek treatment, disease management, and much more which may affect the risk factor's actual impact.

An especially comprehensive study analyzed the National Violent Death Reporting System database, spanning 28,703 total decedents over twelve different states from 2003-2008, attempted to divide suicide deaths into category-based patterns of risk factors (Logan, 2011). In this way, the literature could serve to identify whether certain combinations of risk factor were more predictive of suicide than any single risk factor alone. Consequently, there were nine risk factor patterns identified among the decedent database, and two of these expressed only one distinct risk factor as a predictor of suicide, one such pattern being strictly any documented mental health disorder diagnosis or reported depressed mood prior to death and the other pattern being active substance abuse at time of death. The other seven patterns among the decedents exhibited multiple domains of risk factors, suggesting a multi-dimensional narrative contributing

to suicide in most cases. In other words, in the case of the individuals who died by suicide studied in the database, the majority exhibited more than one risk factor prior to death, suggesting a combination of risk variables rather than any one individual factor contributing specifically to STB behavior in the majority of cases.

Many of these risk factors comprised mental health disorders combined with another risk category, such as recent crises with relationship problems, criminal history, or interpersonal violence. Most decedents were white and non-Hispanic (around 73.9%), as well as males (64%), but among the female decedents, the majority found themselves categorized within the grouping with prior mental health diagnoses, making up between a quarter and a third of overall decedents in that group (25.6%-36.1%). These findings offer an indication of the major role that psychiatric disease plays in suicidal behavior among both biological sexes, as well as the prevalence of a multiplicity of risk factors in the majority of those who die by suicide (Logan, 2011). This element of compounding risk factors is especially crucial in preventative measures, while still addressing certain suicide risk factors as potentially more indicative than others on a large scale.

Generalist methods such as psychiatric risk and behavior assessments are still crucial in the healthcare and treatment sector, which experience time and bureaucratic restrictions to more inclusive assessment; in order to improve current outcomes for at-risk adolescents, it is nevertheless important to acknowledge the complex components that go into STBs.

On a clinical prevention level, risk-based questionnaires are at the forefront of interventional efforts. Suicide risk assessments include a variety of measurement tools based on client self-reporting such as the Patient Health Questionnaire (PHQ-9) used across a variety of primary healthcare settings, SAFE-T behavior and ideation assessments used in outpatient

facilities, and the more extensive Columbia-Suicide Severity Rating Scale (C-SSRS). Interestingly enough, the latter two assessment tools each have a distinct section focused on potential protective factors, or elements of an individual's life that may hold preventative value in impeding STB progression to attempt or completion.

Certain criteria, such as gender identity and sexual orientation, serve themselves as indicators of risk, as up to 43% of transgender young adults report lifetime attempts, sexual minorities demonstrate increased risk of STBs, and white males most commonly make attempts overall (Fehling, 2021).

While data analysis remains elusive when relating protective factors and STBs or attempt, there is nonetheless an understanding that community support or coping capacity may make a difference in interrupting the STB-attempt pipeline; many analyses furthermore make the distinction between presence of a particular protective factor in an individual's environment and whether that individual ultimately perceived said factor as a support (Logan, 2011; Howarth, 2020; Liu, 2016). In line with the investigation into whether protective factors and coping can play a significant role in prevention, assessment of STBs and attempt must include a comprehensive evaluation of these protective factors and how they interact with SLEs.

1.3 The Role of Protective Factors in STB Development

In young adulthood, individuals are exposed to changing conceptualization of identity, inquiry of new roles and responsibilities, as well as environmental changes that relate to new social and risk-based contexts. In the midst of change and subsequent attempts at adjustment,

protective factors may mediate negative psychological and behavioral responses that occur in direct response to stressors. Thus far, protective buffers consisting of a combination of external and internal factors has consistently been negatively associated with suicidal ideation (Youssef et al., 2013; Pietrzak et al., 2011; Lau et al., 2010; Cleverley & Kidd, 2011; Park et al., 2010) and suicide attempts (Lau et al., 2010; Roy et al., 2007; Nrugham et al., 2010). Just looking at external, or environmental circumstances, like greater social support, perceived social support in particular has demonstrated a negative correlation with both ideation (Shilubane et al., 2014; Bomyea et al., 2013); and attempts (Pompili et al., 2014) . Both as a moderator of stress, which has been discussed in relation to suicidal attempt, ideation, and behavior, and perhaps as a direct moderator of STBs and attempt, protective factors may serve as a beneficial risk measurement tool and treatment targets.

Protective factors can be grouped into internal factors and personal characteristics (such as self-esteem and self-efficacy) and external, or environmental factors, (such as relationships with friends, family and support network) that promote self-confidence and support them in dealing with stressful situations. While some of these protective indicators rely on positive reinforcement by outside parties (such as strong social support and security), others are engendered by self-reinforcement (such as perception of stress and self-image). Theoretically, the internal and external protective factors an individual has are not separate entities, but interact to create an overall, albeit often abstract, measure of resilience in response to SLEs. Salience of internal versus external factors has not been a focus of suicide resilience research. However, just as with the subjective impact of SLEs, the salience of any individual resilience factor may differ between individuals.

Contextually, just within the average middle and high school age group, 10% to 15% of kids have thoughts of suicide, according to the Centers for Disease Control and Prevention. In this regard, it may become important to consider the progression of STBs from childhood to young adulthood through a life history approach to behaviors, attempt, SLEs, and protective factors.

However, no significant decreases in suicidal ideation and attempts have been reported despite an increase in treatment for suicidal behaviors to date, suggesting a need to not only address the behaviors that often lead to attempt, but the lacking protective factors that indicate an ability to problem-solve in ways that do not include suicidal attempt as an option (Kessler et al., 2005).

The current standard for assessment and management of suicide risk incorporates a “systematic inventory of the strongest risk and protective factors for suicidal ideation and behaviors”, as seen in models like C-SSRS and SAFE-T questionnaires (Bongar & Sullivan, 2013). When attempting to better identify quantitative measures of risk, an important consideration is defining what adds and detracts from suicidal pathology. Along with mediating depression, stressful life events, and environmentally-initiated psychopathology, perceived social support statistically serves as a moderator in the association between stressful life events and suicidal behavior in several recent studies (Panagioti et al., 2014; Casale et al., 2019; Trujillo et al., 2017). Thus, there is a need to incorporate the contextual cultural factors that may be specific to the collective environment of target populations, and contribute significantly to STBs and attempts. Even among adolescents, those with differing racial, ethnic, gender, and sexual orientation identities may also experience SLEs specific to their life experiences and identity-based perspective.

A study by Chu et al. (2013) concluded that cultural risk and protective factors significantly predicted suicidal behavior beyond the contribution of minority status alone, highlighting a more specific and individualized type of risk factor. These findings are strengthened by the consistency of past study results, showing that specific cultural risk and protective factors such as discrimination, lack of family cohesion, acculturative stress, or cultural beliefs of suicide as unacceptable, are related with elevated suicide risk in ethnic, sexual, or gender minorities (Chu et al., 2010; Odafe, Talavera, Cheref, Hong, & Walker, 2016; Wong, Maffini, & Shin, 2014). In this sense, it is important to assess cultural and classical risk factors, in addition to factors pertaining to psychopathology, stress, and physiology.

Nonetheless, literature has consistently indicated that individual risk factors only account for a small proportion of the variation in risk (Min et al., 2015). In other words, despite finding significance in the correlative relationships between various risk and protective factors, the individual values do not seem to fully encompass the whole picture. This may be due to the complex interplay between these factors that is not represented by measuring them as separate entities, or even the confounding variables involved in STB development and attempt.

1.4 SLEs, Protective Factors, and STBs Through a Social Work Theory Lens

Despite the continual demonstration of SLE relationship to STBs, there is still a need to apply empirical data to practical clinical tools, such as those used in the social work field. Often, these studies collect categorical data indicating patient experience with various life stressors but rarely in a compounding and contextual sense that accounts for the effect of overlapping trauma

events, individual response to trauma, and the complexities of clinical understandings of protective factors. A considerable issue regarding life events screening then pertains to its inability to investigate the differences in outcome that derives from highly individual reactions to negative life events. Acknowledging the subjectivity of experience, the Center for Anxiety Disorders maintains that not all life events should be weighted universally in terms of their traumatic potential, instead encouraging a holistic approach to the STB assessment.

While maintaining measures with the most high-yield risk factors is appropriate when considering the population at large, identifying and acknowledging the influence of a multitude of life circumstances and events incorporates current understanding that many variables may contribute to STB outcome.

In addition to the more prevalent suicide theories (Interpersonal Theory of Suicide (ITS), Integrated Motivational Volitional Theory of Suicide (IMV), Stress Diathesis Theory, and Three-Step Theory of Suicide (3ST) , theories within the social work field can serve to complement an analytical understanding of exactly how SLEs contribute to STB likelihood, especially when defining ‘risks’ versus ‘protective factors’. These theories vary in their postulates and applications but are united in their focus on viewing suicidal motivation, thoughts, and behaviors through the lens of the individual’s experience in their environment (Bolton et al. 2022).

Systems theory has been foundational to a variety of current interactional analyses between client and environment, most especially by concerning itself with the homeostatic interplay between micro, mezzo, and macro levels of social organization and the individuals within that society. As application of this theory, crafted by Ludwig von Bertalanffy in the 1940s, expanded into a way to help clients determine how sociological structure influences individual perception of SLEs , social work theorists developed clinical tools that stressed how

an individual works to make sure the systems to which they contribute, from family to work environment to government, remain in balance (Bertalanffy, 1968; Bolton et al. 2022).

Expanding upon this discussion of systemic impact, ecological and person-in-environment theory (Bronfenbrenner, 1979) argue that variables outside of organized systems could have a profound impact on the behaviors and perception of individuals. Both ecological and person-in-environment theory are centered on the “interaction and interdependence of systems and how the assessment of one system cannot be done in isolation, but, rather, must take into account how the systems affect and are affected by each other” (Bolton et al. 2022).

Ecological theory maintains that individuals will encounter a series of environments throughout their lives, almost in steps similar to current understanding of human life stage development, that drastically alter their psyche and behaviors. Some of these include commonly screened STB risk items, such as perception of stressors, social support, and will to live. Person-in-environment theory similarly uses this hypothesis of social understanding to justify that therapeutically adjusting perception or environmental factors may be more effective in treatment than that which is focused on altering behavior alone.

While not all-inclusive, the above social work theories in addition to theories specific to STBs provide a strong framework for decades of work in intervention and prevention. Going forward, there has been a newfound spotlight on the implementation of clinical tools that combine the elements of client-focused analysis from the previously discussed theories with the additional step of client-led care plans.

Empowerment Theory, developed as a theory of social psychology by Marc Zimmerman, aimed to establish a model of social change that put those affected by adversity at the forefront of interventional efforts, both on an individual basis and as a community.

Nevertheless still theoretically impacted by organized systems, Zimmerman acknowledges the role of the individual in their own processing and treatment journey. Empowerment theory therefore addresses feelings of powerlessness and lost purpose in clients who face SLEs by offering up a model for “understanding the process and consequences of efforts to exert control and influence over decisions that affect one’s life” , and offering a chance to seek ‘control’ and personal meaning of life yet again (Zimmerman, 2000). Strongly goal-oriented, this particular theory has provided backing for exploration into how risk factors for STBs can possibly be buffered by the protective nature of social support, increased self-esteem, and even the self-awareness that can come with agency.

2.0 Methodology

2.1 Sample

Data analyzed to examine the relationship between STBs, SLEs, and protective factors is pulled from Dr. Nadine Melhem's PROMISE study database. The sample utilized for this statistical analysis comprises individuals between the ages of 18-30 years old and contains a total sample size of $n=333$ participants. The sample included healthy controls (HC), psychiatric controls (PC), suicidal ideators (SI), and suicide attempters (SA) in this age range.

People recruited through inpatient admission, or psychiatric controls ($n=92$), with no current ideation or history of suicide attempt were recruited from Western Psychiatric Hospital in Pittsburgh and followed for their first year following hospital discharge, with behavioral and clinical measures collected at baseline, 3 months, 6 months, and 12 months post-enrollment. Similarly, healthy controls ($n=57$) consented to participation through outreach on Pitt+Me, the University of Pittsburgh's Clinical and Translational Science Institute's (CTSI) public platform used to facilitate community participation in clinical trials. Ideators ($n=104$) and attempters ($n=80$) were recruited both in the inpatient and outpatient settings and while the former was defined respectively as those with current ideation, the latter were in treatment for a recent attempt.

All subgroups included were evaluated and defined by their response to the Columbia Suicide Severity Rating Scale (C-SSRS) during the recruitment process, and all groups received clinical and behavioral assessment during the timepoints previously provided (baseline, 3 months, 6 months, and 12 months).

2.2 Defining the Variables: SLEs, STBs, and Protective Factors

The primary goal of this quantitative study was first and foremost to determine the relationship between specific SLEs, defined protective factors, and STBs. As implied by current literature, certain life events may be more stressful than others, in other words, more empirically associated to STBs. The two independent variables examined in the hypothesis, SLEs and protective factors, were defined by the data collected through a range of self-reported measures. Factor salience was determined by the consistency, reliability, and validity of the measures, determined through peer-reviewed analyses of the questionnaires..

Several clinical tools were used in order to assess for both traumatic SLEs and everyday SLEs. For these SLE measures, a higher score indicated a higher lifetime occurrence of stressful life events. Some variables, including socioeconomic status, age, sex, and sexual orientation were collected for demographic purposes.

In terms of protective factors, perceived social support, reasons for living total score, and a generated social support score were assessed. Among these variables, higher score represented more potential protective capacity.

2.3 Clinical and Behavioral Assessment Tools

Mean and standard deviation were provided as an output of continuous data, or measured scores (such as questionnaire scores), and number of responses with percentage of the respondents was provided for categorical data, or responses that can fit into two or more

established categories. In order to establish statistical difference between the two variable types, continuous and categorical, the ANOVA and chi-squared tests were used, respectively.

Analysis of variance, or ANOVA test, is typically used to determine if there is a statistically significant difference between three or more groups along a continuous measurement scale by testing for difference of mean using variance. The dependent variable must be continuous, either a ratio or interval provided in the tests used, and the independent variable must be categorical, like the STB subgroups. For categorical variables where the variables were both nominal, the chi-square test of independence was applied, using formulaic values to evaluate whether there is a difference between actual and expected counts of the tested variable within the other variable subgroups. Similar expected and actual results will demonstrate lessened likelihood of a relationship.

2.3.1 Demographical Data Collection

Demographic information pertinent to this study was derived from participant response to their biological sex at birth, racial identification, age, and sexual orientation and gender identity. In terms of assigning these values, sex at birth, race, and sexual orientation were coded separately as male, white, and sexual minority individually holding a value of “1”, and female, non-white, and non-sexual minority each holding a value of “0”. Specific sexual orientation and racial identity were collected in order to evaluate the true scope and relationship between specific identities, STBs, SLEs, and protective factors. In order to understand the relationship between minority identities (specially racial and sexual orientation) overall, it was decided to use binary

categorization. Due to the limited sample size (n=87 of 333 participants) of non-White participants, the binary categorization also contributed to reducing the chance that statistical power would be skewed by comparison of individual racial identity categories.

Socioeconomic status was determined by participant response to the MacArthurSES questionnaire, providing both subjective and objective socioeconomic measurement (Singh-Manoux et al. 2003) Rather than evaluate participant economic status according to relatively objective methods like household annual income after taxation, the MacArthur Socioeconomic Scale places value on subjective self-evaluation of one's social standing in society by allowing the participant to visually rank themselves on a pictorial ladder diagram, with the highest rung representing the numeric value "10" and metaphorical highest socioeconomic group, and the lowest rung representing a value of "1" and the metaphorical lowest socioeconomic group. Unlike point-in-time measurements of income, subjective ratings may better "capture current and past socioeconomic situation, future prospects, family resources, life opportunities, the way people experience society and how they perceive themselves in relation to others" (Singh-Manoux et al. 2003). The objective portion of the measure compared education levels and household income. The MacArthurSES ladder measurement is provided in Table 1 as "SES Ladder" while differences in actual socioeconomic standing compared to others is simply listed in Table 1 as "SES".

What exactly is being measured by subjective response to socioeconomic status is still debatable and may be subject to bias regarding which population the participant is comparing themselves against, as well as personal definition of socioeconomic status. Nevertheless, the MacArthurSES questionnaire provides a viable option for participants to self-report socioeconomic status without needing to be aware of their exact household income.

2.3.2 SLE, STB, and Protective Factor Data Collection

In order to determine relationships between the sample groups and both protective and risk factors, a variety of questionnaires were used in order to generate the quantitative data needed to determine significant differences between the subgroups (HC, PC, SI, SA). These tools were chosen due to the internal consistency of their psychometric values and applicational success, or prior validity, within the young adult population, further discussed in the context of each measure used.

2.3.2.1 STB Outcome Determination

The Columbia Suicide Severity Scale was used in this study to help define participants as healthy controls, psychiatric controls, and either ideators or attempters. The scale itself functions by providing a series of questions in plain-language, meant to provide anyone regardless of clinical experience the ability to screen participants. As a clinical tool, the number and choice of questions the screener asks is completely dependent on how each subject responds and will range between two to six questions in total for each screening.

The screener is responsible for recording responses as a binary “yes” or “no” in addition to when this thought or behavior happened and a numeric scoring of its severity.

Now a commonplace STB measurement tool in the United States, the C-SSRS has been tested extensively for psychometric validity and reliability in a variety of population types, with studies verifying specific psychometric properties of the C-SSRS provided in Table 1 below. In certain studies focused on young adult suicide attempters in particular, worst-point lifetime suicidal ideation on the C-SSRS predicted suicide attempts during the study, whereas other commonplace measurements of STBs like the Scale for Suicide Ideation did not do this (Posner et al, 2011). The C-SSRS ideation subscale yielded a Cronbach's alpha of 0.87, 0.89, and 0.93, while the intensity, severity, and behavior subscales yielded Cronbach's alpha values of 0.73, 0.89, and 0.91; both subscales yielded high internal consistency (Posner et al. 2011).

2.3.2.2 SLE Data Collection

2.3.2.2.1 Childhood Trauma Questionnaire (CTQ)

The Childhood Trauma Questionnaire (CTQ) provided sub-scores of physical and sexual abuse, as well as total scores for neglect and abuse overall. The CTQ was developed as a screening tool for histories of both childhood abuse and neglect (Bernstein et al. 1997). The questionnaire itself is conducted through self-reported response and includes a 28-item test that span 5 categories of child maltreatment – emotional, physical, and sexual abuse, and emotional and physical neglect. Approximately five minutes is required to complete the test, and the resulting scores are derived from a five -point Likert scale that is then used to quantify the responses. which range from “Never True”-to “Very Often True”. Each subtype of child maltreatment is broken down into five questions that can be scored on the aforementioned Likert scale, with the other three questions evaluating whether or not the respondent may be minimizing their abuse or neglect experiences.

Various studies have identified the CTQ as reliable and valid in both clinical and non-clinical populations (Bernstein, Ahluvalia, Pogge, & Handelsman, 1997; Bernstein & Fink, 1998; Scher, Stein, Asmundson, McCreary, & Forde, 2001), with some focus given to young adult populations. Bernstein et al.'s (2017) psychometric analysis is highly cited, as the tool demonstrated that internal consistency of the CTQ factors was high within their adolescent inpatient psychiatric sample, with a Cronbach's alpha ranging from 0.79 to 0.94. CTQ scores were correlated with therapist-conducted ratings of participant abuse and neglect, supporting the convergent and discriminant validity of the CTQ in this sample (Bernstein, Ahluvalia, Pogge, & Handelsman, 1997).

2.3.2.2.2 Life Events Checklist (LEC)

The LEC provides the other traumatic SLE data used within the study through a list of potentially experienced events that participants can endorse. Per a nationally representative sample analysis by the National Comorbidity Survey, evidence showed that PTSD alone was significantly associated with suicidal ideation or attempts after controlling for other psychiatric diagnoses in the sample (Sareen et al. 2005) As such, tools like the Life Events Checklist, originally developed at the National Center for Posttraumatic Stress Disorder, have been used to screen for the traumatic life events most commonly found to contribute to PTSD symptomatology. The LEC assesses exposure to 16 events known to potentially result in PTSD or distress and includes one additional item assessing any other extraordinarily stressful event not captured in the first 16 items. There is no formal scoring protocol or interpretation methodology, but the tool can provide an overview of general exposures to trauma events throughout one's lifetime.

Respondents indicate varying levels of exposure to each type of potentially traumatic event by using a 6-point nominal scale, and respondents may endorse multiple levels of exposure to the same trauma type, allowing them to endorse different types of event occurrences. As such, a screen cannot necessarily determine a composite or total score representative of all traumatic events experienced, but does provide beneficial information regarding severity. Despite this, one methodology commonly utilized in the literature (Belleau et al., 2020; Heir et al., 2019; Leticia-Crepulja et al., 2020; Weis et al., 2018; White et al., 2015), is to add up all endorsed items from all exposure types to generate a total LEC score (minimum/maximum for each scale = 0/17, total score minimum/maximum = 0/51). Internal reliability for the total scores method in the aforementioned literature is highly rated and is used within this particular study to generate a score for each screened individual, with a Cronbach's alpha of 0.87-0.91 for total score (Weis et al., 2018).

2.3.2.2.3 Social Readjustment Rating Scale (SRRS)

In addition to commonly traumatic stressful life events, daily life stressors were measured within the subgroups to evaluate the differential and overall relationship of acute and chronic life stressors. While some items, like death of a loved one, are often viewed as negative life events, the scale also includes items like marriage and outstanding personal achievement, which may still contribute to stress level overall.

The Social Readjustment Rating Scale (also known as the Holmes and Rahe Stress Scale) was developed in 1967 by psychiatrists Thomas Holmes and Richard Rahe in order to examine the relationship between common life event stressors and acquired illness. 43 common life events were derived and weighted according to systematic review of their patients., with validity provided by a resulting positive correlation (+0.118) found within their study between Life

Change scores and illness scores (Holmes & Rahe, 1967). Gerst et al. later tested the reliability of the SRRS about a decade later, and found that the rank ordering of the included daily life stressors remained extremely consistent both for healthy adults ($r = 0.96 - 0.89$) and patients presenting with illness ($r = 0.91$ to 0.70); Cronbach's alpha overall was 0.85 in the tested population (Gerst et al. 1978). Nevertheless, inconsistencies in cultural and personal interpretation of the metaphorical weight of a given daily life stressor may differ and provide slight differences in calculated versus actual interpretation of one's stress.

2.3.2.3 Protective Factor Data Collection

2.3.2.3.1 Reasons for Living (RFL)

The RFL is a 48-item instrument that measures current values and thoughts associated with adaptive processes that may counteract common reasons for engaging in STBs (Linehan, 1983). In this study, it contributes to data with possible protective value against STBs. The RFL presents questions pertinent to six protective subscales of reasoning: Survival and Coping Beliefs, Responsibility to Family, Child-related concerns, Fear of Suicide, Fear of Social Disapproval, and Moral Objections (Linehan, 1983; Cwik et al. 2017). These items are then scored by the participant on a 6-point scale ranging from (1) "not at all important" to (6) "extremely important", with higher scores therefore representing an increased total degree of protection.

Initial analysis of this measure in adult populations reported moderate psychometric validity and reliability, with calculated Cronbach alpha factors in the six protective factor categories ranging from $.72$ to $.89$ (Lewinsohn et al. 1989). Since this initial scale was

developed, a more minimal scale, the RFL-A, was designed for the adolescent and young adult population, based on findings that indicated that only three of the subscales were useful in predicting suicide risk and general psychopathology, these being the fear of suicide, fear of social disapproval, and survival and in respect to hopelessness scores per the Suicide Probability Scale (SPS; Cull & Gill, 1988).

While the RFL-A may be more relevant to traditionally defined young adults (often designated as individuals between the ages of 18 to mid-20s), it neglects both the collection of participant feelings related to concerns for children and is not inclusive of this study's entire age range (18-30). The National Survey for Family Growth bolsters the importance of the children-related concerns subscale. The mean age that an individual gives birth to their first liveborn child in the United States is 23.1 as of the CDC's latest data collection between the years 2011-2015 (Centers for Disease Control and Prevention, 2017). This has not significantly changed from the mean age of 22.9 years old reported in 2002, emphasizing that child-related stressors have consistently been relevant even to the traditionally defined young adult population. In order to include values indicative of childcare stressors and maximize response options, the original RFL scale was used.

2.3.2.3.2 Multidimensional Scale of Perceived Social Support (MSPSS)

The Multidimensional Scale of Perceived Social Support (MSPSS) is a 12-item questionnaire that provides a measurement for participant perceived levels of social support in relation to family, friends, and significant others. Brief and self-determined, its resulting data set provides perspective into how individuals perceive their social environment, but whether they feel supported and well-connected within that environment. The MSPSS is measured using a 7-

point Likert scale, wherein a value of “1” represents a response of “very strongly disagree” and a value of “7” representing a response of “very strongly agree”.

The authors credited with the creation of the MSPSS, Zimet et al., found that this scale had a Cronbach’s alpha of 0.85 to 0.91 representative of high internal consistency and reliability. In addition to this qualification, confirmatory factor analysis (CFA) categorized a comprehensive three-factor structure (family support, friend support, and significant-other support) within the MSPSS (Zimet et al., 1988). Statistical analysis of the data provided by the MSPSS provided evidence that this measure is negatively related to parenting stress, loneliness and depression, and positively related to self-esteem and life satisfaction, indicating an overall good concurrent validity of this screening tool (Dunst et al., 1986; Bruwer et al., 2008; Jeong et al., 2013; Zhao et al., 2013; Kong et al., 2015).

2.3.2.3.3 Perceived Stress Scale (PSS)

The Perceived Stress Scale (PSS-10) is a 10-item self-reported questionnaire originally created in order to assess perception of stress levels reported in both young people and adults over the age of twelve (Cohen et al. 1983). The measure has been validated for use in both adolescent and adult populations (Kechter et al. 2019). The PSS functions by measuring the degree to which an individual has perceived life as unpredictable, uncontrollable and overloading over the previous month by asking participants to identify their thoughts and feelings using a five point Likert scale, with the value “0” representing the response “never” and the value “4” representing the response “very often”. Positively stated statement scores must be reversed (for example, a response of “0, never” for a positively stated statement would be calculated as a score “4” , as higher overall scores represent a higher level of perceived stress.

The PSS-10 has demonstrated consistent psychometric values throughout the literature. It has been shown to have a good internal consistency in both adults and university student populations, appropriate test-retest reliability over 2- and 4-week periods in adults, as well as construct validity demonstrated in the two factors (Perceived Helplessness and Perceived Self-Efficacy) isolated in both adults and university students (Lee, 2012). Chronbach's alpha for PSS total score was 0.89 (10 items), perceived helplessness factor was 0.85 (6 items), and perceived self-efficacy (4 items) was 0.82, all demonstrative of high internal consistency.

Cross-cultural studies are also indicative of high internal consistency through validity of results present in both American (Kechter et al. 2019) and Chinese adolescents (Liu et al. 2020). The PSS-10 showed good concurrent validity by producing data that positively correlated with measures of anxiety and depression in adults and university students (Lee, 2012) and in adolescents (e.g. Liu et al. 2020; Sood et al. 2013), as well as convergent validation by producing scores that positively correlated with the reported SLEs of Chinese adolescents (Liu et al. 2020).

2.3.2.3.4 Data Analysis and Software

In order to analyze the PROMISE study data collection, RStudio was used as the primary statistical programming tool; the interface was primarily utilized to pull the appropriate variables from the raw data freeze for pairwise comparison as well as to create the data tables. Pairwise comparisons were made between the STB subgroups to determine their statistical similarity in bivariate analysis; while the analysis of variance (ANOVA) is used to test for significant difference overall, post-hoc analysis through pairwise comparison can evaluate for statistical differences between the individual subgroups.

3.0 Results

3.1 Univariate Descriptive Statistical Analysis

Univariate data analysis describes each examined variable in the data set individually and in respect to the sample at large before comparative bivariate analysis between factors and STB outcome subgroups. As visualized in Table 1, Demographic Summaries by Group, all study participants answered three of the five items (age, sex, race), while only 81.7% (n=272) responded to the MacArthurSES measure, and 82.6% (n= 275) provided their sexual orientation. Of the total sample population (n=333), 42% were males (n=139) with mean age of 24.4 years old (Standard Deviation or SD = 3.6), 74% (n=248) were White, and about a third (34%, n= 94) identified as a sexual minority out of the 275 participants who responded to this particular question. Socioeconomic score is pulled from self-reported household income and education level. As a whole, respondents (n= 272) were two iterations under the average income and education level score of the population (mean= -0.2, SD= 0.8).

Traumatic SLE data from the Life Events Checklist (LEC) and Childhood Trauma Questionnaire (CTQ) was captured and differentiated in Table 2, Traumatic Event Summaries by Group. Participants reported an average 4.7 (SD= 3.3) experienced stressful or traumatic life events through response to the Life Events Checklist (LEC). The number of respondents varied depending on the screening item, with respondents neglecting to choose any response at all for some of the questions. As such, the number of respondents for the LEC in particular is quite variable between screening items.

293 respondents provided data to the total LEC score. For each screening item, sample sizes varied from 11.1% (n= 31) of the total respondents (n=272), with very few (n=37) of the total sample size responding to the item reporting “serious injury, harm or death you caused to someone else” to 66.7% (n=222) responding to the item regarding a “transportation accident”. Every other item generated a response total that fell between these two values. Respondent totals among all of the items demonstrated a significant range in the number of responses collected for each item and spread of these responses with respect to the average response-per-item value of 124.4 (Median= 128, Mean= 124.4).

For the CTQ, 310 participants provided responses to each reported subcategory of neglect and abuse, except for sexual abuse which had one less respondent (n=309). While 49% (n= 153) endorsed abuse experience throughout their childhood, 97% (n= 302) related to one of more questions pertaining to childhood neglect. Regardless of STB group, almost all of the respondents experienced some form of childhood neglect. Total subscore for respondents, comprising their Likert response to the five questions specific to the maltreatment type, was 7.8 for physical and emotional abuse, with standard deviations of 4.2 and 5.6 respectively.

Daily life stressors had a more consistent number of respondents (n=269-272) and rather than calculating reported Likert severity, simply tallied whether a given item was endorsed by the respondent. Regardless of event type, 96% of the respondents (n= 261) reported a daily stressful life event. Several were reported by half or more of the respondents, the more commonly reported every day SLEs being a new job (n= 184, 68%), a major change in personal habits (n= 160, 59%), change in residence (n= 167, 62%), major change in social activities (n= 161, 59%), and change in work situation (n= 165, 61%). On average, respondents reported a total of 11.0 (SD= 7.1) daily SLEs each.

Protective factors took into account total scores for the Perceived Stress Scale, Reasons For Living, and social support measures, and was visualized in Table 4, STB Protective Factors by Group. The PSS can range from 0 to 40 with higher scores indicating higher perceived stress. Scores from 0-13 equate with low perceived stress 14-26 with moderate perceived stress, and 27-40 with high perceived stress. Of the 269 respondents to the PSS measure, a mean score of 21.8 (SD=9.1) indicative of moderate perceived stress, is reported. Reasons for Living, the RFL, was completed by 295 participants. The highest possible score of the RFL, with higher score denoting more reported reasons for living, was 288. Of all participants, the mean score for this measure was 173.9, with a broad standard deviation of 41.8. For social support, calculated through response to the Multidimensional Scale of Perceived Social Support, the average Likert score of each response was averaged (between 1-7), with higher scores representing more perceived support (Table 4). The average score for the 12-item questionnaire was 5.4, with a standard deviation of 1.3.

3.2 Bivariate Descriptive Statistical Analysis

Unlike univariate analysis, which discussed demographic, SLEs, and protective factors in respect to all respondents, non-discriminant of STB subgroup, bivariate analysis sought to examine the relationship across the STB subgroups as one variable type, and demographics, SLEs, and protective factors as the other variable. Superscripts seen in the four tables represent statistically significant responses that differ between the four STB subgroups (healthy control being “HC”, psychiatric control being “PC”, suicidal ideators being “SI”, and suicidal attempters

being “SA”). In reference to the tables, statistically similar groups share the same superscript, while statistically different groups are indicated by a differing superscript. Statistical difference is again determined by the ANOVA and chi-square tests and expressed as a p-value in the tables.

3.2.1 Association between Demographic and STB Outcome Groups

Data pertinent to demographic response and differentiation among the STB subgroups can be found in Table 1, Demographic Summaries by Group. While age and race demonstrated the highest p-values, all other demographic factors demonstrated statistically significant variance among the subgroups. Healthy controls (n= 57) and attempters (n=80) both reported that 42% of their respondents were males, and these two subgroups differed significantly from psychiatric controls (n= 92) who only endorsed that 29% of their respondents as males, and ideators, whose male respondents made up more than half of their subgroup (n= 54, 52%)

_____The sexual orientation responses (p-value= 0.001) and socioeconomic income/education values (p-value= <0.001) produced the most statistically significant differences in the STB subgroups among all of the demographic variables. While only 9.8% of healthy controls (n= 5) identified as a sexual minority psychiatric controls (n= 31, 41%), ideators (n= 33, 41%), and attempters (n= 25, 37%) all had over a third of respondents who identified with this identity. For the income and education level measure of socioeconomic status, healthy and psychiatric controls both were slightly over the national average score (mean= 0.3, SD= 0.7), while ideators (mean= -0.4, SD= 0.8) and attempters (mean= -0.5, SD= 0.8) were both under the national average. The perceived SES ladder values similarly indicated statistical difference between

healthy controls and the three other groups (psychiatric controls, ideators, and attempters), with “rungs” reported with a downward trend in value from healthy control to attempter.

3.2.2 Association Between SLEs and STB Outcome Groups

Traumatic Event Summaries by Group, Table 2, reports differences in responses provided by the Life Events Checklist (LEC) and Childhood Trauma Questionnaire (CTQ), while Table 3, Daily Life Stressors by Group, provides additional SLE data pertinent to daily life stressors from the Social Readjustment Rating Scale (SRRS). Beginning with the Traumatic Event Summaries by Group, more than half of the LEC items (9 of the 17) binary response questions were statistically different between the STB subgroups, with an upward trend in total events experienced from healthy control (mean= 2.3, SD= 2.3), to psychiatric control (mean= 4.0, SD= 2.5), to ideators (mean= 5.3, SD= 3.1) up to the most potent STB-demonstrating group, that being the attempters (mean= 6.6, SD= 3.5).

LEC total is the only calculation within the Traumatic Events table (Table 2) that produces four distinct values between the subgroups that are all statistically different from one another according to their bivariate analysis tests. Statistical difference between groups is denoted by a superscript (a-d), with superscripts of the same letter indicating statistical similarity, and two different lettered superscripts representing statistical difference. Responses from the SRRS indicate only three distinct groups among respondents, though number of events endorsed as well as standard deviation does increase in a manner similar to that which is described by the LEC total event score, with healthy controls reporting 4.0 events (SD= 3.1), psychiatric controls reporting 10.4 on average (SD= 5.8), ideators reporting 13.0 (SD= 6.6), and attempters reporting the most total events at 15.0 (SD= 7.2).

Of the individual traumatic life events endorsed, several patterns can be noted. Four of the factors demonstrated significant difference between healthy controls and the other STB subgroups combined (psychiatric controls, ideators, and attempters), with the latter group reporting much higher endorsement of the event: physical assault, other unwanted or uncomfortable sexual experience, and any “other stressful experience”. This difference in endorsement of events between the healthy controls and all other STB groups is reflected similarly by several SRRS factors: major change in financial state, major change in arguments with spouse, major personal illness or injury, and major change in social conditions. Other factors demonstrated statistical difference between the two control groups together and the two STB-demonstrating groups as one (ideators and attempters).

Within the LEC measure, assault with a weapon was much higher in the STB-demonstrating group (66% of ideators and 74% of attempters) compared to the control groups (10% of healthy controls and 35% of psychiatric controls). Within the SRRS, this same pattern can be located within the subgroup differences between those who identified with being fired from work. Finally, there were several measures that yielded three statistically different groups.

In one of the LEC items that yielded three distinct groups, psychiatric controls are statistically different from healthy controls, and both groups differ separately from ideators and attempters. While LEC data does not yield this particular pattern, the SRRS question pertaining to trouble with an employer and major change in personal habits does yield this pattern.

Other factors in both the SRRS and LEC measures yield three distinct groups, with one of the STB groups demonstrating statistical similarity to two of the other STB groups (denoted by inclusion of two of the alphabetic denotations within the same STB subgroup’s superscript). Within the LEC questionnaire, only one factor yielded this particular data pattern, this being

response to experience with sexual assault. While only one individual from the healthy control (6.7%) endorsed this experience, those who responded positively to this item continued increasing from the psychiatric controls (n= 20, 48%) to the ideator group (n= 37, 73%). The attempters, however, fell in between the psychiatric control and ideating subgroups, with 69% having experienced sexual assault (n= 35).

From the SRRS, divorce as an item also produces three distinct groups but still increases in percentage of subgroup endorsing the response from healthy control to attempter, with healthy controls and attempters demonstrating statistical difference (0% of healthy controls affected to 25% of attempters affected), psychiatric controls (7.6%) being statistically similar to both ideators and healthy controls, and ideators (12%) being statistically similar to both psychiatric controls and attempters.

Other items in both the LEC and SRRS differentiated two distinct groups “a” and “b” within the four STB subgroups, with the subgroups themselves defined by a variation of statistical similarity to both “a” and “b”. As such, not all of the groups that followed this pattern type did not show any particular ascending pattern of reported events from the controls to the STB-demonstrative groups. For example, sudden accidental death was endorsed most in the attempters group (n= 21, 50%), and increased from healthy controls (n= 1, 7.7%) to psychiatric controls (n= 12, 48%), but the ideator group reported an endorsement that was in between healthy and psychiatric controls (n= 14, 37%) rather than between psychiatric controls and attempters. In the SRRS dataset, change in work situation increased from healthy controls (n= 21, 41%) to psychiatric controls (n= 53, 67%), but rather than continuing to increase in number of endorsements, was lower in ideators (n= 47, 61%) and statistically similar to attempters (n= 44, 68%).

Of the two category groups, several did follow an ascending pattern among endorsements per STB subgroup. Detention in jail, despite only demonstrating significant difference between attempters and healthy controls, was endorsed in an ascending order from healthy control (n= 0, 0%) to attempter (n= 11, 17%). Death of spouse, close family member or friend, major change in recreation and major change in living conditions also all showed increasing endorsement across the STB subgroups. However, in this case, ideators and attempters were categorized as one group that was jointly different from healthy controls, with the psychiatric control data being similar to both of the delineated categories.

Finally, all but one of the CTQ items (CTQ neglect) demonstrate significant differentiation among the STB subgroups. Item endorsement among all other CTQ items increased from healthy control to attempter, with most items displaying three categories of significant differentiation among the STB subgroups. While the binary abuse item only showcases two distinct groups, between healthy controls and all other subgroups, endorsements are still expressed as increasing among the healthy controls (n= 1, 1.9%), psychiatric controls (n= 42, 49%), ideators (n= 59, 63%), and attempters (n= 51, 66%).

3.2.3 Association Between Protective Factors and STB Outcome Groups

STB Protective Factors by Group, Table 4, differentiates groups by respondent participation in the Perceived Stress Scale (PSS), Reasons for Living measure (RFL), and Multidimensional Scale of Perceived Social Support (MSPSS). All collected values across the four STB subgroups were statistically significant (p-value+ <0.001) and differentiated into three distinct groups, denoted by superscript “a”, “b”, or “c”. There was a clear descending or ascending pattern across groups, starting from healthy control and continuing the given pattern

through to the attempter group. As such, perceived stress increased as STB potency among the groups increased, while reasons for living and perceived social support descended in reported value in the same manner across groups. For each measure, healthy and psychiatric controls were significantly different from each other and from ideators and attempters as a combined entity.

4.0 Discussion

Integrating questionnaire responses related to demographic, protective factors, and stressful life events serves to differentiate whether variable types are significantly different across the four STB sample groups, those being healthy controls (HC), psychiatric controls (PC), suicidal ideators (SI), and suicide attempters (SA). In correspondence with the literature pertinent to protective factors, risk factors, and STBs, there is a hypothetical expectation that risk factors will generally increase as STB severity increases, and that protective factors will decrease with STB severity. This is also taking into account the importance of the measured everyday stressors and protective factors being representative of present-day circumstance during the time the individual is categorized into their identified STB subgroup. Lifetime factors, like abuse experience, are excluded from this understanding.

4.1 Demographic analysis

Demographic data collection was the first line of analysis, and perhaps least likely to elicit respondent bias, as most questions pertained to identity and verifiable social data, with personal identity questions like sexual orientation being left optional to the respondent. The data analysis corroborates with well-established understanding of the demographic risk factors associated with STBs, especially those pertaining to increased overall STB risk among sexual/gender minorities and among white males, but with a few interesting distinctions (Fehling, 2021).

Per Table 1, Demographics Summaries by Group, a little less than half of male respondents were reported overall (n= 139, 42% of the overall respondent sample of n= 333). While males were the majority group in the ideator subgroup (52% of respondents), they made up only 42% of the attempter subgroup. The sample overall was made up of mostly White participants (n= 2481, or 74% of the total sample n= 333), and White participants did represent over half of all STB subgroups, but were least represented in the attempter group (n= 51, or 64% of the total sample n=333). Considering that 74% of the total sample reported themselves as being White, one would expect that White respondents would dominate all of these groups due to the preexistent distribution of racial identities in the sample, however, it may be of interest that the percentage of non-White participants was highest in the attempter group.

Nationally, there is a statistical standard that around 70% of completed suicide attempts are made by White males across all age populations (Neil Watkins, 2021). It has, however, been proven difficult to encapsulate whether there is a major population difference in those who complete suicide and incomplete attempts.

While both “attempter” and “decedent” groups insinuate a desired attempt to end life for the individual, suicide completion is also dependent on method used, with, for example, firearms being much more likely to result in completed suicide than options like ingestion. While firearms are more likely to be used by males, and ingestion by females, availability of the tools used, cultural background, and personal circumstances also play a major role in the method used, limiting both how accurately this specific detail can predict gender distribution pertaining to method, as well as how it may affect completion outcome (*Lethality of Suicide Attempts*, 2017). Inevitably, a plethora of variables provide an additional layer of context to analysis of incomplete suicide and distinguish this population from what can be contrived from those who

died from a suicide attempt. In this case, various cultural and personal experiences of each participant in this particular sample may contribute to slight population differences that trend differently than expected numbers, such as why the attempter population has a slightly lower ratio of White participants (64%) than the other STB subgroups. Because White males are the most likely population to choose suicide methods that result in higher rates of suicidal completion, it is also likely that White male attempters were less likely to survive or maintain the independent capacity to participate as an attempter respondent within the PROMISE study.

Outside of biological sex and race, age of respondent additionally allows for analysis of how the PROMISE dataset reflects changing epidemiology of STBs as clinical care specialization and generational acceptance of mental health treatment increase over time. Notably, rates of suicide are highest among adults aged 25-34 (18.35 per 100,000) as well as 75-84 years (18.43 per 100,000), with the highest demographic rate being middle-aged White males (*Lethality of Suicide Attempts*, 2017).

Given the mean age of participants being 24.4 years, the differences in the amount of non-White individuals making suicide attempts may also be changing with younger generations, an observation that has already been made by the CDC as suicide rates for non-Hispanic White people declined from 2000-2018, and Hispanic and non-Hispanic Black populations saw increased rates that increase to this day (Curtin et al. 2022). The attempter group in this sample is the lowest age group among the STB subgroups, with the average respondent being 23.6 years old. As cultural context and response to mental health changes, especially for those identifying as men, other risk and protective factors may begin to emerge in younger populations of those with STB.

For example, it is commonly acknowledged that up to 90% of suicide decedents suffer psychiatric illness prior to their death (Curtin et al. 2022). Between 2019 and 2021, adults aged 18-44 went from the age group least likely to received mental health treatment in the United States to the group largely driving a recent increase in sought-out mental health treatment in the United States, with likelihood of accessing professional mental health care decreasing with age (Terlizzi & Schiller, 2022). Terlizzi and Schiller, using the 2021 data from the National Health Interview Survey, found that while non-Hispanic White adults (24.4%) experiencing mental health disorders have begun to access clinical care at increasing rates compared to statistics as recent as 2019, non-Hispanic Black (15.3%), Hispanic (12.6%), and non-Hispanic Asian adults (7.7%) were significantly less likely to access the same care resources.

Though socioeconomic status and sexual orientation were the two demographic questions that were deemed optional by some of the respondents, both variables yielded patterns among the STB subgroups that support an understanding of person-in-environment and ecological theory. Individuals in young adulthood and adolescence experience, generally, new encounters that demand newfound independence and exploration of identity. Seventy-one percent of young adults work a full- or part-time job, fifty-two percent work two or more jobs, and more than half (54%) manage most or all of their finances by the age of twenty-six; nevertheless, parental figures still remain a primary financial influence for a third of young adults, signifying a possible conflict of personal agency and simultaneous dependence in this particular age group (*U.S. young adult financial independence study*, 2021). Not only might this financial transition and relationship contribute to personal and environmental stressors, these complex and highly nuanced variables conflate a variety of variables relating to environmental support, a noted protective factor.

Additionally, the endorsement of increased actual (SES) and perceived (SES ladder) socioeconomic difficulty among ideators and attempters may contribute to low rates of consistent clinical care in the STB attempters until they make an attempt, at which point treatment levels go up in correspondence with often mandatory or suggested treatment post-stabilization. From the World Health Organization's World Mental Health Surveys, Two-fifths of suicidal respondents received treatment, ranging from 17% of those located in low-income countries to 56% of respondents residing in high-income countries (Bruffaerts et al. 2011). While low perceived need was the primary reason for not seeking help (58%), 40% sought to solve their STB concerns without professional help, and 15% were primarily affected by financial deterrence from treatment. (Bruffaerts et al. 2011). Especially in low-income communities and populations, accessing mental health care does not often occur until after an attempt has been made, preventing the initial opportunity to focus on intervention and prevention goals.

Several studies endorse family support as a strong protective factor; specifically, LGBTQ+ youth through the Family Acceptance Project were fifty percent less likely to make a suicide attempt if their families were supportive of their identity than those whose families were not supportive (Substance Abuse and Mental Health Services Administration, 2021). In this way, the significance of LGBTQ+ young adults in this study being 27.2-31.2% more likely to experience psychiatric illness or STBs can be understood through the lens of environmental social work theories of person-in-environment and ecological theories: as individuals experience different stages of life, they are dually affected by systems of family and friends as well as societal, organizational, and cultural structures. Despite generational advancements in favor of the LGBT community, with US acceptance of homosexuality increasing from 51% in 2002 to 72% in 2019

(Greenwood, 2020), a third of LGBTQ+ Americans still faced discrimination in 2020 (Director M.C.A et al. 2023).

More than just an indicator of the populations of people most likely to experience STBs, demographic data can serve to indicate trends in societal change revolving around identity, shared risk and protective factors, and chronological change pertaining to the cultural context of STBs.

4.2 SLEs and Protective Factors

The proposed hypothesis posited that a statistically significant difference would be visible between not just those with active STBs compared to the controlled healthy and psychiatric populations, but also between all four subgroups (healthy controls, psychiatric controls, ideators, and attempters). Traumatic events experienced by participants were not always indicative of whether or not someone would be more likely to experience STB behavior in this study. Incidents like accidents, natural disasters, life-threatening illness, and even severe human suffering did not demonstrate a statistical difference between groups; many of the traumatic events that were different among subgroups involved the concept of perpetration, with assault of all kinds (physical, with a weapon, and sexual) all resulting in an increased prevalence in attempters compared to the control groups and ideators, sans the sexual assault and uncomfortable sexual experience groups.

Interestingly, though prevalence increases from healthy control to psychiatric control to ideator, the attempter prevalence of unwanted sexual experiences is lower than the ideator groups

both times. The CTQ, or Childhood Trauma Questionnaire, does however show a clear upward trend from control to attempter among the subgroups; such is true and significantly significant across physical, sexual, and total childhood trauma and abuse scores. However, despite increasing, only the sexual abuse total scores differentiated the attempter group strongly from the ideator group and control groups.

Healthy controls endorsed almost negligible levels of sexual and physical abuse in this sample. Though not every daily stressor increased in an ascending prevalence among subgroups from healthy control to suicide attempter, all of the daily life stressors included in the questionnaire increased in prevalence between the healthy control group compared to the attempter group. This measurement is not a subjective measure of whether said event was stressful to the person, but rather a checklist of the amount of subgroup respondents who endorsed a particular item; therefore, as number of daily stressful events experienced increases across the subgroups in the same pattern traumatic life events experienced does (both with a $p < 0.001$), it can be acknowledged that stressful life events of all kinds play a significant role in the development of STBs. While all subgroups for traumatic events are different from each other as shown in Table 2, daily stressors are only significantly different between healthy controls, psychiatric controls, and ideators and attempters as a combined entity. This may speak to the salience of trauma events; it may be that increased traumatic life events may result in a higher prevalence of attempt even in spite of protective factors, while daily stressors simply elicit higher prevalence of STBs as a whole.

While only half of healthy controls experienced another stressful life event that was impactful enough for them to remember, but not listed in the provided Life Events Checklist tool, 92% of attempters and 97% of ideators could answer affirmatively to this question. Not

only does this necessitate further investigation into what other items might be evaluated on the LEC, it also exposes the concept of perceived stress and susceptibility to STBs. One might ask whether ideators and attempters are experiencing these unlisted stressors in isolation from healthy controls (as psychiatric controls also respond affirmatively at a rate of 95% in this sample), or if they healthy controls are experiencing these events but are much less likely to actually perceive them as significantly stressful. Stress diathesis theory and Interpersonal Theory of Suicide may provide a unique perspective to this distinction that coincides with this study's understanding of the measured protective factors.

As previously described, stress diathesis theory combines a psychosocial stressor such as those studied in the thesis with a “vulnerability” to suicidal behavior as a catalyst to STBs, (Stewart, 2019), while ITS highlights a lack of social belonging as a main indicator of risk for STBs (Chu et al. 2017). Humiliation is not measured in this sample, but social support can be contrived from the events the respondents experienced as well as reported protective score scales, which include perceived social support and resulting confidence in said social circle. As the childhood abuse scores increase across the subgroups, it becomes more and more likely that the respondents spent parts or the entirety of their formative childhood years feeling unsafe at one point in time; this, however, is not always the case and must not be assumed from the data. In line with understanding of systems theory, exposure to external oppressing systems like discrimination and disparity can contribute to trauma in conjunction with perception of said trauma throughout development proposed by ecological theory (Bertalanffy, 1968; Bronfenbrenner 1979).

Protective factors then become the differentiating factor in many of these cases and rely heavily on both personal affirmation that the protective factors are significant to them as well as

circumstantial variables such as community support; there is a clear necessity in evaluating cases holistically and along lines of personal identity, cultural and societal context, and perceived and actual stressors. In other words, while trends of specific factors can be derived in clinical studies, there will always be a need for reform to the tools used that encompasses new understanding of STB epidemiology; a prominent need is evident regarding a transition from internal factors such as psychiatric treatment, and more all-encompassing care that assesses external variables (social relationships, societal acceptance of identity) and how individuals cope and adjust to perceived and actual relationship to systems.

In this way, the “vulnerability” described by stress diathesis theory, or the lack of social belonging in ITS, can be potentially buffered by higher levels of social support. Table 4, STB Protective Factors by Group, corroborates and supports these proposed methods of “buffering” STB risk salience. Ideators and attempters were not differentiated statistically as different subgroups by the results, but the results did affirm theories of protective variables in general STB behavior.

While measured social support and reasons for living both decreased in protective value from healthy controls to attempters, perceived stress increased in the same order among the subgroups. Those experiencing lower levels of social support were not only less likely to report clear reasons for living, indicative of hopelessness, but also had higher levels of perceived stress. This may very well provide context for the reported miscellaneous trauma events in the CTQ measure being endorsed at a much higher level among those least likely to have the presence of social support or meaningful life purpose.

Not only is there an inverse relationship between reasons for living and social support scores versus perceived stress, but also actual reported stressful life events. This finding suggests that

increased perception of stress goes hand-in-hand with an increased lifetime history of SLEs, and may also relate or contribute to less perceived and actual support from those around the individual, further exacerbating separation from others and community that can also contribute to decreased reasons for living. Many of these measured protective factor variables relate to an conceptualized notion of control over one's life and thus agency, a paramount concept in empowerment theory. Notably, certain theoretical frameworks regarding the psychological mechanism of STBs suggest that suicidal behaviors arise as a way of regaining control after an acute period of instability, or perhaps due to long withstanding personal life conflict (Macintyre et al. 2021).

This instability may very well be the result of compounding chronic and acute SLEs and internal conflict therefore pertaining to the various strains of identity, relationships with one's environment, and the metaphorical weight of the stressors themselves. As visualized in the dataset, stressors increase from control to STB groups, with ideators and attempters having the most to balance in terms of numeric life and traumatic stressors. Returning to the current understanding of empowerment theory as an interventional methodology for increasing personal autonomy and control in one's life, there is a distinct understanding that marginalized groups experience systemic oppression that can contribute significantly to disempowerment. Systems theory applies an understanding that oppression occurs on micro, mezzo, and macro levels in ways that compoundly burden affected individuals. While often centered on specific identity populations (racial, ethnic, gender and sexual identity), empowerment theory might going forward be impactful for identifying the structural and cultural components contributing to STBs.

In tandem with physiological predisposition to STBs and the psychiatric conditions that often preface them, the identification and simultaneous intervention of personal and systemic

interactions with one's sense of identity and agency may allow for meaningful re-establishment of control. By using empowerment theory's methodologies of finding meaningful relationships with the community and oneself, perceived sentiments of social support and life meaning (reasons for living) may in turn increase for certain individuals. Empowerment theory's secondary focus of orienting an individual to their current and desired future circumstances may also serve to ground certain individuals in the STB population who struggle with cognitive distortions and reorient them to reality, thus increasing likelihood of true perception of available support.

The nature of these relationships to protective factors and SLEs clearly differentiate STB subgroups from controls by promoting a profile that suggests low levels of actual and perceived social support, high levels of traumatic and life stressors, as well as a clear perception of this stress that manifests psychologically. Emphasis of control regarding these factors may be a crucial next step in the development of STB epidemiological understanding, in tandem with whether the relationship the STB population has with the life-agency empowerment theory promotes impacts whether they are more likely to view SLEs as more impactful on their stress levels.

5.0 Implementation in the Social Work Setting

While working to improve client sense of agency and appropriate clinical treatment, systemic and ecological theories, along with empowerment theory, can be implemented in community and macro-level settings in order to improve societal acceptance of mental health, injustices that contribute to increased STBs in marginalized populations, and resource allocation for empirically-tested treatments. Crucially, social acknowledgment of how social support impacts STB outcome, as well as fighting socioeconomic and cultural barriers for the STB population, may make a tangible difference for those impacted primarily by these variables. This understanding of systemic impact adds dimension and context to the importance of trauma-informed practice with all clients regardless of social work specialization, especially given the prevalence of SLE experience demonstrated across all observed subgroups in this study.

Several suggestions can be made regarding the current approach to client case management in the young adult population in regards to mitigating the effects of SLEs in relation to STBs; using a strengths-based approach in the motivational interviewing setting, social workers should feel comfortable engaging with clients using the clinical instruments in this study to assess SLEs and protective factors, along with the narratives that clients share regarding their perception of life events both traumatic (LEC and CTQ) and every day in occurrence (SRRS), as well as protective factors (PSS, MSPSS, RFL) in order to practically understand the difference in actual and perceived experiences.

Pre-existent exposure of clinicians to PIE and systems theory acknowledges the priority of social workers to uplift, respect, and ultimately work alongside minority communities rather than

above them. Many of the financially significant factors in this study, such as being fired, lower perceived and actual income levels, and lower overall perceived and actual support from others contribute to higher likelihood of STBs. In the case of sexual minorities, ecological theory provides basis to the stages of life, particularly young adulthood, that can lend to environmentally impactful micro, mezzo, and macro level variables that impact self-perception, sense of control, and psychological processes involved in STB behavior.

In this way, and in correlation with associations between SLEs, STBs, and protective factors, there must be a focus turned to environmental change in tandem with psychiatric treatment. Both in the lives of clients and society at large, the professional obligations of social work require empowerment in self-agency and eliminated stigma-based assumptions.

The findings suggest that efforts should be prioritized that specifically consider how community organizing and social action initiatives might intersect with individual clinical assessment of patient risk factors based on stressful life experiences, social support, and specific demographic risk and protective factors. By unifying empowerment initiatives that prioritize patient agency in the care process along with community organizing that validates support of vulnerable populations and systemic misconceptions of these populations, holistic STB outcome prevention and treatment become not just a clinical dilemma, but a community effort for change. These STB prevention and treatment clinical practices should prioritize the involvement of clients in not only their own treatment process, but societal level change to their comfortability in order to promote agency and client-led disclosure of perceived and actual variables involved in their personal narrative.

Recent studies have indicated that peer engagement and “lived-experience” leadership in the mental health sector has been beneficial to the treatment process (Byrne et al. 2018) and in

conducting more efficient research studies when individuals with lived experience are leading said studies (Jones et al. 2021).

The engagement of field workers in initiatives that involve individuals with lived experience in the process of advocacy and outreach may especially serve to normalize both seeking out treatment and the value of individuals with lived experience in leadership positions; in promoting a professional partnership in the realm of public advocacy where appropriate, field workers may also gain further insight into a more holistic view of these populations.

6.0 Conclusion

The relationship between STBs, SLEs, and protective factors are often obfuscated by the complex systemic and personal factors that provide nuance to the impact these variables have on individual members of the population, one in ten young adults, that experience STBs by that time period of their life. What can be derived just from the overall total of traumatic and daily life stressors is that there is a clear increase in these types of events moving from healthy controls, psychiatric controls, ideators, to attempters. While daily life stressors do not separate ideators and attempters from each other as statistically significant STB subgroups, traumatic events do separate each subgroup from each other, demonstrating a high likelihood that there is an increasing proportional relationship between likelihood of experiencing STBs and number of traumatic events experienced. Perceived stress also demonstrates a relationship similar to daily life stressors, wherein perceived stress scores increase along the subgroups, starting with healthy controls and ending with attempters.

In this way, not only do actual itemized SLEs increase among the subgroups in a meaningful way, but perception of these stressors also increases. This may have to do with proportional perception of stress increasing as more types of stressful life events are experienced, as well as higher recollection of the miscellaneous SLEs discussed in the CTQ trauma event tool, suggesting that those who experience STBs or psychiatric illness are more likely to have perceived experiences as stressful that healthy controls do not.

Conversely, perceived social support and reasons for living decreases from healthy controls to attempters, with attempters and ideators grouped together as significantly different from both healthy controls and psychiatric controls. In recognition of the proclivity for

psychiatric illness and STBs that the sample statistically shows, it may be crucial to further examine the ways that systemic and cultural variables impact identity and sense of belonging. These inverse and proportional relationships between STBs, SLEs, and protective factors in the sample dataset provide insight into the holistic treatment options and understanding of STB epidemiology the clinical field seeks to advance. Many variables pertaining to STBs, both actual and perceived, contribute significantly to STB development, whether it be stressors, protective factors, or demographic indication of identity, as evident by LGBTQ+ prevalence of STBs and psychiatric disease.

The finding that STBs, traumatic and daily life SLEs, and protective factors relate to each other in a statistically significant manner provides, on its own, the suggestion that these sorts of measurements might hold some predictive value that may contribute to clinical prevention and intervention of suicide attempts in young adults.

The relationships between STBs, SLEs, and protective factors provide impetus for interventional methodologies that target both clinical and systemic change. Six of the seven statistically significant items pertaining to specific traumatic life events in Table 2, Traumatic Event Summaries by Group, directly involve violence enacted by an individual other than the respondent, with fire/explosion being the only other item demonstrating any sort of meaningful difference in the sub-score between STB subgroups. Social movements that prioritize de-escalation of violence, especially in communities, fights back against a cycle of victimization that finds victims of abuse potentially becoming perpetrators themselves, or experiencing repeated experiences of violence exposure.

The clinical tools, such as the CTQ, LEC, RFL, PSS, SRRS, and MSPSS used in this study, can be potentially used or optimized for the clinical setting to evaluate suicide risk not only along

the lines of demonstrated STBs, but also the risk factors and systemic relationships a respondent experiences. Using this sort of data collection, clinicians like social workers can not only implement theory-based treatment specific to cognitive processing relating to specific STBs, but also environmental and systemic theories like person-in-environment, systemic, ecological, and empowerment theories that unify an understanding of external and internal risk and protective factors in the young adult population.

Appendix A Appendices and Supplemental Content

The following tables were derived using the most recent data freeze from the PROMISE study conducted by Dr. Melhem and associates. Parameters for reading and measurement of the data, dependent on variable type, is included as a footnote beneath each individual graph.

Appendix A.1 Tables and Figures

Appendix Figure 1 Paragraph Mark

Table 1

Demographics Summaries by Group							
Term	n	ALL (N = 333)	HC (N = 57)	PC (N = 92)	SI (N = 104)	SA (N = 80)	p-value
Sex, Male	333	139 (42%)	24 (42%) ^{a,b}	27 (29%) ^a	54 (52%) ^b	34 (42%) ^{a,b}	0.016
Age (years)	333	24.4 (3.6)	24.5 (3.5)	24.7 (3.2)	24.8 (3.9)	23.6 (3.7)	0.154
SES	272	-0.2 (0.8)	0.3 (0.7) ^a	0.03 (0.7) ^a	-0.4 (0.8) ^b	-0.5 (0.8) ^b	<0.001
SES Ladder	270	5.6 (1.9)	6.8 (1.1) ^a	5.8 (1.6) ^b	5.2 (2.1) ^b	5.2 (2.2) ^b	<0.001
Race, White	333	248 (74%)	46 (81%)	69 (75%)	82 (79%)	51 (64%)	0.070
LGBTQ, Yes	275	94 (34%)	5 (9.8%) ^a	31 (41%) ^b	33 (41%) ^b	25 (37%) ^b	0.001

¹Mean(SD) for continuous variables; n (%) for categorical

²ANOVA for continuous variables; X² test for those categorical

³Different superscripts represent differing groups after adjusting for pairwise comparisons

⁴SES stands for Socioeconomic Status; SES and SES Ladder measured with MacArthurSES

Table 2

Traumatic Event Summaries by Group							
Term	n	ALL (N = 333)	HC (N = 57)	PC (N = 92)	SI (N = 104)	SA (N = 80)	p-value
Natural disaster (hurricane, earthquake, flood, tornado)	131	82 (63%)	11 (61%)	20 (59%)	27 (63%)	24 (67%)	0.923
Fire or explosion	121	74 (61%)	8 (67%) ^{a,b}	9 (33%) ^a	26 (62%) ^{a,b}	31 (78%) ^b	0.004
Transportation accident	222	175 (79%)	26 (72%)	48 (77%)	56 (82%)	45 (80%)	0.659
Serious accident at work, home, or during recreational activity	128	93 (73%)	10 (71%)	22 (67%)	37 (76%)	24 (75%)	0.826
Exposure to toxic substance (chemicals, radiation)	51	27 (53%)	1 (25%)	4 (40%)	6 (43%)	16 (70%)	0.190
Physical assault	190	161 (85%)	10 (56%) ^a	43 (86%) ^b	56 (85%) ^b	52 (93%) ^b	0.005
Assault with a weapon	123	71 (58%)	1 (10%) ^a	9 (35%) ^a	29 (66%) ^b	32 (74%) ^b	<0.001
Sexual assault	159	93 (58%)	1 (6.7%) ^a	20 (48%) ^b	37 (73%) ^c	35 (69%) ^{b,c}	<0.001
Other unwanted or uncomfortable sexual experience	166	127 (77%)	4 (29%) ^a	41 (79%) ^b	42 (88%) ^b	40 (77%) ^b	<0.001
Combat or exposure to a war-zone	76	11 (14%)	1 (10%) ^a	0 (0%) ^a	3 (12%) ^a	7 (33%) ^a	0.023
Captivity	53	24 (45%)	0 (0%)	4 (40%)	8 (47%)	12 (55%)	0.271
Life-threatening illness or injury	157	107 (68%)	17 (63%)	32 (70%)	30 (70%)	28 (68%)	0.934
Severe human suffering	104	71 (68%)	6 (75%)	17 (81%)	27 (69%)	21 (58%)	0.336
Sudden violent death (homicide, suicide)	135	53 (39%)	2 (14%)	10 (31%)	19 (45%)	22 (47%)	0.099
Sudden accidental death	118	48 (41%)	1 (7.7%) ^a	12 (48%) ^b	14 (37%) ^{a,b}	21 (50%) ^b	0.043
Serious injury, harm, or death you caused to someone else	37	27 (73%)	1 (50%)	7 (88%)	7 (70%)	12 (71%)	0.640
Any other stressful event or experience	143	133 (93%)	3 (50%) ^a	36 (95%) ^b	57 (97%) ^b	37 (92%) ^b	0.008
Total number of events experienced	293	4.7 (3.3)	2.1 (2.3) ^a	4.0 (2.5) ^b	5.3 (3.1) ^c	6.6 (3.5) ^d	<0.001
CTQ neglect, yes	310	302 (97%)	53 (100%)	83 (97%)	93 (99%)	73 (95%)	0.226
CTQ physical abuse total	310	7.8 (4.2)	5.3 (0.8) ^a	7.4 (3.5) ^b	8.6 (4.6) ^{b,c}	9.1 (5.0) ^c	<0.001
CTQ sexual abuse total	309	7.8 (5.6)	5.0 (0.0) ^a	6.8 (4.2) ^{a,b}	8.0 (5.6) ^b	10.6 (7.4) ^c	<0.001

CTQ total	310	58.6 (11.0)	52.0 (3.3) ^a	57.0 (9.0) ^b	60.4 (11.7) ^{b,c}	62.7 (13.1) ^c	<0.001
CTQ abuse, yes	310	153 (49%)	(1.9%) ^a	42 (49%) ^b	59 (63%) ^b	51 (66%) ^b	<0.001

¹Mean(SD) for continuous variables; n (%) for categorical

²ANOVA for continuous variables; X² or Fisher's exact test for those categorical

³Different superscripts represent differing groups after adjusting for pairwise comparisons

Table 3

Daily Life Stressors by Group

Term	n	ALL (N = 333)	HC (N = 57)	PC (N = 92)	SI (N = 104)	SA (N = 80)	p-value
Any daily stressful event, Yes	272	261 (96%)	44 (86%) ^a	78 (99%) ^b	75 (97%) ^{a,b}	64 (98%) ^{a,b}	0.004
New job, yes	272	184 (68%)	28 (55%)	52 (66%)	54 (70%)	50 (77%)	0.083
Trouble with employer, Yes	272	104 (38%)	5 (9.8%) ^a	23 (29%) ^b	38 (49%) ^c	38 (58%) ^c	<0.001
Detention in jail	269	22 (8.2%)	0 (0%) ^a	5 (6.3%) ^{a,b}	6 (7.9%) ^{a,b}	11 (17%) ^b	0.005
Major change in personal habits	271	160 (59%)	10 (20%) ^a	39 (49%) ^b	57 (74%) ^c	54 (84%) ^c	<0.001
Death of spouse, close family member, or friend	272	80 (29%)	5 (9.8%) ^a	19 (24%) ^{a,b}	29 (38%) ^b	27 (42%) ^b	0.001
Pregnancy or spouse's pregnancy	272	21 (7.7%)	3 (5.9%)	3 (3.8%)	7 (9.1%)	8 (12%)	0.253
Troubles with in-laws	272	37 (14%)	3 (5.9%)	13 (16%)	11 (14%)	10 (15%)	0.342
Major change in financial state	272	113 (42%)	10 (20%) ^a	32 (41%) ^b	35 (45%) ^b	36 (55%) ^b	0.001
Gaining new family member	272	51 (19%)	4 (7.8%)	14 (18%)	16 (21%)	17 (26%)	0.086
Change in residence	271	167 (62%)	24 (47%)	53 (67%)	50 (65%)	40 (62%)	0.114
Son or daughter leaving home	272	6 (2.2%)	0 (0%)	2 (2.5%)	1 (1.3%)	3 (4.6%)	0.445
Being fired from work	272	48 (18%)	1 (2.0%) ^a	7 (8.9%) ^a	18 (23%) ^b	22 (34%) ^b	<0.001
Divorce or separation	272	31 (11%)	0 (0%) ^a	6 (7.6%) ^{a,b}	9 (12%) ^{b,c}	16 (25%) ^c	<0.001
Major change in arguments with spouse	272	65 (24%)	2 (3.9%) ^a	16 (20%) ^b	25 (32%) ^b	22 (34%) ^b	<0.001
Spouse starting or ending work	272	41 (15%)	4 (7.8%)	10 (13%)	17 (22%)	10 (15%)	0.145
Major change in recreation	271	96 (35%)	8 (16%) ^a	25 (32%) ^{a,b}	31 (40%) ^b	32 (50%) ^b	0.001
Major personal illness or injury	272	63 (23%)	1 (2.0%) ^a	21 (27%) ^b	25 (32%) ^b	16 (25%) ^b	0.001

Major change in social activities	272	161 (59%)	14 (27%) ^a	54 (68%) ^b	47 (61%) ^b	46 (71%) ^b	<0.001
Major change in living conditions	272	128 (47%)	12 (24%) ^a	33 (42%) ^{a,b}	43 (56%) ^b	40 (62%) ^b	<0.001
Retirement from work	272	3 (1.1%)	0 (0%) ^a	0 (0%) ^a	0 (0%) ^a	3 (4.6%) ^a	0.019
Marriage	271	11 (4.1%)	3 (5.9%)	1 (1.3%)	3 (3.9%)	4 (6.2%)	0.371
Serious illness or injury of spouse, close family member, or close friend	272	51 (19%)	3 (5.9%)	18 (23%)	15 (19%)	15 (23%)	0.065
Change in work situation (different work responsibility, change in working conditions, etc.)	272	165 (61%)	21 (41%) ^a	53 (67%) ^b	47 (61%) ^{a,b}	44 (68%) ^b	0.013
Number daily stressful events experienced	272	11.0 (7.1)	4.0 (3.1) ^a	10.4 (5.8) ^b	13.0 (6.6) ^c	15.0 (7.2) ^c	<0.001

¹Mean(SD) for continuous variables; n (%) for categorical

²ANOVA for continuous variables; X² test for those categorical

³Different superscripts represent differing groups after adjusting for pairwise comparisons

Table 4

STB Protective Factors by Group							
Term	n	ALL (N = 333)	HC (N = 57)	PC (N = 92)	SI (N = 104)	SA (N = 80)	p-value
Perceived Stress	269	21.8 (9.1)	9.0 (5.1) ^a	20.4 (7.1) ^b	26.9 (6.1) ^c	27.3 (5.6) ^c	<0.001
Reasons for Living	295	173.9 (41.8)	202.1 (23.8) ^a	182.2 (34.9) ^b	161.5 (40.2) ^c	158.2 (48.6) ^c	<0.001
Social Support	273	5.4 (1.3)	6.5 (0.5) ^a	5.6 (1.0) ^b	4.9 (1.2) ^c	4.7 (1.5) ^c	<0.001

¹Mean(SD) for continuous variables; n (%) for categorical

²ANOVA for continuous variables; X² test for those categorical

³Different superscripts represent differing groups after adjusting for pairwise comparisons

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