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Adverse Childhood Experiences and Other Risk Factors in a Homeless Youth Population

by

Michelle J. Goar, B.S.W.

MSW Clinical Research Paper

Presented to the Faculty of the

School of Social Work

St. Catherine University and the University of St. Thomas

St. Paul, Minnesota

in partial fulfillment of the Requirements for the Degree of

Master of Social Work

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The Clinical Research Project is a graduation requirement for the MSW students at St. Catherine University/University of St. Thomas School of Social Work in St. Paul, Minnesota and is conducted within a nine-month time frame to demonstrate facility with basic social research methods. Students must independently conceptualize a research problem, formulate a research design that is approved by a research committee and the university Institutional Review Board, implement the project, and publicly present tot findings of the study. This project is neither a Master's thesis nor a dissertation.

Abstract

This quantitative research project sought to explore the relationship between ACE score, homelessness, PTSD and substance use in a homeless youth population. 161 participants, age 18-21, participated in the 29 question survey, with 40% of youth indicating they were currently homeless, and 86% indicating they were homeless in the past. Mean ACE score was 4.15, with an average duration of homelessness of 17.7 months. 48% of the population screened positively for PTSD, and 83% indicated they used substances in the last six months with 39% using marijuana daily. ACE score, rates of PTSD and substance use was found to be higher among youth who had been homeless compared to those who hadn't been homeless. ACE score was also found to be higher in youth who screened positively for PTSD and used substances. Additionally, participants that identified as LGBTQ or female had higher rates of ACEs, PTSD, and sexual abuse than participants that identified as heterosexual or male. Youth identified as "couch hoppers" were found to be more vulnerable than youth accessing shelters, and equally as vulnerable as those youth staying on the street. These findings indicate a high need for mental health services in the homeless youth field, as well as an increased need for shelter space and long term housing solutions to move youth out of homeless. Agencies working with homeless youth should be urged to adopt trauma informed philosophies, and re-evaluate how needs are assessed with regards to youth who are couch hopping or refusing shelter usage.

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Introduction

“Young people are most at risk for homelessness” (Wilder Research, 2014a). More specifically, young adults age 18-24 have been shown to be especially vulnerable to homelessness (Zerger, Strehlow & Gundlapalli, 2008). Homelessness among youth is a growing problem across Minnesota (Wilder Research, 2014b). High rates of childhood adversities has been linked to adult homelessness using the Adverse Childhood Experience (ACE) study (Montgomery, Cutuli, Evens-Chase, Treglia, and Culhane, 2013; Roos et al., 2013). Young adults experiencing homelessness exhibit a high prevalence for many kinds of abuse and negative health outcomes (Zerger et al., 2008), and homeless youth experience high rates of childhood trauma (Bender, Thompson, Ferguson, Yoder & Kern, 2014; Keeshin & Campbell, 2011). To date, few studies explore homelessness in adults, and no studies to our knowledge have been conducted linking childhood trauma to homelessness in adolescents using the ACE measurement tool. This study seeks to explore the relationship between adverse childhood experiences and homelessness in homeless youth. This study also seeks to explore additional risk factors, such as substance use and symptoms of post-traumatic stress disorder.

Prevalence and scope

According to the most recent data gathered by Wilder Research (2014a) on October, 25, 2012, there were over 10,000 homeless adults, youth, and children in Minnesota. However, of that number, nearly half (46%) were people 21 and younger. Wilder Research also counted 1,151 youth on their own, including 146 youth age 17 and younger and 1,005 age 18 through 21. It is important to understand that this count of 1,151 homeless youth only represents the youth that were counted on one day. The count underrepresents the total youth homeless population since

many homeless people outside the shelter system are not found on the day of the study. This is especially true of youth. According to the National Coalition for the Homeless (2008), five to seven percent of American youth become homeless in any given year. They are among the least visible and most vulnerable homeless people (Wilder Research, 2014b).

The definition of “homeless youth” varies from study to study. The most common terms for “homeless youth” are “street youth”, “runaway”, “homeless adolescent” “homeless young adult or young person”, with the most common term being “homeless youth”. For the purposes of this research study, the term “homeless youth” or “youth” will refer to young people under age 22. However, when citing another researcher’s work, care was used to maintain the language used in the original research.

The U.S. Department of Housing and Urban Development (HUD) has defined the term homeless as: people living in a place not meant for habitation, in an emergency shelter, or existing in a residence that is temporary, such as a transitional living program; people who cannot stay longer than 14 days in their current location and lack the resources to remain housed; families with children or unaccompanied youth who are unstably housed and likely to continue in that state. This applies to those who have not been housed for 60 days or more, who have had two or more moves in 60 days, and who are likely to continue to be unstably housed due to a disability or multiple barriers to employment; and those fleeing domestic abuse who lack the resources to obtain permanent housing (National Alliance to End Homelessness, 2015).

The term “homeless youth” has been defined by the 2013 Minnesota Homeless Youth Act as a person “21 years of age or younger who is unaccompanied by a parent or guardian and is without shelter where appropriate care and supervision are available, whose parent or legal guardian is unable or unwilling to provide shelter and care, or who lacks a fixed, regular, and

adequate nighttime residence” (Office of the Revisor of Statutes, State of Minnesota, 2013). This also includes youth who are “couch hopping” or residing with a friend or family member for less than 30 days and has not been offered a permanent place to live. Also included in the homeless youth category are youth at risk of homelessness. These youth are also under 22 years of age, “whose status or circumstances indicate a significant danger of experiencing homelessness in the near future” (Office of the Revisor of Statutes, State of Minnesota, 2013).

It is common to use the terms “street” or “outdoors” when discussing “people living in a place not meant for habitation”. However, it is important to understand that these terms cover a broad range of circumstances. For example, many people without a place to spend the night will stay in a skyway, or ride the bus or train all night. Other options include staying in a car, abandoned building, sleeping in a park or an outdoor homeless camp. For the purposes of this research study, when referring to a place not meant for habitation, the term “street” will be used. Youth staying in transitional living programs (TLP) will be considered homeless per the HUD definition of homeless. TLP’s are limited term housing programs that provide housing at a reduced cost.

Homeless is defined in this research as youth staying on the street, in a shelter, in a transitional living program, or those unable to stay longer than 30 days in their current location.

Present impact or significance

Homeless youth are often lacking the basic necessities required for survival such as food, clothing and shelter. Many youth resort to survival tactics just to live. Youth may be involved in survival sex, (exchanges of sex for food, money, shelter, drugs or protection), or prostitution, which may lead to sexually transmitted diseases, victimization and exploitation. They may also

be involved in risky behavior such as shoplifting or theft. Youth may turn to drugs or alcohol in order to cope with feelings of fear, loneliness and feelings of worthlessness. Homeless youth may be exposed to increased physical harm and gang violence, as well as an increase in mental health issues (Shannon & Hess, 2008). Homeless young women are five times more likely to become pregnant, and far more likely to experience multiple pregnancies than housed young women (Smid, Bourgois, & Auerswal, 2011). Fifty percent of homeless youth ages 16 and older drop out of school, and face extraordinary obstacles in trying to finish (Lohmann, 2011). Homeless youth may also be lacking in basic life skills, as well as critical job related skills (New England Network for Child, Youth & Family Services, 2008).

Homeless adolescents experience higher levels of mental health problems than other young people (Whitbeck, Johnson, Hoyt & Cauce, 2004). For example, homeless adolescents have higher rates of mental health problems, such as depression, than their housed peers. Homeless adolescent depression rates range from 19% to 39%, whereas stably housed youth range from 8% to 13% (Cauce et al., 1999). According to Shannon and Hess (2008), being homeless and operating in survival mode, or attempting to survive by any means necessary, regardless of consequences, may also increase preexisting mental health conditions. Research also shows high rates of dissociative symptoms, conduct disorder, disengaging coping styles, suicidal ideation, and suicide attempts (Zerger et al., 2008). With most youth engaging in some form of substance use (Merscham, Van Leeuwen & McGuire, 2009), mental health problems often occur in combination with one or more substance abuse disorders (Zerger et al., 2008).

It is virtually impossible to discuss homelessness without discussing the causes of homelessness. The reason for youth homelessness cited most often is family breakdown or family conflict (Edidin, Ganim, Hunter & Karnik, 2012). Family breakdown may include poor

family functioning, unstable home environments, socioeconomic disadvantage, and separation from parents (Edidin et al., 2012). Parental drug and alcohol use is also frequently cited as a reason for leaving home. Parental substance use is often associated with parental abandonment, family violence, and neglect, as well as sexual, physical, and psychological abuse (Edidin et al., 2012; Merscham et al., 2009). Additional factors that often lead to youth homelessness are out-of-home placements, or aging out of foster care, (Merscham et al., 2009), as well as family conflict from identifying as part of the lesbian, gay, bisexual, transgender or questioning (LGBTQ) community (Edidin et al., 2012; Zerger et al., 2008).

This study will examine the relationship between adverse childhood experiences and homelessness and related risk factors in young adults, age 18-21, in order to better understand the impact of adverse childhood events on this population. A review of the literature is provided, as well as a description of the conceptual framework.

Literature Review

Homeless youth and homeless youth mental health are well-researched subjects. However, there are several limitations within the literature. The largest of these limitations is the inconsistency in age categories within research studies. Zerger et al. (2008) discusses the difficulties in reviewing the literature due to the moving target. Most study samples include broad ranges of ages, such as 13 to 23 or 14 to 25. Whereas most policies, including the Homeless Youth Act, only recognizes homeless youth under age 22. A second limitation is the fact that many homeless youth are “hidden”. These youth are usually couch hopping or doubling up with friends and are not counted in homeless counts or available for research (Zerger et al., 2008).

ACE Studies

The ACE study is an ongoing joint collaboration between Robert Anda, Dr. Vincent Felitti, the Centers for Disease Control (CDC), and Kaiser Permanente. This large scale study, with an original sample of over 17,000 participants, explored the “influence of stressful and traumatic childhood experiences on the origins of behaviors that underlie the leading causes of disability, social problems, health related behaviors, and causes of death in the United States” (ACE Reporter, 2003, p. 2), was unprecedented in 1998.

Adverse childhood experiences are defined as: emotional, physical, or sexual abuse; emotional or physical neglect; growing up in a household with substance abuse, mental illness, or violence; parental separation or divorce, or an imprisoned family member (ACE Reporter, 2003). One point is assigned to each category the participant experienced before age 18. The accumulation of points is called the “ACE score”. An accumulation of ACEs has a strong and cumulative impact on the health and functioning of adults (MN Department of Health, 2013).

Adverse childhood experiences have an impact on childhood development. Consequences of ACEs include: neuro-biologic effects such as brain abnormalities and stress hormone dysregulation; psychosocial effects such as poor attachment, poor socialization, and poor self-efficacy; and health risk behaviors such as smoking, obesity, substance abuse and promiscuity. Long term social consequences of ACEs include: homelessness, prostitution, criminal behavior, unemployment, parenting problems, high utilization of health and social services, and shortened lifespan. Long term medical consequences of ACEs include: mental illness, suicide, drug and alcohol abuse, heart disease, cancer, chronic lung disease, and sexually transmitted infections (Putnam, Harris, Lieberman, Putnam & Amaya-Jackson, 2015).

Adverse childhood experiences are transferred from generation to generation. The first generation of child abuse victims grow up with aggression, conduct and school problems, and depression, anxiety and PTSD. These children grow into adolescents with substance abuse problems with depression, anxiety and PTSD who are faced with victimization and school failure. These adolescents grow into adults with parenting problems, domestic violence, maternal depression and PTSD, poverty, and substance abuse. The children of these adults then begin the same intergenerational cycle of abuse (Putnam et al., 2015).

Numerous research studies have shown a relationship between ACE score and negative mental illness and negative medical implications (Felitti et al., 1998; Patterson, Moniruzzaman and Somers, 2014). A person who had experienced four or more categories of childhood exposure has a four to twelve fold increased risk of alcoholism, drug abuse, depression, and suicide. Having an ACE score of four or more also showed increases in smoking, sexual intercourse partners, sexually transmitted diseases, physical inactivity, obesity and the presence of adult diseases of heart disease, cancer, chronic lung disease, skeletal fractures and liver disease (ACE Reporter, 2003).

In 2011 the Minnesota Department of Health joined with the CDC to research ACE scores on a state level. The finding from this large scale study were consistent other states scores and the initial ACE study; namely: ACE's are common, occur together, and have a strong and cumulative impact on the health and functioning of adults. ACE's were more common among Minnesotans who did not graduate from high school, who were unmarried, who rented rather than owned their own home, who were unemployed, or who worried about paying their mortgage or rent or about buying nutritious food (Minnesota Department of Health, 2013). Minnesotans with more ACEs were more likely to rate their health as fair or poor, to have been diagnosed

with depression or anxiety, to report smoking and chronic drinking, to have been diagnosed with asthma, and to be obese (Minnesota Department of Health, 2013).

Although less researched, several studies have explored the relationship between ACE score and homelessness in adults. One study of homeless adults with mental illness found a strong relationship between ACE score and poor mental health, poor physical health, as well as problematic substance use. Duration of homelessness was “marginally” predicted by total ACE score. The mean ACE score of this population was 4.0 (Patterson et al., 2014). Another study of homeless adults confirmed suggestions that adverse childhood experiences increased risk of homelessness (Larkin & Park, 2012). A study researching the relationship between childhood adversities and lifetime homelessness found a strong link between each type of ACE category and future homelessness. “Individuals with lifetime homelessness experienced higher rates of all childhood adversities compared with individuals without lifetime homelessness” (Roos et al., 2013, p. 280). Finally, adverse childhood experiences predicted increased odds of experiencing homelessness as an adult, as well as mental and physical problems (Montgomery et al., 2013).

Childhood Trauma in Homeless Youth

Homeless youth experience higher rates of childhood trauma than housed youth. Non-homeless youth experience trauma at a rate of 15% (Cuffe et al., 1998) to 40% (Giaconia et al., 1995). In a study by Keeshin and Campbell (2011), 84% homeless youth screened positive for childhood physical or sexual abuse and 72% of the youth state the history of abuse still affects them now. In a 2014 study of trauma among street involved homeless youth, the youth experienced an average of four types of trauma before leaving home. Ninety-two percent of youth experienced emotional neglect and an additional 92% of youth experienced emotional abuse. Eighty-eight percent of youth experienced physical neglect and 84% of youth experienced

physical abuse. Additionally, 39% of youth experienced sexual abuse before leaving home (Bender et al., 2014). Females were more likely to report childhood abuse than males (95% vs. 79%), (Keeshin & Campbell, 2011). Males were more likely to report physical neglect than females, and females are more likely to report sexual and emotional abuse (Gwadz, Nish, Leonard, & Strauss, 2007).

Youth with abuse histories reported living with someone suffering from alcoholism more frequently (63%) than youth without abuse histories (50%). Mental illness was also reported more frequently in youth with abuse histories (72%) compared to youth without abuse histories (50%). Homeless youth with abuse histories also had higher rates of suicide (54%) compared to those without (30%). Current drug usage was also higher among homeless youth with abuse histories (48%) compared to those without (30%). Youth with a history of abuse were significantly less likely to recall feeling loved, looked after, or cared for by family members during childhood than those without abuse. Only 22% of homeless youth with abuse histories felt close to family and only 41% felt loved by family (Keeshin & Campbell, 2011).

Adolescents who report trauma compared to adolescent who report no trauma have significantly more overall behavioral-emotional problems, and were four times more likely to externalize their problems. Adolescents with trauma also had poorer academic performance, higher rates of suicidal ideation and attempts, and poorer health compared to adolescents without childhood trauma (Giaconia et al., 1995).

Relationship Between Suicide and Childhood Trauma and Abuse in Homeless Youth

Previous research has established a direct link between childhood sexual or physical abuse and suicide in homeless youth. Yoder (1999) found that 41% of youth who had previously

attempted suicide had been sexually abused by an adult caretaker. This is in contrast with non-suicidal youth who only reported a 10% rate of sexual abuse by an adult caretaker (Yoder, 1999).

In a recent study examining the relationship between childhood trauma and suicide attempts in homeless youth, nine percent reported a suicide attempt in the preceding six months. Trauma was found to be highly prevalent with 41% of youth reporting physical abuse, 26.5% of youth reporting sexual abuse and 50% of youth reporting emotional abuse. “There exists a strong and graded association between childhood trauma and subsequent attempted suicide among street youth” (Hadland, Marshall, Kerr, & Montaner, 2012). In a similar study (Molnar, Shade, Kral, Booth & Watters, 1998), the relationship between sexual and physical abuse and suicidal behavior was examined in 775 homeless youth. 48% of the females and 27% of the males reported previous suicide attempts. 70% of the females reported sexual abuse and 35% reported physical abuse. Similarly, 35% of males also reported physical abuse, but only 24% reported sexual abuse. The average age of the first incident of sexual abuse was between 9 and 10, and 85% who reported sexual abuse reported that it happened while still living at home. Among homeless and runaway youth, those who were sexually abused or physically abused before leaving home were much more likely to have attempted suicide (Molnar et al., 1998). In fact, among youth who were sexually or physically abused before leaving home, the odds of attempting suicide were 1.9-4.3 times the odds of those youth who were not abused (Molnar et al., 1998).

Repeated suicidal behavior has also been linked to childhood abuse in the non-homeless adult population. In a study of suicide attempters, 35% reported severe sexual abuse in childhood and 18% reported severe physical abuse in childhood. “Physical and sexual abuse are

significantly and independently associated with repeated suicidal behavior” (Ystgaard, Hestetun, Loeb, Mehlum, 2004, 871).

Implications of Being Homelessness

Increased mental illness. Youth experiencing homelessness have increased rates of mental illness (Edidin et al., 2012; Merscham et al., 2009). Homeless youth were six times more likely than housed youth to struggle with mental illness. (Merscham et al., 2009; Whitbeck et al., 2004). Lifetime prevalence of psychiatric disorders was almost twice as high for homeless youth compared to housed youth (Edidin et al, 2012). Rates of mental illness range between 66% and 89% among homeless youth (Merscham et al, 2009; Whitbeck et al., 2004). A systematic review of psychopathology in young people experiencing homelessness revealed rates of mental illness as high as 98% (Hodgson, Shelton, van den Bree, & Los, 2013). This is dramatic when compared to non-homeless youth in which only 23% were diagnosed with a mental illness (Whitbeck et al., 2004).

Whitbeck et al. (2004) compared mental health rates in 428 homeless adolescents to housed adolescents in the National Comorbidity Survey. Whitbeck states that homeless adolescents were four times more likely to have a conduct disorder than non-homeless adolescents (76% vs. 18%). Even greater was the difference for females. The conduct rate was 70% for homeless females compared to 11% for housed females. Homeless adolescents were seven times more likely to have PTSD than non-homeless adolescents (36% vs. 5%). Homeless adolescents were twice as likely to have a major depressive episode (30% vs. 14%) than housed adolescents. The difference was even more dramatic for males (26% vs. 9%). Whitbeck also found that identifying as LGBTQ, spending time on the street rather than “doubling up with friends” (couch hopping), childhood abuse by a caretaker, and being victimized while being on

their own increased the risk of mental illness in homeless adolescents. Evidence also shows the older the adolescent, the more likely they would meet the criteria for a mental disorder (Whitbeck et al., 2004), and as time on the streets increased so did rates of psychopathology (Solorio, Milburn, Anderson, Trifskin & Rodriguez, 2006). “Experienced” homeless youth had higher rates of emotional distress than newly homeless youth (17% vs. 10%), (Solorio et al., 2006, p. 388).

Rates of mental health comorbidity, defined as having one or more additional diagnoses co-occurring with a primary diagnosis, in homeless youth was found to be twice as high as housed youth (Hodgson et al., 2013). The rates of comorbidity among homeless youth have been reported as high as 60% (Zerger et al., 2008), and 67% (Whitbeck et al., 2004). The most common comorbidities were found to be substance use disorders and another psychiatric disorder, particularly PTSD (Hodgson et al., 2013). At least 56% of homeless youth have more than one substance use diagnosis (Zerger et al., 2008).

A strong link has been found between psychopathology and homelessness in the homeless youth community (Hodgson et al., 2013). In a study by Rohde, Noelle, Ochs and Seeley (2001), 73% of adolescents experienced mental health symptoms before becoming homeless. Research also suggests that certain types of disorders, such as substance abuse and PTSD appear to worsen or are triggered by homelessness (Hodgson et al., 2013). Existing research shows evidence of a reciprocal relationship between homelessness and psychopathology in homeless youth. Psychopathology appears to make young people more vulnerable to homelessness and has been shown to precede homelessness. Homelessness, in turn, compounds or triggers psychopathology, which seems to prevent youth from moving out of homelessness successfully (Hodgson et al., 2013).

Increased substance abuse. Substance use among homeless youth has been reported to be as high as 70% to 97% (Zerger et al., 2008). Rates of alcohol abuse among homeless youth are between 41% and 58% whereas rates for non-homeless youth are only 5% to 9% (Edidin et al., 2012; Merscham et al., 2009; Whitbeck et al., 2004). Male homeless youth were ten times more likely to abuse drugs than their housed counterparts (47% to 4%) and female homeless youth were more than 17 times more likely to abuse drugs than housed peers (35% to 2%). Additional rates of drug use among homeless youth are: marijuana 19% to 69%, cocaine 2% to 13%, stimulants 10% to 38%, and hallucinogens 7% to 25% (Edidin et al., 2012; Kral, Molnar, Booth & Watters, 1997). The use of crack cocaine among homeless youth is eight times that of youth in the general population. (Kral et al., 1997). Additionally, the rate of cigarette use was found to be between 76% and 86% among homeless youth (Edidin et al., 2012; Keeshin & Campbell, 2011).

Substance use among homeless youth may serve several purposes such as staying awake for longer periods of time, keeping warm in the winter months (Ayerst, 1999), and as a way to manage life on the street (Kidd, 2003). Drugs and alcohol may also be used to cope with early childhood abuse and other forms of victimization commonly experienced while homeless, such as sexual and physical assault, and survival sex (Tyler, Gervais & Davidson, 2013).

Substance abuse, particularly alcohol and marijuana use, has been linked to street exposure and child sexual abuse and different forms of street victimization (Tyler et al., 2013). Physical victimization has been correlated to alcohol use and sexual victimization has been correlated to marijuana use. Trading sex for survival or specific items was linked to both alcohol and marijuana use (Tyler et al., 2013). Being a victim of early sexual abuse continues to have a negative impact on homeless adolescents long after they leave home. Once on the streets, they

continue to experience other forms of victimization, which are also linked to greater frequency of alcohol and marijuana use (Tyler et al, 2013).

Substance use has also been linked with risky sexual behavior in homeless youth. Risk is amplified though decreased inhibition, and youth are at greater risk for numerous health problems such as HIV, hepatitis and other sexually transmitted infections (Edidin et al., 2012; Kral et al., 1997). In a study by Kral et al. (1997), roughly 75% of youth reported engaging in sex while under the influence of drugs or alcohol, of whom 56% reported not using a condom in their most recent encounter. Approximately 31-57% of the youth admitted engaging in sex even though they knew a partner of theirs had injected drugs. 62% of youth admitted to sharing needles and only 70% reported cleaning the needles with bleach. Research suggests that substance use is a strong predictor of HIV, (Milburn, Stein, Rice & Rotheram-Borus, 2007) and survival sex (Greene, Ennet, & Ringwalt, 1999).

Increased sexual risk, survival sex and rates of STI and HIV. Homeless youth have been shown to be more sexually active and initiate sexual activities at an early age. This is typically two to three years earlier than other youth, and typically at about 12 or 13 years old (Rew, Fouladi, & Yockey, 2002). Homeless youth frequently report high-risk sexual behaviors such as having multiple partners and unprotected sex (Booth & Zhang, 1997). Homeless youth have also been shown to have higher rates of sexually transmitted diseases, including HIV and pregnancy (Edidin et al., 2012). Research indicates that rates of sexually transmitted infections (STI) in homeless youth range from 11% in males to 63% in females (Rice, Milburn, & Rotheram-Borus, 2007). These rates are three to ten times higher than rates among housed youth (Steel & O'Keefe, 2001). This high rate of STI might be attributed to high risk sexual situations,

survival sex, (Edidin et al., 2012) high rates of substance abuse (Greene et al., 1999; Milburn et al., 2007), or lack of appropriate prevention services and lack of insurance (Zerger et al., 2008).

HIV has been found to be three to 30 times more prevalent among homeless youth (Steel & O'Keefe, 2001). In a study of homeless youth, Kral (1997) found that four percent of youth report having sex with a partner they knew to be HIV positive. There is consistent evidence that homeless transgender, gay, and bisexual males engaged in survival sex are at significantly higher rates than their heterosexual counterparts (Walls & Bell, 2011; Whitbeck, Johnson, Hoyt & Cauce, 2004a).

Survival sex, or exchanges of sex for food, money, shelter, drugs or protection ranges from 10% to 50% among homeless youth (Greene et al., 1999). A 2012 study found 17% of Minnesotan homeless youth age 18-21 participating in survival sex. It should also be noted that males often participate in survival sex at rates equal to or greater than females (Wilder, 2013). According to Green et al. (1999), the most common reason given for young women engaging in survival sex was related to meeting survival needs. A majority (83%) admitted to exchanging sex for money, but well over half (63%) said they exchanged sex for a place to stay, 26% exchanged sex for food, and 23% exchanged sex for drugs (Warf et al., 2013). Rates of suicide were significantly higher in homeless young women engaging in survival sex when compared to homeless young women who were not. (61% vs. 25%) (Warf et al., 2013). Previous suicide attempts have also been shown to be a predictor of survival sex (Walls & Bell, 2011). Previous research has also linked survival sex to a history of family drug use, as well as physical and emotional abuse by family members (Greene et al., 1999).

There are significant health risks associated with survival sex including exposure to STI's, exposure to HIV, involvement in serious drug use, increased risk of pregnancy (Greene et

al., 1999). Victimization is another physical risk associated with survival sex (Walls & Bell, 2011). Adolescents engaging in survival sex are more likely to have been physically victimized by pimps or customers, or sexually assaulted (Whitbeck et al., 2004a).

Increased risk of sexual and physical violence. Many homeless youth, especially those who have fled serious sexual, emotional and or physical abuse and neglect during childhood, perceive their current state of homelessness to be an improvement compared to their previous home and family circumstances (Coates & McKenzie-Mohr, 2010; Whitbeck et al., 1997). However, it has been well documented that homeless youth are vulnerable to continued maltreatment and traumatic events once on their own, either in the streets or in shelters (Cauce, Cochran, & Whitbeck, 2004; Gwadz et al., 2007). Youth on the street face an average of three types of trauma while on the streets, and 29% of homeless youth described simply being homeless as a trauma itself (Bender et al., 2014).

The prevalence of trauma among homeless youth is significantly higher than in other populations of young people (Gwadz et al., 2007; Whitbeck, Hoyt, & Ackley, 1997). Rates of trauma in homeless youth range from 86% (Gwadz et al., 2007) to 78% (Bender et al., 2014). Rates of multiple type trauma exposure are as high as 64% (Gwadz et al., 2007). In other populations of adolescents, only 20-40% are exposed to trauma before adulthood (Whitbeck et al., 1997). Additional studies show that 83% of homeless youth were exposed to at least one form of physical or sexual victimization since leaving home (Stewart et al., 2004). Females are more often to report sexual assault (Gwadz et al., 2007), and sexual victimization (Stewart et al., 2004). Males more often report higher rates of physical victimization (Stewart et al., 2004) and are more apt to be involved in serious accidents or be imprisoned (Gwadz et al., 2007).

In qualitative interviews homeless youth described increased vulnerability when new and inexperienced youth arrived on the streets. These youth were described as being “naïve to the ways of the streets” and brought too much attention to themselves, making them targets for victimization. Homeless youth also identified youth lacking resources as particularly vulnerable because they are forced to engage in dangerous behaviors such as stealing or prostitution. Homeless youth identified youth who abuse drugs as being at greater risk because drugs “cause you to do stupid things” (p. 60) and put youth in a dangerous cycle to obtain more drugs. Living on the streets was also identified by youth as being very dangerous. Youth are forced to deal with the outside elements, lack of basic necessities such as food and warmth, as well as the “other people out there” (p. 60). Although staying in a shelter was described by youth as safer than the streets, staying in an adult homeless shelter exposed youth to further victimization. Homeless youth also reported feeling vulnerable when alone, especially at night. Youth reported feeling anxious about walking alone and encountering drug dealers, gang members, or other dangerous situations (Bender et al., 2014).

The most common trauma experiences faced by homeless youth on the streets was the sudden death of a close friend or loved one, (63%), witnessing a severe assault, (55%), being threatened with death or serious bodily harm (52%) experiencing a physical assault (52%), and seeing someone overdose on drugs (48%) (Bender et al., 2014). Another study of homeless youth described additional “highly stressful experiences”. Of interest, is the high incidence of being bullied (78%), facing isolation (63%), and fearing being killed or injured (61%). Additionally, 46% reported being assaulted with a weapon, 35% reported being in trouble with the law, 31% were mugged, 33% experienced sexual abuse, 29% had abortions or miscarriages, 24% were raped, and 17% handled dead bodies (Coates & McKenzie-Mohr, 2010).

On average, the homeless youth experienced an average of 13.5 highly stressful experiences. This further break down revealed that the average number of stressful events actually decreased from 7.0 before leaving home, to 6.4 after becoming homeless. While this shows that youth did improve their rate of victimization by leaving home, it also confirms that being on the street is almost equally as dangerous (Coates & McKenzie-Mohr, 2010). Once leaving home the types of stressful events changed for the youth. Many forms of physical and sexual violence decreased for youth after leaving home with the exception of sexual violence by non-family members for females. For both males and females physical violence remained high after becoming homeless and other forms of violence, such as muggings and fear of being killed, increased after becoming homelessness (Coates & McKenzie-Mohr, 2010).

When compared to housed peers who haven't experienced trauma, and to youth who were physically mistreated as a child, homeless youth who had experienced trauma scored substantially higher in all categories related to the negative effects of trauma. Homeless youth with trauma showed high rates of anxious arousal, depression, anger/irritability, intrusive experiences, defensive avoidance and dissociation. A negative correlation was made between age of first being homeless and high rates of negative effects of trauma showing that the earlier a youth is homeless, the more negative effects they will face (Coates, McKenzie-Mohr, 2010)

Increased risk of death and injury. In a mortality study of homeless street youth, it was found that the risk of death was increased during episodes of homelessness (Roy, 2004). The mortality rate among homeless youth was "extremely high" exceeding 11 times the rate observed among youth in the general population. Predictors of death were homelessness within the last six months, current heavy substance abuse, HIV infection, and being male. The leading causes of death were suicide and drug overdose (Roy, 2004).

In a study of homeless adolescents and young adults, 43% were found to have a history of traumatic brain injury (TBI). Respondents with a TBI became homeless earlier and were homeless more often than those without a TBI. The findings in this study suggest that TBI may be both an antecedent and consequence of homelessness in adolescents and young adults. A majority of the respondents reported sustaining their first head injury before, or at the same age, as becoming homeless. Homeless adolescents and young adults with a TBI had rates of mental illness 34% to 77% higher than those without an injury. Those with a TBI were also 88% and 51% more likely to report physical or sexual assault and survival sex respectively. Those with a TBI were also 83% more likely to report lifetime suicidal ideation and 22% more likely to have attempted suicide. In addition, youth with a TBI were 47% to 80% more likely to report childhood physical or sexual abuse or neglect. Homeless adolescents and young adults who identified as gay or lesbian were 80% more likely to have reported a TBI after becoming homeless than those who identified as heterosexual (Mackelprang et al., 2014).

PTSD in Homeless Youth

Post-traumatic stress disorder (PTSD) is a serious mental health concern among homeless youth (Stewart et al., 2004). This clinical syndrome is comprised of three dimensions: heightened arousal, re-experiencing the traumatic event via flashbacks and intrusive thoughts, and avoiding trauma related stimuli and / or numbing of general responsiveness (American Psychiatric Association, 2000). PTSD may be more common among high risk populations, such as homeless youth, because the risk of victimization is higher and youths in high-risk may be exposed to multiple traumas (Stewart et al., 2004).

In samples of non-homeless adolescents, the rate of PTSD was found to range between 6.3% (Giaconia et al., 1995) to 12.4% (Cuffe, et al., 1998). Previous research has shown rates of

PTSD in homeless youth to be between 18% (Stewart et al., 2004) and 35.5% (Whitbeck, Hoyt, Johnson & Chen, 2007). Females are more likely to experience childhood sexual abuse (Cuffe et al., 1998; Giaconia et al., 1995; Stewart et al., 2004), and females are six times more likely to develop PTSD (Giaconia et al., 1995). Reported rates for PTSD among female homeless adolescents were reported as high as 45% (Whitbeck et al., 2007). Additionally, females exhibit more symptoms of PTSD (Gwadz et al., 2007). In females, physical, emotional, and sexual abuse were most often associated with PTSD symptoms, (Gwadz et al., 2007). Sexual assault is the event with the highest probability of leading to PTSD (Foa & Street, 2001; Whitbeck et al., 2007).

In a study of street-involved youth, youth with alcohol dependence were three times more likely to experience trauma and five times more likely to develop PTSD (Bender, Ferguson, Thompson, Komlo & Pollio, 2010). This may be attributed to alcohol's sedative and numbing effects. (Tyler & Johnson, 2006). Other risk factors related to an increased risk of PTSD were being highly mobile. When youth repeatedly move to unfamiliar areas to find basic needs such as housing, food, and support networks, they are at greater risk for victimization. Without stable or supportive relationships in place, the recovery time for traumatic experiences may be slow, increasing the risk of developing PTSD (Bender et al., 2010).

Adolescents with PTSD demonstrated "substantial and widespread impairment in almost every area of functioning examined at age 18" (Giaconia et al., 1995, p. 1373), compared to adolescents who have not experienced trauma. Adolescents with PTSD were 12 times more likely to clinically externalize their problems and four times more likely to clinically internalize problems compared to adolescents without trauma. Adolescents with PTSD also displayed difficulties with relationships, more suicidal ideation and attempts, poorer wellbeing, more sick

days per month, and significantly lower grade point averages than youth without any trauma.

Adolescents with PTSD were also seven times more likely to have at least one additional mental health diagnosis than youth without trauma (Giaconia et al., 1995). Whitbeck et al., (2007) states that 90% of adolescents with PTSD have at least one additional diagnosis. Adolescents with PTSD were more likely to have major depression (Giaconia et al., 1995; Whitbeck et al., 2007) and serious substance dependence than other adolescents without a trauma background (Giaconia et al., 1995; Whitbeck et al., 2007). Additionally, nearly all (93%) males and three-quarters (76%) of females with PTSD were also diagnosed with conduct disorder (Whitbeck et al., 2007).

Homeless youth with PTSD were most likely to have symptoms of intrusive thoughts about the traumatic event (24.6%), nightmares related to the trauma (17%), and flashbacks (11%) (Stewart et al., 2004). Other symptoms include difficulty concentrating, irritability, avoidance, numbing, and hyper vigilance. Hyper vigilance may be more common among youth immersed in high-risk environments where the threat of danger is constant (Stewart et al., 2004).

Research Questions

This research study asked the following research questions:

- 1) Do those who have experienced homelessness have different ACE scores than those who haven't experienced homelessness? It is hypothesized that participants that have experienced homelessness will have higher ACE scores.
- 2) Are there differences in the experience of current risk factors for those who have experienced homelessness? It is hypothesized that participants that have experienced homelessness will have higher rates of positive PTSD screenings and higher rates of substance use.

3) Are ACE scores related to the experience of other risk factors? It is hypothesized that participants that have other risk factors will have higher ACE scores.

Conceptual Framework

Risk Amplification Model

This study will utilize a risk amplification model (RAM) (Whitbeck, Hoyt & Yoder, 1999). This model is based on life course developmental theory by Elder (1997) and social interaction theory by Patterson (1982). The RAM can be described as a way “in which early negative experiences (i.e. abuse) set in motion a negative chain of events that are related with more time spent on the street and participation in survival strategies, such as trading, which results in increased risk for victimization” (Tyler et al., 2013, p. 477). This model can also be described as “A potential mechanism by which early victimization places homeless youth at risk for later abuse” (Gwadz et al., 2007, p. 126).

Trauma Informed Care

“Trauma informed care is a strengths based framework that is grounded in an understanding if and responsiveness to the impact of trauma that emphasizes physical, psychological and emotional safety for both providers and survivors and that creates opportunities for survivors to rebuild a sense of control and empowerment” (Hopper et al. 2010, p. 83). Organizations must be committed to creating emotionally and physically safe and comfortable environments. Organizational policies and procedures should be reviewed often with a willingness to make changes in order to avoid re-traumatizing youth. An example of developing trauma informed policies might include reconsidering eligibility criteria that may exclude many youth, such as zero-tolerance policies regarding substance use (McKenzie-Mohr,

Coates, & McLeod, 2012). Other trauma informed practices may include: services that are voluntary rather than mandatory, ensuring informed consent language is easy to understand for all clients, conducting early interventions by trained staff to assess for trauma, establishing visible leadership roles for clients and ongoing opportunities for engagement, providing initial and ongoing training for all staff regarding trauma and its effects, providing ongoing supervision and encouraging staff to recognize their own limits, and engaging in strategic planning to utilize best practices (Prescott, Soares, Konnath, & Bassuk, 2008).

Methods

Research Design

This quantitative research study used a 29 question survey to collect data. Descriptive and inferential statistics will be used in the analysis to answer research questions.

Sample

The research survey was offered to 18-21 year old clients of a homeless youth drop in resource center. Although the center serves youth ages 14-21, only clients 18 and older were invited to participate in the survey. Although a large population of the clients utilizing the center were homeless or “couch hopping”, many clients were stably housed or paying rent in their own apartment. A large majority of the population surveyed live in poverty and struggle to have basic needs met. This was a convenience sampling with 161 youth participating in the survey.

Protection of Human Subjects

Due to the personal nature of the questions, the survey was only administered by the researcher. Surveys were offered to participants when mental health or case management staff

was available to provide mental health support for participants. Confidentiality, potential harm, and the nature of the questions were explained in person to ensure understanding. Participants were also informed of mental health services outside of the resource center. These mental health and crisis numbers were also listed on informed consent form. Clinical judgment and a short conversational screen was used to assess age, active and severe mental health symptoms, as well as sobriety or being high at the time of participating in the survey.

To further protect survey participants, the researcher completed a thorough training regarding the protection of human subjects in research (CITI Training). This research proposal was approved by the St. Catherine University Institutional Review Board. Due to the vulnerability of the homeless population surveyed, a full board review was held.

Recruitment Process

Participants were recruited from a youth drop in resource center in a metropolitan area. A flyer was hung at the researcher's desk informing clients of the survey. The participants were informed of the purpose of the research, the nature of the questions, the approximate time commitment required, and of the compensation for their time, which was two bus tokens. Participants received two bus tokens, value \$4.50, for participating in the survey. Participants were asked to self-report age. Participants were informed that they did not need to complete all questions in order to receive the bus tokens. Participants were also informed that they could turn in a blank survey in order to receive the bus tokens. Participants were only allowed to participate in the survey one time.

Confidentiality

In order to maintain confidentiality, participants were instructed to place completed surveys in a locked drop box to decrease stigma about having to hand the survey to a person, who in turn could physically look at the answers, and thereby break confidentiality. Participants were directed to complete the survey on their own in a closed quiet room separate from the main population of clients. Completed surveys were stored in a locked personal file cabinet in the researcher's home. To further protect confidentiality, participants were not asked to sign informed consent forms. Completed surveys will be destroyed by the researcher by May 18, 2015.

Informed Consent

Due to the personal nature of the questions, mental health crisis numbers were included on the informed consent form. Participants were informed that participation in the survey was completely voluntary and they had the option to decline the survey at any point. Participants were informed they could decline the survey at any time, skip any questions they choose, and that they also had the option of turning in a blank survey. Participants were also informed that their relationship with staff, or ability to receive services, would not be harmed by choosing to decline participation in the survey. Participants were told there was no way of knowing which survey they completed, only that they were handed a survey.

Data Collection

Adverse childhood experiences were measured using the ACE survey. The ACE survey is a 10 question instrument measuring physical, sexual, and emotional abuse during the first 18 years of life. This scale has been widely used to link childhood trauma to long term health and social consequences. The original study was offered to over 17,000 patients participating in a

routine health screening, and is a collaboration between the Centers for Disease Control and Prevention and Kaiser Permanente. The ACE study calculates 1 point for every category of exposure to child abuse or neglect. The points are added up for a total score of 0 to 10 with 10 being the highest amount of adverse experiences measurable by the scale, and therefore having the greatest risk for negative consequences (Felitti et al., 1998).

Demographic information including age, race, gender, sexual orientation, and amount of schooling completed was collected via the survey. The survey also measured substance use rates, including liquor, beer, or wine, marijuana, and other drugs. A standardized PTSD symptom screen entitled Primary Care PTSD Screen (PC-PTSD), which was designed for use in primary care and other medical settings, and is currently used to screen for PTSD in other populations such as veterans at the VA, was used to measure symptoms including intrusive thoughts or nightmares, avoidance, vigilance, being startled easily, and feeling numb or detached. The instructions of the PC-PTSD indicate that the screen should be considered “positive” if a participant answers “yes” to any three items (Prins et al., 2003).

Current housing status was measured by asking participants “Where did you stay last night?” Choices available were: *Outside or someplace not meant for habitation, such as riding the bus all night or staying in a car; Shelter or Hotel; Family member’s house; Friend’s house; Paying Rent or Transitional Housing.* To determine how long a participant can stay at their current location, participants were asked “How long can you stay there?” Choices available were: *Less than 30 days, or More than 30 days.* Less than 30 days was considered homeless pursuant to Minnesota state regulations. Participants were also asked if they had ever stayed in an emergency shelter, or had to sleep outdoors or someplace not meant for habitation such as a car or skyway. Additionally, participants were asked if they had ever spent 30 days couch

hopping, how many months they had been homeless in their entire life, and how old they were when they were first on their own.

Data collection took place from January 2015 to March 2015. Data was managed through the creation of an Excel spreadsheet.

Data Analysis

Data was analyzed with the Statistical Package for the Social Sciences (SPSS) program. Bivariate statistics, such as chi-square and correlation, were used to compare total ACE score to rates of homelessness. Total ACE scores were also compared to other risk factors of substance use rates and the PTSD symptom screen. Rates of homelessness were also compared to risk factors to explore relationships. Additional statistics, such as t-Test and ANOVA, were used to analyze data.

Findings

Descriptive Statistics

Table 1 contains demographic characteristics. A total of 161 youth participated in the survey. Participants were asked to write in age, race, gender and sexual orientation. Twenty-five percent of participants were 18 years old, 15% were 19 years old, 30% were 20 years old, and 30% were 21 years old. The sample was nearly evenly split between genders with 50% of participants identifying as female, 48% identifying as male, and 1% identifying as other or gender non-conforming. A majority of the sample identified as African American (59%), 17% identified as multi-racial, and 11% identified as Caucasian. Sixty-nine percent of the sample identified as heterosexual, 24% identified as LGBTQ, and seven percent of participants declined

to answer the question. A majority of the sample (51%) were either still in school, or did not have a high school diploma or GED, and 36% had a high school diploma or GED.

Table 1

Frequency of Distribution of Demographic Characteristics
(N=161)

Demographic characteristics	Frequency of respondents	Valid percentage (%)
Age		
18	41	25.5
19	24	14.9
20	48	29.8
21	48	29.8
Gender		
Female	80	49.7
Male	78	48.4
Other	2	1.2
Missing	1	0.6
Race		
African American	95	59
Asian	1	0.6
Caucasian	18	11.2
Hispanic	7	4.3
Multi-Racial	27	16.8
Native American	3	1.9
Other	8	5
Didn't Answer	2	1.2
Sexual Orientation		
Heterosexual	111	68.9
LGBTQ	38	23.6
Didn't Answer	12	7.5
Schooling		
Some high school / no diploma	82	50.9
High school diploma or GED	58	36
Some college	19	11.8

2 year degree	2	1.2
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Table 2 presents housing frequencies. Thirty-three percent of the sample stayed with family the previous evening, 24% stayed with friends, 24% were paying rent, 9% spent the previous evening in a shelter, 6% were outside, or in a place not meant for habitation, such as a skyway or riding the bus all night. An additional 4% were living in a transitional living program. Sixty percent of participants indicated they could stay at their present location over 30 days, with the remaining 40% indicating they could stay less than 30 days, meeting the definition of homeless according to Minnesota State law. Additionally, 57% of the sample indicated they had stayed in a shelter in the past, 63% indicated they had stayed outside or in a place not meant for habitation in the past, and 68% indicated they had couch hopped for at least 30 days at some point in their past. When asked how many months total they have been homeless in their lives, only 14% of participants indicated they had never been homeless. Eight-six percent of the sample indicated they had been homeless at one point in their life. The total number of months homeless ranged from zero to 252 months, or 21 years homeless, with a mean of 17.7 months homeless. It is entirely possible for a youth to have spent their entire life homeless without ever having had a stable or permanent place to stay. Sixty-four percent of the sample indicated they had been homeless 12 months or less, 17% were homeless 13-24 months, 8% were homeless 25-36 months, 6% were homeless 37-48 months and 6% indicated they were homeless 49 months or more. When asked at what age they were first on their own not living with their parents, the responses ranged from age 1 to 21 years old. Fifty-nine percent of the sample indicated they left home to be on their own before age 18. Twenty-six percent indicated they left home at age 18, and 15% indicated they were 19 or older when they left home.

Table 2

Frequency of Distribution of Housing Characteristics (N=161)

Housing Characteristics	Frequency of respondents	Valid percentage (%)	Cumulative percentage (%)
Where did you stay last night?			
Street	10	6.2	
Shelter	14	8.7	
With Family	53	32.9	
With Friends	39	24.2	
Paying rent	39	24.2	
Transitional housing	6	3.7	
How long can you stay where you stayed last night?			
Less than 30 days	65	40.4	
More than 30 days	96	59.6	
Have you ever stayed in a shelter?			
No	70	43.5	
Yes	91	56.5	
Have you ever stayed outside?			
No	60	37.3	
Yes	101	62.7	
Have you ever couch hopped 30 days?			
No	50	31.1	
Yes	110	68.3	
Missing	1	0.6	
Total months homeless (N=156)			
0 months	22	14.1	14.1
1-4 months	29	18.6	32.7
5-8 months	24	15.4	48.1
9-12 months	24	15.4	63.5
13-24 months	26	16.7	80.1
25-36 months	12	7.7	87.8
37-48 months	10	6.4	94.2
49 months or more	9	5.8	100
Age first on own (N=138)			
13 and under	10	7.2	7.2
14	15	10.9	18.1
15	7	5.1	23.2

16	27	19.6	42.8
17	22	15.9	58.7
18	36	26.1	84.8
19	13	9.4	94.2
20 or 21	8	5.8	100

Substance use rates can be seen in Figure 1. Participants were asked how often they drank alcohol, smoked marijuana, and used other drugs in the past six months. Seventy-six percent of the sample indicated they have never used other drugs over the last six months, 44% indicated they use alcohol a few times over the time period, and 39% indicated they use marijuana daily during the last six months. A Total Substance Use variable (Table 3) was created by assigning a value of 0 to “never”, 1 to “a few times”, 2 to “monthly”, 3 to “weekly”, and 4 to “daily”. Scores were added with possible scores ranging from 0 to 12. A score of 0 indicates the participant did not use any substance in the last six months, and a score of 12 indicates the participant used all three substances daily. Only 17% of the sample indicated they did not use substances during the last six months, with 83% indicating they use substances. The mean score of Total Substance Use was 4.01.

Figure 1

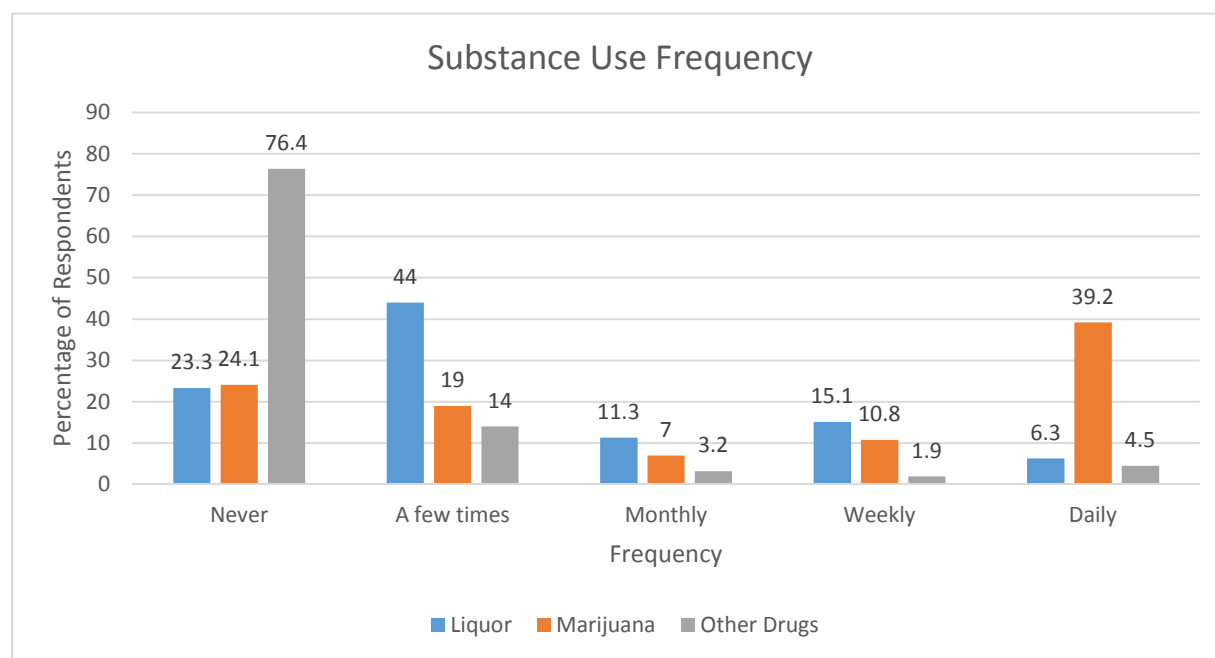
Substance Use Frequency

Table 3

Frequency of Distribution of Total Substance Use (N=157)

Substance Use Score	Frequency of respondents	Valid percentage (%)	Cumulative percentage (%)
Total Substance Use Score			
0	26	16.6	16.6
1	11	7.0	23.6
2	21	13.4	36.9
3	11	7.0	43.9
4	17	10.8	54.8
5	24	15.3	70.1
6	14	8.9	79.0
7	17	10.8	89.8
8	6	3.8	93.6
9	4	2.5	96.2
10	0	0	96.2
11	3	1.9	98.1
12	3	1.9	100

Table 4 presents the percentages of positive answers for each PTSD screening category. Fifty-two percent of the sample indicated they have nightmares or intrusive thoughts, 56% indicated they had symptoms of avoidance, 51% indicated they had symptoms of being hyper-vigilant or being easily startled, and 51% indicated they felt numb or detached.

Table 4

Frequency of Distribution of PTSD Screen (N=160)

PTSD Category	Frequency of respondents	Valid percentage (%)
Nightmares or intrusive thoughts		
No	77	48.1
Yes	83	51.9
Avoidance		
No	71	44.4
Yes	89	55.6
On-guard or easily startled		
No	79	49.4
Yes	81	50.6
Numb or detached		
No	79	49.4
Yes	81	50.6

A Total PTSD variable was created by assigning a value of 0 to “no” responses and a value of 1 to “yes” responses. The scores were added and presented in Table 5. As noted earlier, a total score of 3 or 4 indicates a positive screening for PTSD. A total of 48% of the sample screened positive for PTSD according to the PC-PTSD screen.

Table 5

Frequency of Distribution Total PTSD Screen Score (N=160)

PTSD Score	Frequency of respondents	Valid percentage (%)	Cumulative percentage (%)
Total PTSD Score			
0	43	26.9	26.9
1	25	15.6	42.5
2	15	9.4	51.9
3	29	18.1	70.0
4	48	30.0	100.0

Table 6 presents the percentages of each ACE category ranging from 26.8% (sexual abuse) to 65.2% (parents separated or divorced). Other notable ACE categories were emotional abuse (50.3%), emotional neglect (49%), and household substance abuse (46.2%). A Total ACE Score variable was created by adding all positive responses for a total score ranging from 0 to 10. Table 7 presents Total ACE score. The mean score for Total ACE score is 4.15. Data included in the Total ACE score includes only participants that completed the ACE questionnaire in its entirety to avoid missing data being counted as a “No” response.

Table 6

Frequency of Distribution of each Ace Category

ACE Categories	Frequency of respondents	Valid percentage (%)
Emotional Abuse (N=157)		
No	78	49.7
Yes	79	50.3
Physical Abuse (N=157)		
No	96	61.1
Yes	61	38.9
Sexual Abuse (N=157)		
No	115	73.2
Yes	42	26.8
Emotional Neglect (N=157)		
No	80	51
Yes	77	49
Physical Neglect (N=156)		
No	100	64.1
Yes	56	35.9
Parents Seperated or Divorced (N=158)		
No	55	34.8
Yes	103	65.2
Mother Treated Violently (N=156)		
No	117	75
Yes	39	25
Household Substance Abuse (N=156)		
No	84	53.8
Yes	72	46.2
Household Mental Illness (N=156)		
No	92	59
Yes	64	41
Family Member Incarcerated (N=156)		
No	95	60.9
Yes	61	39.1

Table 7

Frequency of Distribution Total ACE Score
(*N*=155)

ACE Score	Frequency of respondents	Valid percentage (%)	Cumulative percentage (%)
Total ACE Score			
0	20	12.9	12.9
1	17	11.0	23.9
2	12	7.7	31.6
3	24	15.5	47.1
4	14	9.0	56.1
5	14	9.0	65.2
6	14	9.0	74.2
7	16	10.3	84.5
8	12	7.7	92.3
9	7	4.5	96.8
10	5	3.2	100.0

Inferential Statistics

Does ACE score impact homelessness? Independent samples *t*-tests were performed to analyze differences in mean ACE scores between groups who have experienced homelessness, and those who have not; those who can stay longer than 30 days in their current location, and those who cannot; and those who have stayed on the street, in a shelter, or couch hopped in the past, and those who have not.

There was a significant difference in the ACE score between those who have not experienced homelessness (*M*=2.14, *SD* =2.22) and those who have (*M*=4.52, *SD*=2.88); $t(31.99) = -4.36$, $p = .000$. The Levene's Test of Equality of Variance for the independent samples T-test was .010. Since .010 is not greater than .05, the Levene's Test was significant.

Therefore, the p-value for this T-test is .000. Since the p-value is less than .05, the results of this data are statistically significant.

There was a difference in the ACE score between those who cannot stay longer than 30 days in their current location ($M=4.52$, $SD=2.96$) and those who can ($M=3.91$, $SD=2.87$); $t(153)=1.27$, $p=.208$. The Levene's Test of Equality of Variance for the independent samples T-test was .785. Since .785 is greater than .05, the Levene's Test is not significant. Therefore, the p-value for this T-test is .208. Since the p-value is greater than .05, the results of this data are not statistically significant.

There was a significant difference in the ACE score between those who have not stayed on the street ($M=3.33$, $SD=2.89$) and those who have ($M=4.65$, $SD=2.82$); $t(153)=-2.80$, $p=.006$. The Levene's Test of Equality of Variance for the independent samples T-test was .542. Since .542 is greater than .05, the Levene's Test is not significant. Therefore, the p-value for this T-test is .006. Since the p-value is less than .05, the results of this data are statistically significant.

There was a difference in the ACE score between those who have not stayed in a shelter ($M=4.38$, $SD=2.78$) and those who have ($M=3.99$, $SD=3.00$); $t(153)=.830$, $p=.411$. The Levene's Test of Equality of Variance for the independent samples T-test was .578. Since .578 is greater than .05, the Levene's Test is not significant. Therefore, the p-value for this T-test is .411. Since the p-value is greater than .05, the results of this data are not statistically significant.

There was a significant difference in the ACE score between those who have not couch hopped ($M=3.08$, $SD=2.67$) and those who have ($M=4.64$, $SD=2.89$); $t(153)=-3.16$, $p=.002$. The Levene's Test of Equality of Variance for the independent samples T-test was .301. Since

.301 is greater than .05, the Levene's Test is not significant. Therefore, the p-value for this T-test is .002. Since the p-value is less than .05, the results of this data are statistically significant.

One-way between-groups analysis of variance ANOVA were performed to compare mean ACE scores between groups with different current housing statuses, groups with differing ages of first leaving home, and groups with varying levels of total months homeless.

There were statistically significant differences in the ACE score between groups with different current housing statuses at the $p = <.05$ level [$F(5, 149) = 2.86, p = .017$]. However Post hoc multiple comparisons using the Turkey HSD were not possible due to differences in group sizes.

There were not statistically significant differences in the mean ACE score between groups with differing ages of first leaving home at the $p = <.05$ level [$F(7, 126) = 1.22, p = .294$].

There was a statistically significant difference in ACE score between groups with varying lengths of Total Months homeless at the $p = <.05$ level in the LOT scores for the eight categories [$F(7, 143) = 3.37, p = .002$]. Post hoc comparisons using the Turkey HSD test indicated that the mean ACE score for being homeless 0 months ($M = 2.14, SD = 2.22$) was significantly different than the group being homeless 25-36 months ($M = 5.42, SD = 2.81$) and the group being homeless 37-48 months ($M = 6.40, SD = 3.50$).

Although post hoc multiple comparisons using the ANOVA Turkey HSD were not possible due to differences in group sizes within the Current Housing Status categories, those staying on the street or outdoors, had the highest mean ACE score of 6.25, which was statistically significant difference than those who have never stayed outdoors. Participants staying in transitional housing, and with a friend had the next highest mean ACE scores of 5.17

and 5.11 respectively. Participants staying with family had the lowest mean ACE score at 3.43. The ACE score of participants who had couch hopped was nearly identical to participants who had stayed outdoors (4.64 vs. 4.65). The largest statistically significant differences in ACE score was between those who had couch hopped that those that hadn't (difference of 1.56). This is followed by a 1.32 difference in those who stayed outside and those that hadn't. The mean ACE score of participants who have been homeless was more than double (4.52) that of the participants that have never been homeless (2.14). Although not statistically significant, the mean ACE score was higher for participants who could stay less than 30 days at their current housing location (4.52) than the participants that could stay longer than 30 days (3.91). Once again, although not statistically significant, it is important to note the difference in mean ACE score between those who have accessed shelters in the past and those that have not. Mean ACE score is higher (4.38) for those who have not used a shelter in the past compared to those who have used a shelter (3.99).

Although not statistically significant through ANOVA analysis, there were differences in mean ACE scores between the different age groups of participants for first leaving home. Participants who left home at an earlier age had higher mean ACE scores compared to those participants that left home at an older age. Participants who left home at age 14 or younger had a mean ACE score of 5.5 to 5.6, whereas participants who left home at age 20 or older had a mean ACE score of 3.29.

Mean ACE score also generally increased as total months homeless increased. The mean ACE score of participants who were not homeless was 2.14. Scores ranged from 3.71-4.61 for participants who were homeless 1-24 months, and scores ranged from 5.42-6.4 for participants who were homeless longer than 24 months. ANOVA analysis showed statistically significant

differences between participants who were not homeless (2.14), those who were homeless two to three years (5.42), and those who were homeless three to four years (6.40).

A correlation analysis was used to determine the relationship between Total ACE score and Total months homeless. There was a small positive correlation between the two variables Total months homeless and Total ACE score, $r = .163$, $p < .05$. Therefore, as participants total ACE scores increased, their total months homeless also increased. A correlation analysis was also used to determine the relationship between Total ACE score and Age First on own. There was a small negative correlation between the two variables Age on First own and Total ACE score, $r = -.188$, $p < .05$. Therefore as total ACE score increased, the age of first leaving home decreased.

Do other risk factors impact homelessness?

PTSD. Independent samples *t*-tests were performed to analyze differences in mean Total PTSD scores between groups that have experienced homelessness, and those that have not; those that can stay longer than 30 days in their current location, and those that cannot; and those that have stayed on the street, in a shelter, or couch hopped in the past, and those that have not.

There was a significant difference in the mean PTSD score between those who have not been homelessness ($M=1.27$, $SD = 1.52$) and those who have ($M=2.24$, $SD=1.60$); $t(154) = -2.64$, $p = .009$. The Levene's Test of Equality of Variance for the independent samples T-test was .340. Since .340 is greater than .05, the Levene's Test is not significant. Therefore, the *p*-value for this T-test is .009. Since the *p*-value is less than .05, the results of this data are statistically significant.

There was a difference in the PTSD score between those who cannot stay longer than 30 days in their current location ($M=2.38$, $SD=1.59$) and those who can ($M=1.90$, $SD=1.62$); $t(158)=1.85$, $p=.066$. The Levene's Test of Equality of Variance for the independent samples T-test was .826. Since .826 is greater than .05, the Levene's Test is not significant. Therefore, the p-value for this T-test is .066. Since the p-value is greater than .05, the results of this data are not statistically significant.

There was a significant difference in the PTSD score between those who have not stayed on the street ($M=1.68$, $SD=1.55$) and those who have ($M=2.33$, $SD=1.62$); $t(158)=-2.49$, $p=.014$. The Levene's Test of Equality of Variance for the independent samples T-test was .301. Since .301 is greater than .05, the Levene's Test is not significant. Therefore, the p-value for this T-test is .014. Since the p-value is less than .05, the results of this data are statistically significant.

There was a difference in the PTSD score between those who have not stayed in a shelter ($M=1.94$, $SD=1.56$) and those who have ($M=2.20$, $SD=1.66$); $t(158)=-.990$, $p=.324$. The Levene's Test of Equality of Variance for the independent samples T-test was .179. Since .179 is greater than .05, the Levene's Test is not significant. Therefore, the p-value for this T-test is .324. Since the p-value is greater than .05, the results of this data are not statistically significant.

There was a significant difference in the PTSD score between those who have not couch hopped ($M=1.62$, $SD=1.58$) and those who have ($M=2.30$, $SD=1.60$); $t(158)=-2.50$, $p=.013$. The Levene's Test of Equality of Variance for the independent samples T-test was .570. Since .570 is greater than .05, the Levene's Test is not significant. Therefore, the p-value for this T-test is .013. Since the p-value is less than .05, the results of this data are statistically significant.

One-way between-groups analysis of variance ANOVA were performed to compare mean PTSD scores between groups with different current housing statuses, groups with differing ages of first leaving home, and groups with varying levels of total months homeless.

There were not statistically significant differences in the mean PTSD score between groups with different current housing statuses at the $p = <.05$ level [$F(5, 154) = 1.45, p = .210$].

There were not statistically significant differences in the mean PTSD score between groups with differing ages of first leaving home at the $p = <.05$ level [$F(7, 130) = .865, p = .536$].

There was a statistically significant difference in the mean PTSD score between the groups with varying lengths of Total Months homeless as determined by one-way ANOVA ($F(7,148) = 3.51, p = .000$). The test of homogeneity of variances was violated. Therefore, Welch and Brown-Forsythe tests were run. Post hoc comparisons using the Turkey HSD test indicated that the mean PTSD was score for being homeless 0 months ($M = 1.27, SD = 1.52$) was significantly different than the group being homeless 37-48 months ($M = 3.70, SD = .675$).

A correlation analysis was used to determine the relationship between Total PTSD score and Total months homeless. No significant relationships were determined $r = .148, p >.05$. A correlation analysis was also used to determine the relationship between Total PTSD score and Age first on own. No significant relationships were determined $r = -.109, p = >.05$. See Table 9.

Although the differences in mean PTSD score were not statistically significant, it is worth noting that within the group of Current Housing Status, those staying outdoors or on the street had the highest mean Total PTSD score of 2.56. (Also see Table 8). Participants paying rent and those staying with a friend followed next with score of 2.38 and 2.33 respectively. Participants staying in a shelter and with family had the lowest mean PTSD scores of 1.93 and 1.64, which

were both below the total mean of 2.09. Participants that could stay less than 30 days in their current housing location, ever stayed in a shelter, ever stayed outside, ever couch hopped 30 days, and had ever been homeless all had higher mean PTSD scores than the participants that had not. The categories with the highest mean PTSD scores were participants who could not stay longer than 30 days at their current location (2.38), ever stayed outside (2.33), and who had ever couch hopped (2.30). The largest statistically significant differences in mean PTSD score was between those who have been homeless and those who haven't (.72 difference), those who have couch hopped and those who haven't (.68 difference), and between those who have stayed outside and those who haven't (.65 difference).

Although the difference was not statistically significant, and no significant relationship was found, participants who left home at an earlier age had higher PTSD scores compared to those participants that left home at an older age. Participants who left home at age 14 or younger had a mean PTSD range of 2.73 - 2.90, whereas participants who left home at age 20 or older had a mean PTSD score of 1.88.

Although no significant relationship was found, Mean PTSD scores also generally increased as months homeless increased. The mean score of participants who were not homeless was 1.27. Scores ranged from 1.62 - 2.46 for participants who were homeless 1-24 months, and scores ranged from 2.0 – 3.70 for participants who were homeless longer than 24 months.

Substance Use. Independent samples *t*-tests were performed to analyze differences in mean Total Substance Use scores between groups that have experienced homelessness, and those that have not; those that can stay longer than 30 days in their current location, and those that cannot; and those that have stayed on the street, in a shelter, or couch hopped in the past, and those that have not.

There was a significant difference in the mean Substance Use score between those who have not been homeless (M=2.86, SD =2.69) and those who have (M=4.19, SD=2.90); $t(151) = -1.97, p = .05$. The Levene's Test of Equality of Variance for the independent samples T-test was .703. Since .703 is greater than .05, the Levene's Test is not significant. Therefore, the p-value for this T-test is .05. Since the p-value equal to .05, the results of this data are statistically significant.

There was a very small difference in the Substance Use score between those who cannot stay longer than 30 days in their current location (M=4.03, SD =3.17) and those who can (M=4.00, SD=2.85); $t(158) = .065, p = .949$. The Levene's Test of Equality of Variance for the independent samples T-test was .421. Since .421 is greater than .05, the Levene's Test is not significant. Therefore, the p-value for this T-test is .949. Since the p-value is greater than .05, the results of this data are not statistically significant.

There was a significant difference in the Substance Use score between those who have not stayed on the street (M=3.36, SD =2.64) and those who have (M=4.41, SD=3.10); $t(155) = -2.17, p = .031$. The Levene's Test of Equality of Variance for the independent samples T-test was .331. Since .331 is greater than .05, the Levene's Test is not significant. Therefore, the p-value for this T-test is .031. Since the p-value is less than .05, the results of this data are statistically significant.

There was a difference in the Substance Use score between those who have not stayed in a shelter (M=4.09, SD =2.81) and those who have (M=3.96, SD=3.10); $t(155) = .280, p = .780$. The Levene's Test of Equality of Variance for the independent samples T-test was .789. Since .789 is greater than .05, the Levene's Test is not significant. Therefore, the p-value for this T-test

is .780. Since the p-value is greater than .05, the results of this data are not statistically significant.

There was a difference in the Substance Use score between those who have not couch hopped ($M=3.58$, $SD=2.83$) and those who have ($M=4.20$, $SD=3.03$); $t(155)=-1.20$, $p=.231$. The Levene's Test of Equality of Variance for the independent samples T-test was .758. Since .758 is greater than .05, the Levene's Test is not significant. Therefore, the p-value for this T-test is .231. Since the p-value is greater than .05, the results of this data are not statistically significant.

One-way between-groups analysis of variance ANOVA were performed to compare mean Substance Use scores between groups with different current housing statuses, groups with differing ages of first leaving home, and groups with varying levels of total months homeless.

There were not statistically significant differences in the mean Substance Use score between groups with different current housing statuses at the $p < .05$ level [$F(5, 151) = .866$, $p = .506$).

There were not statistically significant differences in the mean Substance Use score between groups with differing ages of first leaving home at the $p < .05$ level [$F(7, 129) = .1816$, $p = .089$).

There were not statistically significant differences in the mean Substance Use score between groups with varying levels of total months homeless at the $p < .05$ level [$F(7, 145) = .120$, $p = .306$).

Although the differences in the current housing category were not statistically significant, the those staying in Transitional housing had the highest Total Substance use score of 5.67. See

Table 8. Participants staying on the street and in a shelter followed with rates of 5.00 and 4.50 respectively. Participants staying with family had the lowest substance use rates. The largest statistically significant differences in categories was between participants and between participants that have been homeless in the past and those that have not ever been homeless (difference of 1.33), and between those that have stayed outside in the past, and those that have not (difference of 1.05). Participants that have not been homeless have the lowest substance use rates at 2.86. Although the differences were not statistically significant, those who have couch hopped had higher rates of substance use than those who hadn't. Those who have stayed in a shelter had slightly lower substance use rates than those that have not used shelters in the past.

A correlation analysis was used to determine the relationship between Total Substance Use score and Total Months homeless. Although no significant relationship was found $r = .076$, $p > .05$, those that have never been homeless had the lowest substance use rates out of all total months homeless groups.

A correlation analysis was used to determine the relationship between Total Substance Use score and Age first on own. There was a small negative correlation between the two variables Age first on own and Total Substance Use score, $r = -.189$, $p < .05$. Therefore, as the age a participant first leaves home decreases, the Total Substance Use score increases. Participants who left home at age 13 or younger had the highest rates of substance use (6.40) among all participants in all categories.

Table 8

Mean Score Comparison. - Housing Categories

Housing Category	N	Mean ACE Score	N	Mean PTSD Score	N	Mean Substance Use Score
Where did you stay last night?						
Street	8	6.25	9	2.56	9	5.00
Shelter	14	4.21	14	1.93	14	4.50
Family	51	3.43	53	1.64	51	3.67
Friend	37	5.11	39	2.33	39	4.10
Paying Rent	39	3.59	39	2.38	38	3.71
Transitional Housing	6	5.17	6	2.17	6	5.67
Total	155	4.15	160	2.09	157	4.01
How long can you stay?						
Less than 30 days	62	4.52	64	2.38	64	4.03
More than 30 days	93	3.91	96	1.90	93	4.00
Ever stayed in a shelter?						
No	66	4.38	69	1.94	66	4.09
Yes	89	3.99	91	2.20	91	3.96
Ever stayed outside?						
No	58	3.33	60	1.68	59	3.36
Yes	97	4.65	100	2.33	98	4.41
Ever couch hopped 30 days?						
No	48	3.08	50	1.62	48	3.58
Yes	107	4.64	110	2.30	109	4.20
Ever been homeless?						
No	21	2.14	22	1.27	21	2.86
Yes	130	4.52	134	2.24	132	4.19
Age first left home						
13 and under	10	5.50	10	2.90	10	6.40
14	15	5.60	15	2.73	15	4.20
15	7	4.71	7	2.00	6	4.33
16	27	3.74	27	2.07	27	3.11
17	21	4.67	22	2.14	22	4.55
18	34	3.71	36	1.86	36	3.31
19	13	3.85	13	2.46	13	4.00
20 or 21	7	3.29	8	1.88	8	4.38

Total	134	4.25	138	2.18	137	3.96
Total months homeless						
0 months	21	2.14	22	1.27	21	2.86
1-4 months	27	4.00	29	1.62	28	4.86
5-8 months	24	3.71	24	1.96	24	3.71
9-12 months	23	4.61	24	2.29	24	3.71
13-24 months	25	4.28	26	2.46	26	4.46
25-36 months	12	5.42	12	2.00	12	3.33
37-48 months	10	6.40	10	3.70	9	4.44
49 and longer	9	5.44	9	2.89	9	4.78
Total	151	4.19	156	2.10	153	4.01

Table 9
Correlations

		Correlations				
		Months Homeless	Age First On Own	Total Ace	Total PTSD	Total Substance Use
Months Homeless	Pearson Correlation	1	-.297**	.163*	.148	.076
	Sig. (2-tailed)		.000	.045	.066	.350
	N	156	136	151	156	153
Age First On Own	Pearson Correlation	-.297**	1	-.188*	-.109	-.189*
	Sig. (2-tailed)	.000		.029	.205	.027
	N	136	138	134	138	137
Total Ace	Pearson Correlation	.163*	-.188*	1	.490**	.172*
	Sig. (2-tailed)	.045	.029		.000	.033
	N	151	134	155	155	153
Total PTSD	Pearson Correlation	.148	-.109	.490**	1	.244**
	Sig. (2-tailed)	.066	.205	.000		.002
	N	156	138	155	160	157
Total Substance Use	Pearson Correlation	.076	-.189*	.172*	.244**	1
	Sig. (2-tailed)	.350	.027	.033	.002	
	N	153	137	153	157	157

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Does ACE score impact other risk factors?

PTSD. A correlation analysis was used to determine the relationship between Total PTSD Score and Total ACE Score. There was a medium positive correlation between the two variables Total PTSD Score and Total ACE Score, $r = .490$, $p < .01$. Therefore, as a participants Total PTSD Score increases, so does their total ACE score. See Table 9.

A new variable (Positive PTSD Screen) was created to differentiate between participants who scored positively for the PTSD screen (a total score of 3 or 4) and those that did not (a total score of 2 or less). There was a significant difference in the mean ACE score between those who did not screen positive for PTSD ($M=2.94$, $SD = 2.65$) and those who have ($M=5.49$, $SD=2.59$); $t(153) = -6.05$, $p = .000$. The Levene's Test of Equality of Variance for the independent samples T-test was .920. Since .920 is greater than .05, the Levene's Test is not significant. Therefore, the p-value for this T-test is .000. Since the p-value is less than .05, the results of this data are statistically significant.

Independent samples *t*-tests were performed to analyze differences in mean Total ACE scores between groups that have experienced PTSD symptoms, and those that have not.

There was a significant difference in the mean ACE score between those who did not screen positive for PTSD item "nightmares" ($M=2.97$, $SD = 2.60$) and those who did ($M=5.26$, $SD=2.76$); $t(153) = -5.31$, $p = .000$. The Levene's Test of Equality of Variance for the independent samples T-test was .450. Since .450 is greater than .05, the Levene's Test is not significant. Therefore, the p-value for this T-test is .000. Since the p-value is less than .05, the results of this data are statistically significant.

There was a significant difference in the mean ACE score between those who did not screen positive for PTSD item "avoiding" ($M=2.77$, $SD = 2.70$) and those who did ($M=5.27$,

SD=22.59); $t(153) = -5.87$, $p = .000$. The Levene's Test of Equality of Variance for the independent samples T-test was .829. Since .829 is greater than .05, the Levene's Test is not significant. Therefore, the p-value for this T-test is .000. Since the p-value is less than .05, the results of this data are statistically significant.

There was a significant difference in the mean ACE score between those who did not screen positive for PTSD item "on-guard" ($M=3.19$, $SD = 2.67$) and those who did ($M=5.10$, $SD=2.84$); $t(153) = -4.31$, $p = .000$. The Levene's Test of Equality of Variance for the independent samples T-test was .442. Since .442 is greater than .05, the Levene's Test is not significant. Therefore, the p-value for this T-test is .000. Since the p-value is less than .05, the results of this data are statistically significant.

There was a significant difference in the mean ACE score between those who did not screen positive for PTSD item "numb" ($M=2.90$, $SD = 2.68$) and those who did ($M=5.40$, $SD=2.58$); $t(153) = -5.92$, $p = .000$. The Levene's Test of Equality of Variance for the independent samples T-test was .733. Since .733 is greater than .05, the Levene's Test is not significant. Therefore, the p-value for this T-test is .000. Since the p-value is less than .05, the results of this data are statistically significant.

The mean ACE score for participants who screened positively for PTSD was 5.49, whereas participants that did not screen for PTSD had a mean ACE score of 2.94. Participants that indicated they were experiencing PTSD symptoms had significantly higher mean ACE scores in all categories than participants that were not experiencing PTSD symptoms. Also See Table 10.

A correlation analysis was also used to determine the relationship between Total PTSD score and Total Substance Use score. There was small positive correlation between the two variables Total PTSD score and Total Substance Use score, $r = .244$, $p < .01$. Therefore, as participants Total PTSD score increases, so does their Total Substance Use score. See Table 9.

Table 10

Mean ACE Score Comparison Other Variables

Other Variable	N	Mean ACE Score
Positive PTSD Screen		
No	81	2.94
Yes	74	5.49
PTSD Nightmares		
No	75	2.97
Yes	80	5.26
PTSD Avoiding		
No	69	2.77
Yes	86	5.27
PTSD On Guard		
No	77	3.19
Yes	78	5.10
PTSD Numb		
No	77	2.90
Yes	78	5.40
Gender		
Female	79	4.67
Male	73	3.59
Other	2	5.00
Total	154	4.16
Sexual Orientation		
Heterosexual	108	3.74
LGBTQ	38	5.89
Didn't Answer	9	1.78
Total	155	4.15
Substance Use Median		
Low	84	3.86
High	69	4.51

How often Liquor		
Never	35	2.97
A Few Times	70	4.06
Monthly	17	5.47
Weekly	24	4.33
Daily	8	6.38
Total	154	4.13
How often Marijuana		
Never	37	3.68
A Few Times	30	3.90
Monthly	10	6.00
Weekly	17	4.82
Daily	59	4.07
Total	153	4.15
How often Other Drugs		
Never	118	3.84
A Few Times	21	5.14
Monthly	5	7.00
Weekly	2	4.00
Daily	7	4.43
Total	153	4.15

Substance Use. A correlation analysis was also used to determine the relationship between Total ACE score and Total Substance Use score. There was small positive correlation between the two variables Total ACE score and Total Substance Use score, $r = .172$, $p < .05$. Therefore, as participants Total ACE score increases, so does their Total Substance Use score. See Table 9.

A new variable (Substance Use Median) was created to split Total Substance Use score at the median point creating a “Low” and “High” group. There was a difference in the mean ACE score between those who fell within the Low group ($M=3.86$, $SD = 2.88$) and those who fell within the High group ($M=4.51$, $SD=2.92$) conditions; $t(151) = -1.38$, $p = .168$. The Levene’s Test of Equality of Variance for the independent samples T-test was $.787$. Since $.787$ is greater

than .05, the Levene's Test is not significant. Therefore, the p-value for this T-test is .168. Since the p-value is greater than .05, the results of this data are not statistically significant.

One-way between-groups analysis of variance ANOVA were performed to compare mean ACE scores between groups with differing usage frequencies between the groups "How often Liquor", "How often Marijuana", and "How often Other Drugs".

There was a statistically significant difference in ACE score between groups with differing usage frequencies for the group "How Often Liquor" at the $p = <.05$ level in the LOT scores for the five categories [$F(4, 149) = 3.80, p = .006$]. Post hoc comparisons using the Turkey HSD test indicated that the mean ACE was score for using liquor "never" ($M = 2.97, SD = 3.04$) was significantly different than the group using liquor "monthly" ($M = 5.47, SD = 2.55$) and the group using liquor "daily" ($M = 6.38, SD = 2.13$).

There were not statistically significant differences in the mean ACE score between groups with differing frequencies for the group "How Often Marijuana" at the $p = <.05$ level [$F(4, 148) = 1.59, p = .181$].

There were not statistically significant differences in the mean ACE score between groups with differing frequencies for the group "How Often Other Drugs" at the $p = <.05$ level [$F(4, 148) = 2.25, p = .066$].

Although not statistically significant, the mean ACE score was higher (4.51) in the High group than the Low group (3.86). Mean ACE score was compared between substance use categories. Within the "How Often Liquor" category, mean ACE score was lowest (2.97) among participants that "never" used alcohol. Mean ACE score was highest among participants that used alcohol "monthly" (5.47) and "daily" (6.38). Within the "How Often Marijuana" category,

participants that “never” used marijuana had the lowest mean ACE score at 3.68. Participants that used marijuana “monthly” had the highest mean ACE score at 6.00. Participants that used marijuana on a daily basis had a mean ACE score lower (4.07) than the Total Mean of 4.15. Within the “How often Other Drugs” category, participants that “never” used other drugs had the lowest mean ACE score of 3.84. Participants that used other drugs “monthly” had the highest mean ACE score among all substance use categories of 7.00.

Schooling. One-way between-groups analysis of variance ANOVA were performed to compare mean ACE scores between groups with differing levels of schooling. There were statistically significant differences in the mean ACE score between races at the $p = <.05$ level [$F(2, 152) = 2.91, p = .058$]. In order to perform Post hoc testing, the variable Schooling was recoded. “2 Year Degree” ($N= 2$) was merged into the “Some College” ($N=19$) category. There was a statistically significant difference in ACE score between “Some high school, no diploma” (4.67) and the group “High School Diploma or GED” (3.46).

Race. One-way between-groups analysis of variance ANOVA were performed to compare mean ACE scores between groups with differing races. There were statistically significant differences in the mean ACE score between races at the $p = <.05$ level [$F(4, 142) = 7.42, p = .000$]. In order to perform Post hoc testing, the Race variable was recoded. “Didn’t Answer” ($N=2$), “Native American” ($N=3$) and “Asian” ($N=1$) were merged into the “Other” ($N=8$) category. There was a statistically significant difference in ACE score between the groups “African-American” (3.30) and “Multi-Racial” (6.30). Additional ACE scores by race are: “Caucasian” (5.11), “Hispanic” (3.67), “Other” (4.80).

Gender. In order to run Independent-samples t-test, the variable “Gender” was recoded. The variable “Other” ($N=2$) was merged into the variable “Female” ($N=80$) There was a

significant difference in the mean ACE score between the groups “Female” ($M=4.68$, $SD=2.89$) and “Male” ($M=3.59$, $SD=2.85$) conditions; $t(152)=2.35$, $p=.020$. The Levene’s Test of Equality of Variance for the independent samples T-test was .829. Since .746 is greater than .05, the Levene’s Test is not significant. Therefore, the p-value for this T-test is .020. Since the p-value is less than .05, the results of this data are statistically significant.

There was also significant difference in the mean PTSD score between the groups “Female” ($M=2.34$, $SD=1.69$) and “Male” ($M=1.81$, $SD=1.51$) conditions; $t(156.7)=2.11$, $p=.036$. The Levene’s Test of Equality of Variance for the independent samples T-test was .038. Since .038 is not greater than .05, the Levene’s Test was significant and the p-value was taken from the “Equal variances not assumed” section of the test. Since the p-value is less than .05, the results of this data are statistically significant.

Sexual Orientation. One-way between-groups analysis of variance ANOVA were performed to compare mean ACE scores between groups with differing sexual orientations. There were statistically significant differences in the mean ACE score between sexual orientation categories at the $p < .05$ level [$F(2, 152) = 12.54$, $p = .000$]. There were statistically significant differences between every category within the sexual orientation category. The mean ACE scores were as follows: LGBTQ (5.89), Heterosexual (3.74), and Didn’t Answer (1.78).

One-way between-groups analysis of variance ANOVA were also performed to compare mean PTSD scores between groups with differing sexual orientations. There were statistically significant differences in the mean ACE score between sexual orientation categories at the $p < .05$ level [$F(2, 157) = 10.72$, $p = .000$]. There were statistically significant differences between the groups “LGBTQ” (3.00) and “Heterosexual” (1.89) and between the groups “LGBTQ” (3.00) and “Didn’t Answer” (1.00).

Sexual Abuse. In order to run additional statistical testing, the variable sexual orientation was recoded into a new variable where the category “Didn’t answer” (N=12) was merged into the “LGBTQ” (N=38) category. A Chi-square test for independence (with Yates Continuity Correction) indicated a significant association between the recoded Sexual Orientation variable and the Sexual Abuse variable of the ACE test, $\chi^2 (1, n = 157) = 8.27, p = .004, \phi = .25$. This test tells us that 19% of heterosexuals indicated they had experienced sexual abuse, and 43% of the LGBTQ population indicated they experienced sexual abuse.

A Chi-square test for independence (with Yates Continuity Correction) indicated a significant association between the recoded Gender variable and the Sexual Abuse variable of the ACE test, $\chi^2 (1, n = 156) = 7.20, p = .007, \phi = .23$. This test tells us that 37% of females indicated they had experienced sexual abuse, and 16% of males indicated they experienced sexual abuse.

Discussion

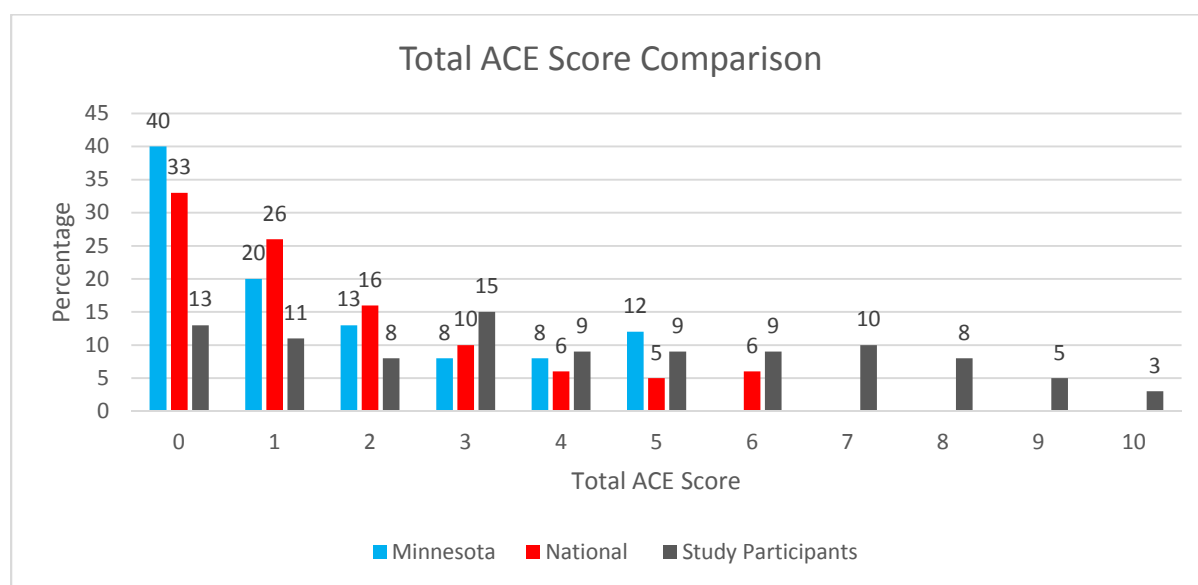
ACE Scores

When compared to the national and Minnesota samples, the Total ACE scores from this study show major differences (Felitti et al., 1998; Minnesota Dept of Health, 2013a). At first glance it may appear that this study’s participants fared well in the “0” category (Figure 2). However, the data shows that 40% of the Minnesota sample and 33% of the national sample had a total ACE score of 0. However, within this study’s sample, only 13% of participants had a total ACE score of 0. Nationally, the high ACE score reported is 6. In the current sample, 26% of the sample scored between 7 and 10, indicating a marked increase in total ACE scores compared to Minnesota and national samples. It should be noted that the results from the Minnesota total

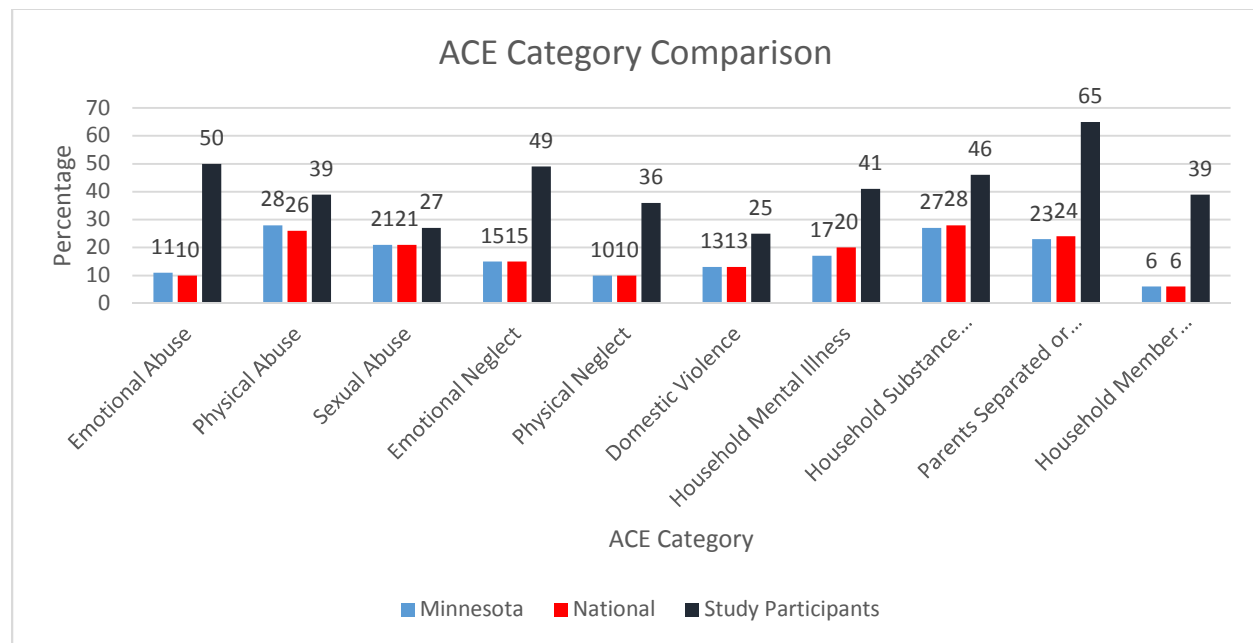
ACE score were reported differently by the Minnesota Department of Health. All scores 5 and over were combined into the high score of 5.

While there are clear differences in ACE scores between the current sample and the national and Minnesotan sample, this sample's mean ACE score (4.15) was consistent when compared to another homeless adult sample (3.9) (Patterson et al., 2014).

Figure 2. *Total ACE Score Comparison*



When looking at individual ACE categories, there were also clear differences between the national and Minnesota samples when compared to this current study's sample. While the current sample outscored the national and Minnesota sample in every category, the largest differences were in the categories of: Parents Separated / Divorced, Emotional Abuse, Emotional Neglect, and Household Member Imprisoned. (Felitti et al., 1998; Minnesota Dept of Health, 2013b).

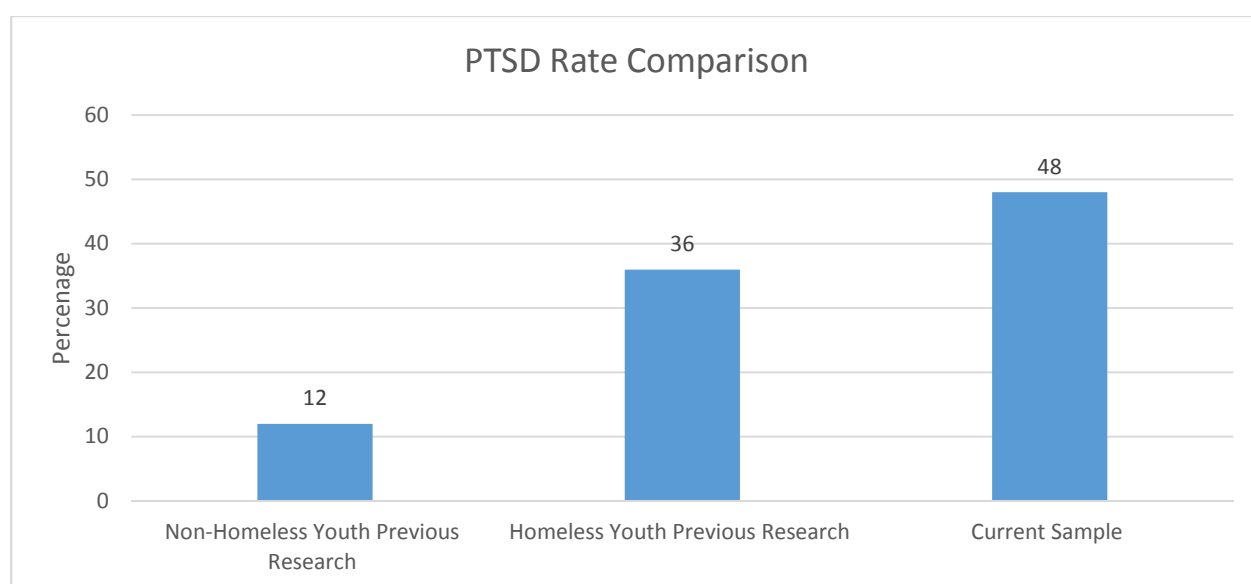
Figure 3. *ACE Category Comparison*

When compared to the 2012 Wilder survey of Minnesota homeless youth (Wilder, 2013), this current sample scored similarly in the area of physical abuse. Forty-four percent of the Wilder sample indicated they had “been physically mistreated as a child or youth”. In the current sample, 39% indicated they had experienced physical abuse. These results are similar to another study of homeless youth where 41% of the sample indicated they experienced physical abuse before age 18. (Hadland et al., 2012). Surprisingly, this current research sample had the exact same rate of sexual abuse as the 2012 sample of the Wilder Minnesota Homeless Youth Survey. Both samples had a 26.8% sexual abuse rate. Additionally, a similar sample of homeless youth reported a 26.5% sexual abuse rate (Hadland et al., 2012). Another surprising similar statistic occurred within the category of emotional abuse. The current sample indicated 50.3% of youth experienced emotional abuse. Another study of homeless youth reported the exact same result of 50.3% of youth experiencing emotional abuse (Hadland et al., 2012).

PTSD

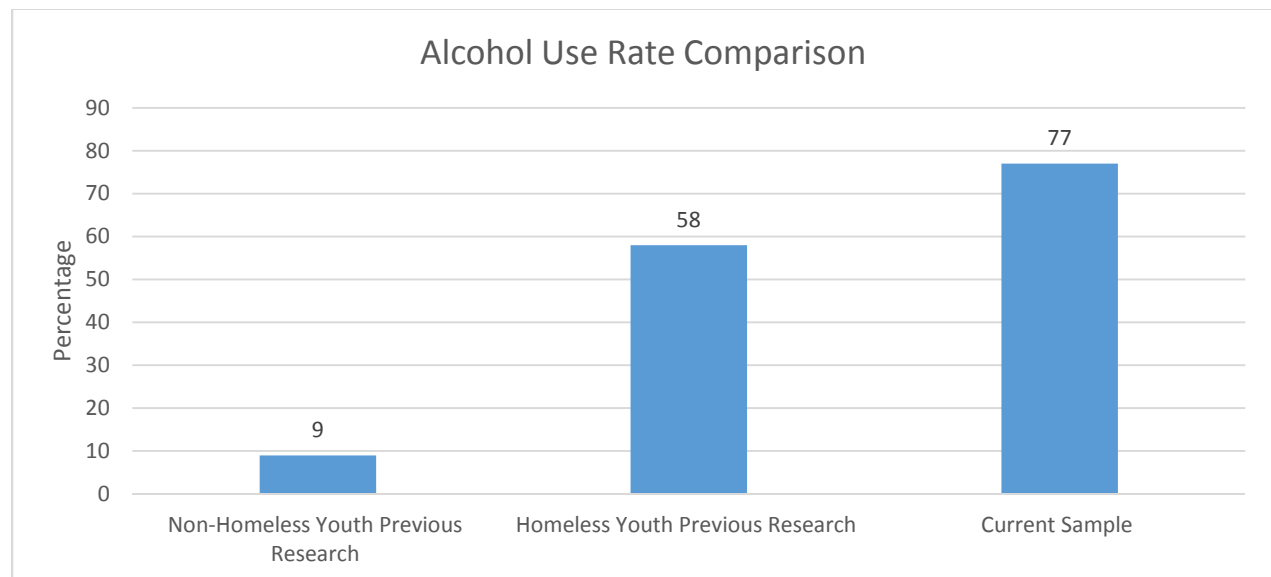
The current sample has a 48% positive screening rate for PTSD. This is higher than other homeless youth samples from other research where the rate of PTSD was found to range between 18% and 36% (Stewart et al., 2004; Whitbeck et al., 2007). Rates of PTSD in non-homeless youth was found to range between 6% and 12% (Giaconia et al., 1995; Cuffe, et al., 1998) in other research. See Figure 4.

Figure 4. *PTSD Rate Comparison*



Substance Use

Previous research of other homeless youth samples have established a substance use rate of 70% to 97% (Zerger et al., 2008). The substance use rate from the current research sample was 83% which falls within the range of similar samples. However, rates of alcohol use in non-homeless youth in other research was 5% to 9%, rates of alcohol among homeless youth in other research was 41% and 58% (Edidin et al., 2012; Merscham et al., 2009; Whitbeck et al., 2004), and this study's sample had an alcohol use rate of 77%. See Figure 5.

Figure 5. *Alcohol Use Rate Comparison***Does ACE score impact homelessness**

It was hypothesized that participants that have experienced homelessness will have higher ACE scores. Several statistical tests confirm the hypothesis that youth who have experienced homelessness have higher mean ACE scores. The clearest measure of this finding can be seen through the independent samples *t*-test between those who have been homeless and those who have not. The mean ACE score in participants that had been homeless was double that of participants that had not been homeless. Mean ACE scores were also found to be significantly different by *t*-test for those who have stayed on the street or couch hopped in the past, compared to those who have not. Mean ACE score was also highest in those that were currently staying on the street. There was also a statistically significant difference in the total ACE score between those who were not homeless, and those who were homeless between 2 and 4 years. A correlation analysis confirms the relationship between Total Ace score and Total Months Homeless. Although not statistically significant, mean ACE score was also higher in those that

left home at an earlier age (14 or younger) than those that left home at 20 or older. A correlation analyses also confirms the relationships between total ACE score and First Age on own.

It should also be discussed that although mean ACE score was found to be higher in those that could stay less than 30 days in current location than those that could stay longer than 30 days, the difference was not statistically significant. This may indicate that current housing status may not be as telling as housing history when determining ACE score.

There was also no significant difference between those who have used shelters in the past and those that haven't. It should also be noted that those that had used shelters in the past had lower mean ACE score than those that had not used shelter. This may suggest that youth may not be accessing shelters, but rather choosing to either couch hop or sleep on the street.

Do other risk factors impact homelessness

PTSD. It was hypothesized that participants that have experienced homelessness will have higher total mean PTSD scores. Several statistical tests confirm the hypothesis that youth who have experienced homelessness have higher total PTSD scores. The clearest measure of this finding can be seen through the independent samples *t*-test between those who have been homeless and those who have not. The mean PTSD score was higher in participants that had been homeless compared to those participants that had not been homeless. Mean PTSD scores were also found to be significantly different by *t*-test for those who have stayed on the street or couch hopped in the past compared to those who have not. Mean PTSD score was also highest in those who were currently staying outside or on the street. There was also a statistically significant difference in the total PTSD score between those who were not homeless and those

who were homeless three to four years. Mean PTSD scores were also higher among those that left home at an earlier age than compared to those who left home at an older age.

It should also be discussed that although mean PTSD score was found to be higher in those that could stay less than 30 days in current location than those that could stay longer than 30 days, the difference in PTSD scores was not statistically significant. This may indicate that current housing status may not be as telling as housing history when determining risk of PTSD.

There was also no significant difference in PTSD score between those who have used shelters in the past and those that haven't. Although the mean PTSD was slightly higher in those that had accessed shelters in the past than those who hadn't, it was still lower than the average mean. This may suggest that youth may not be accessing shelters, but rather choosing to either couch hop or sleep on the street.

Substance Use. It was hypothesized that participants that have experienced homelessness will have higher total mean Substance Use scores. Several statistical tests confirm the hypothesis that youth who have experienced homelessness have higher total Substance Use scores. The clearest measure of this finding can be seen through the independent samples *t*-test between those who have been homeless and those who have not. The mean Substance score was higher in participants that had been homeless compared to those participants that had not been homeless. Mean Substance Use scores were also found to be significantly different by *t*-test for those who have stayed on the street in the past compared to those who have not. Mean Substance Use score was also highest in those with the current housing status of Transitional Living. It should be noted that youth in a transitional living program are considered homeless by Minnesota and federal statutes. Participants currently staying outside or on the street had the second highest substance use rates. Participants who couch hopped also higher rates of substance use than those

who had not. Participants who never been homeless had the lowest substance use rates, and participants who left home at age 13 or younger had the highest rates of substance use out of all participants.

It should also be discussed that although mean substance use score was found to be slightly higher in those that could stay less than 30 days in current location than those that could stay longer than 30 days, the difference in substance use scores was not statistically significant. This may indicate that current housing status may not be as telling as housing history when determining substance use risk.

There was also no significant difference in substance use score between those who have used shelters in the past and those that haven't. It should also be noted that those that had used shelters in the past had a lower mean Substance Use score than those that had not used shelter. This may suggest that youth may not be accessing shelters, but rather choosing to either couch hop or sleep on the street.

Street, Shelter, or Couch Hop

Traditionally, youth that are currently staying on the street, outdoors, or in a place not meant for habitation are considered the most vulnerable and at risk among homeless youth. The fact that participants who were staying outdoors had the highest mean ACE score, highest mean PTSD score, and second highest mean substance use score confirms this. The same holds true for the participants who indicated they had stayed outside in the past. This group had the highest mean ACE, PTSD and Substance Use scores compared to the groups that used shelters or couch hopped in the past. In practice currently, youth who are currently accessing a shelter are also viewed as vulnerable and at-risk, but not to the extent of those who are outdoors. Similarly,

youth who are currently couch-hopping, or staying with a friend, are considered to be more stably housed, and less vulnerable than those in shelters or outdoors.

However, when it comes to ACE scores, participants who were staying with a friend had a higher ACE score (5.11) than those currently in a shelter (4.21). Additionally, those participants that said they had couch hopped in the past had a higher ACE score (4.64) than the participants that said they had accessed shelters in the past (3.99). Interestingly, the ACE score of those that had couch hopped in the past (4.64) was virtually identical to those that had stayed outdoors in the past (4.65). These results indicate that youth that have couch hopped in the past may be as vulnerable as those youth who have stayed outdoors, and these youth that have couch hopped may be more vulnerable than those youth in a shelter.

This same trend holds true when it comes to PTSD scores. Participants who were currently staying with a friend had a higher PTSD score (2.33) than those currently in a shelter (1.93). Additionally, the PTSD score was higher in participants that couch hopped in the past (2.30) than those who had accessed shelter in the past (2.20). Once again, the PTSD score between couch hoppers (2.30) was virtually the same as those who had stayed outdoors in the past (2.33). This data adds to the idea that participants who are currently couch hopping, or have couch hopped in the past, are more vulnerable than those currently in a shelter or have used shelters in the past, and are equally at risk as those participants who are currently outdoors or have been outdoors in the past.

Once again, this same trend holds true when it comes to substance use. Participants who stayed outdoors in the past had the highest substance use rates (4.41). However, participants who couch hopped had rates similar (4.20) to those who stayed outdoors (4.41). Those who couched hopped had higher substance use rates (4.20) than those who accessed a shelter in the past (3.96).

Once again this data adds to the idea that participants who are currently couch hopping, or have couch hopped in the past, are more vulnerable than those currently in a shelter or have used shelters in the past, and are equally at risk as those participants who are currently outdoors or have been outdoors in the past.

Throughout this research, it has been shown that youth who have accessed shelters in the past have no significant differences in ACE, PTSD or substance use score compared to youth who haven't. It has also been shown throughout this research that youth who are currently staying with a friend, or have couch hopped in the past may be as vulnerable as those youth who are currently staying on the street, or have in the past. This may be explained by several theories:

- 1) Youth that have the highest ACE, PTSD, and substance use scores may not be accessing shelters, or may be refusing shelter stays and opting to couch hop with friends or stay on the street. Past trauma, current mental illness or substance use may make shelter use appear too confining or restrictive.

- 2) The high ACE PTSD and substance use rates in the youth currently staying with or friend or who have couch hopped in the past may also reflect those youth who are participating in survival sex. These youth may be choosing to stay in an unsafe situation because it is the only perceived solution to homelessness. The 2012 Wilder Homeless Youth survey found that 19% of youth age 18-21 had been "sexual with someone only for the purpose of getting shelter, clothing, food, and other things. An additional 28% of youth indicated they had been in an abusive personal relationship with someone in the last 12 months. And most startling is the fact that 29% of youth stayed in an abusive situation because they did not have other housing options (Wilder Research, 2013).

Overall, there were no significant differences in ACE, PTSD and substance use score between those that could stay longer than 30 days day in their current location, and those that could not stay longer than 30 days. This may suggest that measuring how long a person can stay in their current location in the near future is not as good an indicator of vulnerabilities or current or future needs as housing history may be. Rather, housing history may be a better indicator of vulnerability or current need than a measurement of housing future. This has potential implications considering the measurement of how long an individual can stay in their current location (over or under 30 days) is one the current measurements of homelessness by Minnesota statutes.

Does ACE score impact other risk factors

PTSD. It was hypothesized that participants that have other risk factors will have higher ACE scores. Several statistical tests confirm the hypothesis that youth who have screened positive for PTSD, and youth who have experienced PTSD symptoms, will have higher mean ACE scores. The clearest measure of this finding can be seen through the independent samples *t*-test between those who have screened positive for PTSD and those who have not. The mean ACE score was significantly higher in participants that had screened positive for PTSD compared to those who had not. Additionally, mean ACE scores were found to be significantly different between those who experienced PTSD symptoms compared to those who had not. Mean ACE score was significantly higher in every PTSD symptom category when compared to the “No” responses. A correlation analysis also confirmed the relationship between Total ACE score and Total PTSD score. A correlation analysis also confirmed the relationship between Total PTSD score and Total Substance Use score.

Substance Use. It was hypothesized that participants that have other risk factors will have higher ACE scores. Several statistical tests were run to test the hypothesis that youth who have higher substance use scores will also have higher mean ACE scores. An independent samples *t*-test between those participants that scored in the Low substance use category was compared to those who scored in the High substance use category. Although the difference was not statistically significant, the mean ACE score was higher in participants that used substances more frequently than those that did not. Additionally, the mean ACE score was the lowest in the “Never” frequency of all three substance use categories (alcohol, marijuana and other drugs). A correlation between Total ACE score and Total Substance Use indicated a positive relationship. Therefore, the hypothesis is confirmed; youth who use substances have higher mean ACE scores.

Other Demographic Factors. Additional statistical testing was conducted to compare ACE scores among participants with different demographic characteristics. Participants that had not finished high school yet, or received a GED, had the highest ACE score among schooling categories. Among racial categories, participants that indicated they were multi-racial had the highest ACE scores, followed by Caucasians.

Participants identifying as LGBTQ were also more than twice as likely to report sexual abuse than heterosexuals, and also had statistically significant higher ACE and PTSD scores than heterosexuals. Females in this current study had statistically significant higher ACE and PTSD scores than males. They were also more than twice as likely to report sexual abuse than males, (37% vs. 16%). These findings are consistent with Wilder Research Minnesota Homeless Youth survey sexual abuse rates: female 39%, male 15%. Additionally, the Wilder Research survey also revealed that 35% of females have been in abusive relationships in that last 12 months, compared 17% for males. These findings indicate that females and are at greater risk of intimate partner

abuse and that females and members of the LGBTQ population are at greater risk for sexual abuse, PTSD and vulnerabilities associated with higher ACE scores.

Practice Implications

This study indicated high rates of ACE scores and high rates of positive PTSD screenings. These findings indicate a high rate of trauma among the youth served in at-risk homeless youth agencies. These agencies would benefit from additional mental health screenings including specific screenings for PTSD and specific traumas such as sexual abuse. Additional mental health services may be required to provide treatment for youth that wish to receive mental health services. These services should include substance abuse services. Agencies serving homeless youth should adopt trauma informed care approaches, and provide frequent trainings for all staff, to better serve the needs of these vulnerable clients.

Additional support is also needed for youth who move into housing or transitional housing. Being housed doesn't change ACE score or past trauma. Additionally, once youth move out of a survival based mentality, and basic needs are met on a regular basis, additional trauma may begin to surface. Mental health services and other supportive services would benefit youth exiting homelessness. These services should also include substance abuse services. Participants that indicated they were currently living in transitional housing programs had the highest substance use rates out of any housing category including youth currently on the street.

Specialized services for youth who have experienced sexual abuse are needed, as well as services specific to the LGBTQ population. A greater number of females indicated they experience sexual abuse, however, a high number of males also indicated sexual abuse. It should

also remembered that just as many or even more males participate in survival sex (Wilder Research, 2013) indicating a need for targeted services for males victims of sexual trauma.

This study also indicated a need to reevaluate the “30 day homeless rule”. Currently, many programs follow the lead set by Minnesota statues identifying a person who can stay less than 30 days in their current location as homeless. Often, certain services, such as rental assistance programs and eviction prevention programs, are only available to those who identify as homeless. However, the results of the research indicate that housing history may be a better indicator of current needs and vulnerability.

This study clearly identified youth who are couch hoppers as being more vulnerable than youth in shelters, and equally as vulnerable as youth on the street. This indicates an immediate need for agencies to change how need is assessed. Agencies need to recognize the vulnerability of youth who are couch hopping. There is a need to get youth off the floors of friends and into shelters or housing. With 68% of the current sample indicating they have couch hopped in the past, and 57% of the sample currently staying with friends or family, the need for additional funding is great. Agencies should be urged to work with policy makers and funding sources in order to move youth out homeless.

Finally, the homeless youth community would benefit by addressing and assessing the needs of youth who refuse to access shelters.

Policy Implications

Each new case of child maltreatment in 2014 costs the US economy approximately \$1.8 million per victim in total expenditures over their lifetime. The costs incurred include the costs of child abuse, teen pregnancy, high school dropout, illegal drug abuse and alcohol use. The cost of

all 2014 first time child maltreatment victims on the US economy is \$5.9 Trillion (The Perryman Group, 2014). However, high quality home visiting child abuse prevention programs have been found to return \$3.00 for every dollar spent, and evidence based child trauma treatment programs such as Parent Child Interaction Therapy (PCIT) return \$3.64 for every dollar spent (Washington State Institute for Public Policy, 2004). Programs such as Head Start show documented social, justice, and economic benefits for disadvantaged children that persist into adulthood (Garces, Thomas and Currie, 2002). Additionally, childhood trauma prevention, screening, and treatment can be implemented into systems that currently serve children such as: child care, education, foster care, child welfare, mental health services, drug and alcohol services, and juvenile justice (Putnam et al., 2015). Additional funding for early childhood development programs and childhood abuse prevention and treatment programs are critical.

This research clearly identifies a need for increased mental health funding. There is also a need for additional funding for homeless youth services including emergency shelter beds and transitional living programs. Need continues to grow. For example, total visits to the homeless youth drop in center where this study was conducted increased by 42% from 2010 to 2014 (Face to Face Health and Counseling Service, 2015)

Additional Research Opportunities

Future studies of homeless youth populations would be strengthened by collecting data from several different locations throughout the surround areas, such as: additional youth drop in centers, youth shelters, and other locations that homeless and at-risk youth frequent. The homeless youth population will be benefited by further research in the areas of shelter access and why certain populations of youth refuse shelter stays. Additional research is needed in the area of couch hopping youth. This study indicated a high rate of sexual abuse among participants

identifying as female, and of the LGBTQ population. Targeted research in the area of sexual abuse is needed. Finally, additional research is needed to explore the impact of generational poverty on childhood trauma and homelessness.

Strengths and Limitations.

This study has several limitations. The data used in this research study was collected at only one location limiting the generalizability of the results to a greater population. Additionally, this research study was limited as it only collected data from youth that access the resource center.

It was also reported by several participants that several of the questions were hard to understand such as “total months homeless”, “age left home” and the ACE question “were parents separated or divorced?” The question of “What if your parents were never together” was brought up several times during data collection. Additionally, variables such as homelessness, PTSD, and substance use were measured by different parameters throughout literature review, which makes comparisons harder.

Despite these limitations this research study had several strengths. A total of 161 participants completed the survey. The original ACE study (Felitti et al., 1998) has been independently replicated by many different research studies. The PC-PTSD screen (Prins et al., 2003) is standardized and is currently used to screen for PTSD at the VA (US Department of Veterans Affairs, 2014). The ACE scores reflected in this study are consistent with other homeless adult populations (Patterson et al., 2014). Additional findings such as ACE category percentages and rates of sexual and physical abuse were also consistent with other homeless

youth populations (Hadland et al., 2012; Wilder Research, 2013) suggesting the findings in the current study are likely to be credible.

Conclusion

With youth homelessness on the rise and youth being most at risk for homelessness (Wilder Research 2014a; Wilder Research 2014b), it is no wonder why homeless youth services have increased 42% in four years (Face to Face Health and Counseling, 2015). Youth experiencing homelessness have been found to have higher rates of childhood trauma, mental illness, and substance abuse (Giaconia et al., 1995; Merscham et al., 2009; Whitbeck et al., 2004). This research study sought to explore the relationship between ACE scores, homelessness, PTSD, and substance use in sample of 161 homeless youth, age 18-21. The sample was 59% African-American, with 24% of the sample identifying as LGBTQ. The average duration of homelessness was 17.7 months with 40% of the sample currently homeless, and 86% of the sample indicating they had been homeless in the past.

Total ACE scores were significantly higher in this population than in non-homeless samples, with a mean ACE score of 4.15. This sample also outscored non-homeless samples in individual ACE categories with the highest ACE scores being in the areas of emotional abuse and neglect, and parents being divorced or separated. Ace score was found to be higher in participants that did not have a high school diploma or GED and those that identified as multi-racial. Forty-eight percent of the sample screen positively for PTSD and 83% indicated they had used substances in the last six months, with 39% using marijuana daily. ACEs, PTSD, and substance use was found to be higher in participants that had been homeless, compared to those who had never been homeless. Additionally, participants that screened positively for PTSD or

had used substances had higher ACE scores. Finally, sexual abuse, ACEs and PTSD was found to be higher in participants that identified as LBGTQ or female.

Youth currently staying on the street, currently or in the past, had the highest ACE, PTSD and substance use scores overall. However, youth who were currently staying with friends, or who had couch hopped in the past, were found to have numbers equal to or similar to those youth who were on the street. Youth who had couch hopped generally had numbers higher than youth who were in shelter. Youth in shelters generally had numbers lower than couch hoppers and youth outdoors. This may indicate that the most vulnerable youth are not accessing shelters and that youth who couch hop are as vulnerable those staying outdoors or on the street.

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Appendix A

St. Catherine University
Institutional Review Board

11/10/14

Dear Board Members,

The management of xxxx xx xxxx xxxxx xxxxxxxx are aware of Michelle Goar's intent to complete a research project at the xxxxxxxx location in St. Paul, MN. We have reviewed the proposal and survey questions and are in full support of this project.

Respectfully,

Xxxxxx xxxxxx
Director of Programs

Appendix B

Adverse Childhood Experiences and Other Risk Factors in a Homeless Youth Population

INFORMATION AND CONSENT FORM

Introduction and background information:

You are invited to participate in a research study. The purpose of this study is to see if events in your childhood still affect you today. About 100 SafeZone clients are expected to take this survey. This survey is only being given to clients of SafeZone.

You were selected as a possible participant in this research because you are a client of Safe Zone who is 18 years old or older, and have indicated interest in participating in this research study. Please read this form and ask questions before you agree to be in the study.

This study is being conducted by Michelle Goar, a graduate student at St. Catherine University under the supervision of Lisa Kiesel, Ph.D., a faculty member in the Department of Social Work.

Risks and Benefits of being in the study:

The survey will ask personal questions about growing up with your family. You will also be asked personal questions about your life today. The study has minimal risks, but you may feel vulnerable or emotional during, or after, the survey. If you become too upset or uncomfortable during the survey, you may stop the survey at any time. You can also skip any questions you don't feel like answering. You can discuss your feelings with a SafeZone case manager or mental health staff at any time, but if you choose to seek help from SafeZone staff, your confidentiality may be at an increased risk. If you don't want to talk to SafeZone staff, you can call, or visit, any of the mental health resources listed on page 2 of this form.

If you participate, you will receive two extra bus tokens. After you have placed the survey in the drop box in the group room, you will be given 2 tokens. You do not need to complete every question to get the extra tokens. You may skip any questions, or stop at any time. If you decide not to complete the survey, turn in a blank survey and collect your tokens.

Confidentiality and voluntary nature of the study:

Your answers to these questions on the survey are completely anonymous. No one at Safe Zone will know how you answered your survey, or which survey was yours. Your name will never appear in any written report or presentation of this information.

Participation in this research survey is completely voluntary. You don't have to do this survey. If you decide not to do this survey, nobody from SafeZone or St. Catherine's University will be mad or upset with you, and you will still be get all the resources and help you would normally get from SafeZone. If you do decide to participate in this survey, you can stop at any time and nobody from SafeZone will be

upset or mad at you. You will still receive 2 extra tokens for participating even if you don't complete the whole survey.

I will keep the research results in a locked file cabinet in my home, and only my advisor and I will have access to the records while I work on this project. I will finish analyzing the data by May 16th, 2015. I will then destroy all original surveys.

Procedures:

If you decide to participate in this research survey, you will be asked to:

1. Read this consent form.
2. Ask me any questions you have about participating in this research survey.
3. Tell me that you understand the risks and procedures associated with participating in this research survey. You will be asked questions about your age, race, gender and sexual orientation. You will also be asked personal questions about your current and past living situations, your use of alcohol and other drugs, feelings about scary events in your life, childhood experiences with discipline/punishment, unwanted sexual experiences, and other personal questions about growing up in your home such as abuse of you mom.
4. Tell me that you wish to participate in the survey.
5. Complete the survey in the group room. This should take approximately 5-10 minutes.
6. Place the completed survey in the locked drop box in the group room.
7. Collect 2 extra bus tokens from Michelle Goar.
8. You may keep this information sheet. It has important contact information and mental health resource information on it.

Contacts and questions:

If you have any questions, please feel free to contact me, Michelle Goar, at 651-224-9644. If you want to ask questions to someone other than me, you can ask my teacher, Lisa Keisel, (651) 690-6709, or Dr. John Schmitt, Chair of the St. Catherine University Institutional Review Board, at (651) 690-7739 or jsschmitt@stkate.edu.

Mental health resources:

Ramsey County Adult Mental Health Urgent Care 651-266-7900 402 University Ave St. Paul, MN

The Urgent Care Center provides phone and outreach services 24 hours a day, 7 days a week. Walk-in services are open Monday through Friday from 8:00 a.m. to 9:00 p.m., and Saturday and Sunday from 11:00 a.m. to 3:00 p.m.

Crisis Connection 612-379-6363 *Phone counseling available 24 hours a day, 7 days a week.*

Statement of Consent:

Do you wish to participate in this research survey?

Appendix C

Reminder: You may stop this survey at any time and may skip any questions you don't feel like answering.

1. How old are you?

2. How do you identify your race?

3. How do you identify your gender?

4. How do you identify your sexual orientation?

5. Please circle how far you've gone in school.

Some high school, but didn't graduate yet

High school graduate or GED

Some college or technical school

2 year degree completed

4 year degree completed

6. Where did you stay last night?

Street, outside, car, rode bus all night, skyway or squatting

Shelter

Staying with family (not paying rent)

Staying with a friend (not paying rent)

Paying rent (to a landlord, family or friend)

Transitional housing

7. How long can you stay there?

Less than 30 days

More than 30 days

8. Have you ever stayed in a youth or adult shelter, or a domestic abuse shelter?

Yes _____ No _____

9. Have you ever lived in a car, abandoned building, or anywhere outside, or have you ever had to ride the bus all night or sleep in the skyway?

Yes _____ No _____

10. Have you ever spent at least 30 nights couch hopping? (Doubled up, in someone else's house, apartment, or room for economic reasons, or because there was not a safe or affordable place for you to rent on your own?)

Yes _____ No _____

11. How many months have you been homeless in your entire life?

12. How old were you when you were *first* on your own, not living with your parents?

13. In the past 6 months, how often have you drank liquor, beer, or wine?

Never a few times monthly weekly daily

14. In the past 6 months, how often have you smoked marijuana?

Never a few times monthly weekly daily

15. In the past 6 month, how often have you used other drugs?

Never a few times monthly weekly daily

In your life, have you ever had any experience that was so frightening, horrible, or upsetting that, in the past month, you:

16. Have had nightmares about it or thought about it when you did not want to?

Yes _____ No _____

17. Tried hard not to think about it or went out of your way to avoid situations that reminded you of it?

Yes _____ No _____

18. Were constantly on guard, watchful, or easily startled?

Yes _____ No _____

19. Felt numb or detached from others, activities, or your surroundings?

Yes _____ No _____

While you were growing up, during your first 18 years of life:

20. Did a parent or other adult in the household often or very often...

Swear at you, insult you, put you down, or humiliate you?

or

Act in a way that made you afraid that you might be physically hurt?

Yes No

21. Did a parent or other adult in the household often or very often...

Push, grab, slap, or throw something at you?

or

Ever hit you so hard that you had marks or were injured?

Yes No

22. Did an adult or person at least 5 years older than you ever...

Touch or fondle you or have you touch their body in a sexual way?

Or

Attempt or actually have oral, anal, or vaginal intercourse with you?

Yes No

23. Did you often or very often feel that ...

No one in your family loved you or thought you were important or special?

Or

Your family didn't look out for each other, feel close to each other, or support each other?

Yes No

24. Did you often or very often feel that ...

You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you?

Or

Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?

Yes No

25. Were your parents ever separated or divorced?

Yes No

26. Was your mother or stepmother:

Often or very often pushed, grabbed, slapped, or had something thrown at her?

Or

Sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard?

Or

Ever repeatedly hit at least a few minutes or threatened with a gun or knife?

Yes No

27. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?

Yes No

28. Was a household member depressed or mentally ill, or did a household member attempt suicide?

Yes No

29. Did a household member go to prison?

Yes No