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Identifying and Measuring Environmental Stressors in Intimate Partner Violence Shelters

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16. Abstract

Environmental stressors within the built environment can greatly impact health. Environmental stressors, such a noise levels, crowding, and housing quality have shown to impact physical healing as well as mental health. Although environmental stressors have been examined within healthcare environments, such as hospitals and clinics, very little research exists about the presence of environmental stressors within shelter environments. Furthermore, even less research has looked at environmental stressors present within intimate partner violence (IPV) shelters. The built environment of IPV shelters and environmental stressors present within the shelter have the potential to greatly impact survivors' health and influence whether survivors gain positive outcomes from services provided within the shelter. Due to this gap in knowledge, this study will identify environmental stressors found within IPV shelter environments and formulate a measurement to capture survivors' level of environmental stress. Ten survivors were interviewed at three shelters, one rural and two suburban, across North Texas in order to gain knowledge about the physical structure of shelters and potential environmental stressors experienced by shelter residents. In addition, a secondary data analysis was conducted on 150 qualitative interviews of survivors based across the state of Texas to identify additional stressors. Finally, spatial mapping of the built environment of the location of the shelters was conducted to identify potential stress related to mobility and access to employment and healthcare. Then using participant feedback and GIS data, a measurement was developed to capture survivors' level of environmental stressor in shelters. The measurement was developed by obtaining feedback from shelter residents, shelter staff, and experts within the research community who have studied the impact of the built environment on survivors' outcomes. The results of this study will have implications for the development and design on IPV shelters and for the rules and policies that govern life within the shelter.

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IDENTIFYING AND MEASURING ENVIRONMENTAL STRESSORS IN INTIMATE PARTNER VIOLENCE SHELTERS

by

Sarah R. Leat, LMSW

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Abstract

Environmental stressors within the built environment can greatly impact health. Environmental stressors, such a noise levels, crowding, and housing quality have shown to impact physical healing as well as mental health. Although environmental stressors have been examined within healthcare environments, such as hospitals and clinics, very little research exists about the presence of environmental stressors within shelter environments. Furthermore, even less research has looked at environmental stressors present within intimate partner violence (IPV) shelters. The built environment of IPV shelters and environmental stressors present within the shelter have the potential to greatly impact survivors' health and influence whether survivors gain positive outcomes from services provided within the shelter. Due to this gap in knowledge, this study will identify environmental stressors found within IPV shelter environments and formulate a measurement to capture survivors' level of environmental stress. Ten survivors were interviewed at three shelters, one rural and two suburban, across North Texas in order to gain knowledge about the physical structure of shelters and potential environmental stressors experienced by shelter residents. In addition, a secondary data analysis was conducted on 150 qualitative interviews of survivors based across the state of Texas to identify additional stressors. Finally, spatial mapping of the built environment of the location of the shelters was conducted to identify potential stress related to mobility and access to employment and healthcare. Then using participant feedback and GIS data, a measurement was developed to capture survivors' level of environmental stressor in shelters. The measurement was developed by obtaining feedback from shelter residents, shelter staff, and experts within the research community who have studied the impact of the built environment on survivors' outcomes. The results of this study will have

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Chapter 1: The Problem of Intimate Partner Violence

Intimate partner violence (IPV) is a global health concern that can have substantial impacts to the physical and mental health of women (Garcia-Moreno & Watts, 2011). The Centers for Disease Control and Prevention (2017) define IPV as “physical violence, sexual violence, stalking, and psychological aggression (including coercive acts) by a current or former partner.” Tactics of IPV encompass a myriad of behaviors that are used to control, intimidate, and dominate partners within abusive relationships (Marais, 2015). It is estimated that one in four women will experience IPV in their lifetime (Smith et al., 2017). The effects of IPV are long lasting and may persist long after the violent relationship has ended (Alejo, 2014). Many women experience direct effects to their health as a result of physical injury and indirect effects, such as chronic health conditions from prolonged stress (Chisholm, Bullock, & Ferguson, 2017). Experiences of IPV may lead to digestive problems, abdominal pain, chronic pain, somatic symptoms, hypertension, traumatic brain injury, strangulation and consequences to reproductive health, such as sexually transmitted diseases, vaginal bleeding, painful intercourse, and pelvic pain (Soleimani, Ahmadi, & Yosefnezhad, 2017; Valera & Kucyi, 2017; Sedziaofa, Tenkorang, & Owusu, 2016; Ruiz-Perez, Plazaola-Castano, & del Rio-Lozano, 2007; Campbell, 2002). Furthermore, many women encounter negative effects to their mental health, including posttraumatic stress disorder, anxiety, self-harm, suicidal ideation, and completed suicide attempts (Soleimani, Ahmadi, & Yosefnezhad, 2017; Sedziaofa, Tenkorang, & Owusu, 2016; Lee & Hadeed, 2009). Women who are pregnant and experience IPV are at an elevated risk for severe physical violence (Ramalho et al., 2017; Brownbridge et al., 2011, Cheng & Horon, 2010). Many pregnant survivors experience impacts to their health, as well as the health of their babies including preterm birth, low fetal birth weight, fetal injury, and stillbirth (Brown, 2009;

Committee on Health Care for Underserved Women, 2017; Stadtlander, 2018). In addition to negative consequences to their health, many survivors also encounter economic challenges as abusive partners may restrict financial resources (Postmus et al., 2012) or limit employment opportunities or job attendance (Castro, Cerellino, & Rivera, 2017). Given the negative consequences survivors face as a result of IPV, creating a safe space for survivors to receive support and assistance is an important step to mediate the effects of IPV.

The Importance of Intimate Partner Violence Shelters

For many survivors, access to support and resources would not be possible without intimate partner violence shelter programs. Survivors contemplate many options when making decisions about their intimate relationships, including material, psychological, financial, and social opportunities (Davies & Lyon, 2013; Grossman & Lundy, 2011; Anderson & Saunders, 2003). Shelter staff can assist survivors in safety planning, offer information about the survivors' rights and options, and connect survivors to community resources, all while providing support and a safe space as they navigate the decision-making process (Glenn & Goodman, 2015). The National Network to End Domestic Violence (2015) estimated that on a single day in the 2015 in the United States, 26,000 women and their children resided in IPV shelters. Shelter stays can range from one to 624 days depending on the program, with the average stay being 60 days (Sullivan & Virden, 2017). Shelters offer survivors a network of tangible supports including food, clothing, employment, housing, healthcare, and legal support (Gregory et al., 2017). One of the guiding purposes of many shelter programs is to eliminate feelings of coercive control that diminish survivors' personal control and agency by empowering survivors to use their knowledge and skills to regain power over their lives (Davies & Lyon, 2014; Goodman &

Epstein, 2008). This is accomplished by giving survivors the power to make choices about their futures and supporting them through the decision-making process.

Intimate Partner Violence Shelter Outcomes

Survivors come to shelters with a variety of needs and many shelter programs have seen short-term positive outcomes. Tully (2006) found that survivors entering shelters in Canada most commonly expressed the need for socio-emotional support and safety. Upon exiting the shelter, survivors felt more hopeful about their lives, understood they deserved better when it came to intimate relationships, and had tools to keep themselves and their children safe. Women in Ireland identified their top needs as understanding IPV, staying safe, housing, healing, and support in making decisions (SAFE Ireland, 2009). Upon leaving, women reported receiving information about IPV, emotional support and healing, information about housing and other important resources, and ways to keep themselves safe. They also reported feeling supported in their own decision-making process while in shelter. Finally, United States based programs identified the top needs expressed by survivors as safety, understanding IPV and information about options and choices, housing, and emotional support and counseling (Sullivan & Virden, 2017). Ninety-three percent of residents found the shelter stay to be helpful and 90% felt they were treated fairly by the staff. Sullivan and Virden (2017) found that survivor outcomes were related to what they received from the program and how they were treated by the staff. From this research, survivors residing in shelters experience short-term positive outcomes when they have their needs met and when they have supportive relationships with shelter staff. However, when survivors have negative experiences within the shelter due to the structure and policies of the shelter, these gains are often mitigated or lost (Wood, Heffron, Voyles, & Kulkarni, 2017).

Survivors' perceptions of the shelter environment and the rules and policies associated with the shelter are often negative. Survivors express challenges living under shelter rules as they often interfere with their desired routines (Bergstrom-Lynch, 2017; Glenn & Goodman, 2015). They also have experienced negative emotions due to the layout of the shelter itself, which often limits personal privacy (Chanmugam, 2011; Haj-Yahia & Cohen, 2009). Bergstrom-Lynch (2017) found that survivors felt the shelter environment was a bureaucracy in which they were constantly monitored and lacked privacy due to the structure and rules of the shelter. This led to survivors feeling controlled and unable to make choices about their daily life. Survivors have also expressed challenges adapting to the rules of the shelter (Glenn & Goodman, 2015) and perceived the rules to be a barrier to gaining an independent life (Gregory, Nnawulezi, & Sullivan, 2017; Kim & Yang, 2016; Haj-Yahia & Cohen, 2009). Haj-Yahia and Cohen (2009) found that survivors described the shelter as an institution in which they were restricted from leaving the shelter whenever they wanted, and they were unable to have a private, safe space to keep their belongings. In addition, survivors living in shelters with children described how the shelter structure and rules restricted them from being a parent and maintaining a healthy routine with their children, such as the inability to have a private space to bond as a family and eat meals together (Chanmugam, 2011; Krane & Davies, 2002). Experiences with the shelter structure and policies often cause survivors to consider staying in the restricting unfamiliar shelter environment or returning to a familiar controlled environment with their abuser (Wood, Heffron, Voyles, & Kulkarni, 2017; Fisher & Stylianou, 2019).

This juxtaposition between the positive outcomes gained from services and negative experiences from living in the shelter structure itself has led some researchers to call for a reconsideration of shelter policies in order to improve quality of life in the shelter for survivors

(Kulkani, Stylianou, & Wood, 2019). Survivors' experiences of control and lack of privacy within the shelter stand in direct opposition with models of empowerment and autonomy that are reflected in many IPV intervention programs. Empowerment models assume survivors are the experts on their lives and advocates must work collaboratively with survivors to address their needs (Wood, 2015). More specifically, empowerment models involve enabling survivors to take personal control over their lives and develop the coping skills necessary to handle future stress (Johnson, Worrell, & Chandler, 2005; Corrigan, 2006). The majority of shelter and outreach programs for survivors of IPV subscribe to an empowerment model. However, research indicates that while advocates have the intension to empower survivors, the environment is having an adverse effect (Glenn & Goodman, 2015; Haj-Yahia & Cohen, 2009). Furthermore, although researchers are beginning to consider the impact rules and regulations have on shelter residents, little research has considered the impact of the built environment of the shelter as well as the stress caused by environmental factors present within the shelter, such as noise, crowding, and housing quality.

The Built Environment of Shelters

Although great attention has been paid to therapeutic and healthcare settings, little research exists about the impact of the built environment of shelter environments such as those for persons experiencing homelessness or survivors of IPV or human trafficking. The majority of research examining the impact of the physical environment of the shelter is qualitative in nature and focused on shelters for individuals experiencing homelessness. McLeod and Walsh (2014) interviewed women experiencing homelessness about their desires for a shelter space. The women expressed the need for the shelter to feel like a home with décor, music and comfortable accommodations to make them feel as though it was their own space. Similarly, Petrovich and

colleagues (2017) found through a systematic review of the literature that individuals residing in homeless shelters desired spaces that increased their autonomy, such as the ability to store belongings safely and shower privately, while also increasing their dignity through the choice of the layout of the space. In addition, Burlingham and colleagues (2010) identified perceived facilitators and barriers to staying in shelter by interviewing women experiencing homelessness. Facilitators to staying in shelter were privacy (i.e., having one's own space, sleeping and showering in a private space) and health support (i.e., having a safe place to store medication and administer medication). Barriers identified were the rules (i.e., being forced to wake up early, noise rules), other residents (i.e., being in close quarters with people who have an unmedicated mental illness), and personal psychological changes, like depression and anxiety. Finally, parenting within the shelter environment has been identified as a barrier to living within the shelter. Many parents felt disempowered as parents within the shelter environment due to constant surveillance and judgement from shelter staff about their parenting (Anthony, Vincent, & Shin, 2016)

Research on the built environment of IPV shelters is even more scant. Although research is limited, researchers have highlighted the importance of seeking feedback from potential IPV shelter residents for the construction of shelters that will best meet the needs of residents (Burlingham et al., 2010; Walsh et al., 2010). In addition, survivors of IPV recognized the need for security at the shelter but expressed their need for autonomy (Clark & Wydall, 2015). Finally, Hughes (2017) found that survivors desire a homely environment that is free of conflict and serene. The survivors' described the contrast between their home in the shelter and their homes with their abusers. They felt they had support in times of conflict with other residents and they were allowed to feel like normal women and not abuse victims.

Given shelter residents' desire for a space that feels like home in which they have personal autonomy, IPV researchers Grieder and Chanmugam (2013) applied principles of environmental psychology to identify four factors for creating a healing IPV shelter environment. Those factors are 1) sense of control, 2) eliminating environmental stressors, 3) enabling social support, and 4) providing positive distractors. Although important factors to consider when constructing IPV shelter spaces have been identified, strategies for building spaces that address survivors' desires and needs are limited (Grieder & Chanmugam, 2013). Further, understanding potential environmental stressors within the shelter environment could identify changes that could be made to the physical space of the shelter which could improve residents' experience of staying in the shelter as well as improve outcomes from services received at the shelter.

Study Purpose

Given the important role IPV shelters play in providing survivors of IPV a safe place to receive services and support, ensuring the shelter environment is comfortable, tranquil, and free of stress is critical. This study aims to address the significant gap in knowledge surrounding environmental stressors present in shelter environments. Although extensive literature has examined environmental stressors present in other environments, such as neighborhoods, hospitals, and schools (Evans, 1984), there is very little research that has evaluated environmental stressors in shelter environments and even less in IPV shelter environments. Therefore, the purpose of this study is to identify environmental stressors present within the built environment of the shelter and to construct a measurement to identify the impact those stressors have on the health and wellbeing of shelter residents. This study will address the following aims and research questions.

Research Aims

Aim 1: Identify environmental stressors present within IPV shelter environments.

1. What are environmental stressors present within IPV shelter environments from the perspectives of shelter residents?
2. What are the environmental stressors within the built environment surrounding the location of the shelters?
3. What are, if any, the differences and similarities between suburban and rural shelters in terms of the presence of environmental stressors?

Aim 2: Construct a measurement of environmental stress for IPV shelter environments.

1. What stressors need to be included in a measurement of environmental stress for IPV shelter environments?
2. What are the appropriate response sets, recall timeframes and items from existing measures of perceived stress that can be included or adapted for a measurement of an environmental stress for IPV shelter environments?
3. What feedback do shelter residents have about the constructed measurement of environmental stress?
4. What feedback do shelter employees have about the constructed measurement of environmental stress?
5. What feedback do experts who conduct research related to shelter life have about the constructed measurement of environmental stress?

Chapter 2: Literature Review – The Impact of the Built Environment

In order to understand the impact environmental stressors within the shelter can have on survivors of IPV, it is important to first define the built environment and what constitutes an environmental stressor. Within this chapter, the built environment will be defined and described. Then a discussion will follow about the impacts of the built environmental on health and stress. Finally, potential environmental stressors within the shelter environment will be identified.

Defining the Built Environment

Conceptualizing the built environment involves recognizing the interdisciplinary nature of how buildings are designed, manufactured, and maintained. For professionals in urban planning and city management, the built environment is often defined as the "settings designed, created, and maintained by human efforts… that have been sited, designed, and constructed by people" (Dannenberg, Frumkin, & Jackson, 2011, p. 5). In addition, professionals from the architecture field factor into the built environment construct regulations that govern the creation and maintenance of public spaces, as norms created by policies can greatly impact the design and use of a structure (Imrie & Street, 2009; Imrie, 2007). Using these definitions, the built environment includes the physical structure of the building itself, the policies that regulate design, creation, use, and maintenance of the building, and the purpose and role of the building within the community for which it was designed.

Public health professionals and environmental psychologists have begun to understand the impact of the built environment on health and quality of life. In a seminal study on the impact of the built environment on the health and well-being of people, Ulrich (1984) discovered that patients recovering from surgery in a hospital who were in a room that had a window with a view of nature used less pain medication and exited the hospital sooner than those without a window.

This study led public health officials to research the impact of the built environment on public health, healing, and quality of life. What has since emerged is a body of collaborative research that includes public health professionals, environmental psychologists, neuroscientists, architects, and city planners, which focuses on understanding how to build the best communities that maximize the health and quality of life of residents (Dannenberg, Frumkin, & Jackson, 2011).

The Built Environment and Health

In healing professions, such as healthcare, psychology, and social work, practitioners have begun to research the impact of the built environment on the therapeutic and healing process. Years ago, Maluccio (1979) highlighted that the physical environment in which healing was to take place mattered and advocated for practitioners to consider design when creating social service agencies that will provide therapy or counseling. Since that article, research has supported his claim and begun to identify the connection between design and healing (Shepley et al., 2016). This has led to the development of theories of health promoting design as well as a copious research to understand what design elements can be used to improve or support health and healing (Jonas et al., 2014; Sakallaris et al., 2015). See table 1 for a list of design elements that contribute to healing.

Table 1. *Design elements that promote healing.*

Design element	**Improved health outcome**
Exposure to lighting and appropriate lighting	- Reduced pain (Ulrich et al., 2008) - Reduced stress, anxiety, and depression (Patronen & Lonnqvist, 2000; Ulrich et al., 2008) - Quicker healing and shortened length of hospital stay (Dijkstra, Pieterse, & Pruyn, 2006; Huisman et al., 2012; Shepley, Gerbi, Watson, Imgrund, & Sagha-Zadeh, 2012; Ulrich et al., 2008; Welch et al., 2005) - Improved sleep (Boubekri et al., 2014; Ulrich et al., 2008)
Access to nature	- Reduced pain, stress, and depression (Ulrich et al., 2008)

	- Quicker healing and shortened length of hospital stay (Bailey, 2002; Diette, Lechtzin, Haponik, Devrotes, & Rubin, 2003; Perkins, 2013; Ulrich et al., 2003; Ulrich et al., 2008; Weeks, 2004)
Single-bed rooms	- Improved sleep, reduced stress and anxiety (Ulrich et al., 2008)
Appropriate ventilation	- Reduced inflections (Jiang et al., 2003) - Quicker healing (Carr, 2011; Dijkstra, Pieterse, & Pruyn, 2006; Dupris & Thorns, 1998; Hartig, Johansson, & Kylin, 2003; Morrison, Poulin, & Holman, 2018; Sixsmith, 1986; Tapal, 2012)
Spatial quality	- Improved mood and reduced anxiety and depression (Richter & Holger, 2014) - Quicker healing (Weeks, 2004)
Privacy	- Improved overall well-being (Douglas & Douglas, 2005; Huisman et al., 2012; Williams, Dawson, & Kristjanson, 2008)

Neighborhood effects, such as neighborhood quality and access to nature, has proven to impact cardiovascular disease and cancer screenings (Diex Roux, 2001; Diex Roux, 2003; Diex Roux, 2009; Kawachi & Beckman, 2003; O'Campo, 2003, Pruitt et al., 2009). The built environment of a neighborhood or physical space have the ability to influence individuals' outcomes by promoting healing intentions and fostering healing relationships (Day, 2008; DuBose, MacAllister, Hadi, & Sakallaris, 2018; Rogers, Edwards, Hudman, & Perera, 2016; Miwa & Hanyu, 2006; Dijkstra, Pieterse, & Pruyn, 2006). Furthermore, by increasing creative capacity, supportive healing environments can encourage individuals to search for solutions that aid in their healing (VanBurn, Berger, & Fauss, 2010). By allowing patients to take an active role in their health plan, they have the opportunity to use their knowledge of their capacity and environment to develop creative ideas to promote their healing, such a taking a walk through their neighborhood for physical therapy.

Researchers have identified several factors within the built environment, which when used correctly, can support and promote healing. First, lighting and access to natural light can

impact healing. Patients who are exposed to natural light heal faster (Dijkstra, Pieterse, & Pruyn, 2006; Huisman et al., 2012; Shepley, Gerbi, Watson, Imgrund, & Sagha-Zadeh, 2012; Welch et al., 2005), have improved moods (Patronen & Lonnqvist, 2000), and sleep better (Boubekri et al., 2014). Second, access to nature or green spaces have been shown to promote healing (Bailey, 2002; Perkins, 2013; Diette, Lechtzin, Haponik, Devrotes, & Rubin, 2003; Ulrich et al., 2003; Weeks, 2004). Sounds and smells have also been demonstrated to impact healing (Dijkstra, Pieterse, & Pruyn, 2006). Finally, quality and accessibility of the space has also proven to impact health. Creating a welcoming environment that is easily accessible where people can easily have their needs met has shown to accelerate healing (Weeks, 2004). Similarly, Richter and Holger (2014), in a systematic review of the literature, found that simple changes to the physical environment, such as adding an art installation, had positive results on patients' well-being and healing within a mental health hospital.

In addition to features within the built environment of a space, spatial design has also proven to impact health. Spatial designs that allow people to control their space, have a sense of privacy, and help them feel safe contribute to faster healing and general overall positive wellbeing (Douglas & Douglas, 2005; Huisman et al., 2012; Williams, Dawson, & Kristjanson, 2008). Allowing people to maintain their activities of daily living while being surrounded by friends, family, and practitioners who provide social support also promotes healing and decreases time spent in a hospital environment (Douglas & Douglas, 2005; Huisman et al., 2012). Finally, creating a home-like environment as opposed to an institutional environment increases comfort and relaxation, which can positively impact healing (Carr, 2011; Dupris & Thorns, 1998; Hartig, Johansson, & Kylin, 2003; Morrison, Poulin, & Holman, 2018; Sixsmith, 1986; Tapal, 2012).

The built environment can greatly impact health. By creating an environment full of design features that promotes health, people are more comfortable, have a more positive sense of wellbeing, and ultimately heal faster (Jonas et al., 2014; Sakallaris et al., 2015). However, in some cases, aspects of the environment can act as a barrier to healing (Wood et al., 2015). Certain factors within the environment have been demonstrated to increase stress, which act as obstacles for healing. These factors have been defined as environmental stressors (Evans, 1984).

The Built Environment and Stress

Stressors within the built environment, called environmental stressors, have been found to act as barriers to health by increasing psychological stress (Evans, 1984). Evans, an environmental psychologist, defined environmental stress as stress that is caused from the physical environment (Evans, 1984). Given the breadth of environmental factors that can be included within that definition, research into the impact of environmental stress has permeated many disciplines, including psychology, sociology, and biology (Evans, 1984). Researchers have discovered that environmental stressors can greatly influence mental health (Rautio, Filatova, Lehtiniemi, & Miettunen, 2018; Evans, 2006; Kuo & Sullivan, 2001; Evans, Lepore, & Allen, 2000), physical health (Krieger & Higgins, 2002), and quality of life and overall well-being (Kaplan, 2001). Several environmental stressors have been studied extensively within the literature given the profound impact they can have on health. Those stressors are noise levels, crowding, transportation, and housing quality.

Noise levels have been demonstrated to cause stress, which can impact physical and mental health (Evans, 1984; Honold; Beyer, Lakes, & van der Meer, 2012). People experiencing noise annoyance or inescapable levels of noise tend to rate their general health lower and experience more somatic symptoms like headaches and muscle tension (Wallenius, 2003).

Similarly, Wass and colleagues (2019) found that infants exposed to high levels of noise within their homes had more unstable arousal patterns that infants who were not exposed to noise. In addition, noise levels have been shown to affect motivation and performance, which decreased self-efficacy (Barber, 1989; Hiroto, 1974; Krantz, Glass, & Snyder, 1974; Winefield, Barnett, & Tiggeman, 1985). Uncontrollable and inescapable high volumes of noise have been shown to increase stress and induce feelings of learned helplessness, which affect motivation and performance (Evans & Stecker, 2004). Further, vibrations from high levels of noise have also been shown to increase stress and somatic symptoms, such as increased heart rate (Ljungberg & Neely, 2007). High levels of noise can increase stress and lead to a host of negative health and mental health outcomes.

In addition to noise, crowding has also been proven to increase stress levels. Being in a crowded environment can increase stress and intensify feelings of anger and fear (Chambers, Fuster, Suglia, & Rosenbaum, 2015; DeCelles, DeVoe, Rafaeli, & Agasi, 2018; Regoeczi, 2003). This often leads to reduced cooperation and increased competition among people who are residing in crowded spaces (Baum, Aiello, & Calesnick, 1978). Similarly, stress induced by crowding has been shown to increase cognitive overload making it difficult to perform routine tasks (Evans & Stecker, 2004). Also, people living in a crowded environment in which there are not enough spaces for every member to sleep comfortably begin to develop learned helplessness because they are unable to safety rest and feel unable to change or escape their circumstances (Campagna 2016). Finally, crowding has also been shown to negatively affect mental health by increasing anxiety (Ndom, Igbokwe, & Idawo, 2012; Tripathi, 2004) and depression (Regoeczi, 2008; Virtanen et al., 2008). The stress of being in a crowded environment can induce anger and fear, which can lead to increases in anxiety and depression.

Housing quality has also been identified as an environmental stressor. Housing disrepair has been shown to increase stress and depression (Burdette, Hill, & Hale, 2008). Furthermore, the inability to make improvements or changes to housing can lead to thoughts of helplessness, which increases stress (Campagna, 2016). In addition, neighborhood and housing quality can significantly impact wellbeing (Brown, Werner, Altman, 2006). Beyer, Wallis, and Hamberger (2015) found that in neighborhoods that were in disarray and high in housing deprivation there were more incidents of household violence due to stress. Similarly, neighborhoods with high rates of poverty and poor-quality housing have significantly more incidents of IPV (Cunradi, Caetano, Clark, & Schafer, 2000; Miles-Doan, 1998, Miles-Doan & Kelly, 1997; Pearlman, Zierler, Gjelsvik, & Verhoek-Oftedal, 2003). Housing quality can induce stress, which can ultimately lead to higher rates of depression and violence (Beyer, Wallis & Hamberger, 2015).

Although significant research has identified noise, crowding, and housing quality as environmental stressors, other stressors have been identified but are not as well researched. For example, Latina and Stattin (2018) found that living within an environment in which there are lot of hostile interactions can increase stress and lead to elevated rates of self-harm. In addition, inadequate transportation has been shown to also increase stress (Okohio et al., 2017). Lack of transportation is related to lower social and economic functioning, which leads to increased isolation and stress (Lee & Glenmaye, 2014). Since environmental stressors have not been researched in shelter environments, it is possible for additional stressors to exist, which can impact health.

The ability of the environmental stressors to influence health emphasizes the importance of understanding what stressors are present within IPV shelters. Given that survivors are under a tremendous amount of stress when they enter shelter due to the life experiences that resulted in

them seeking help, identifying what environmental stressors are present within the shelter could help mitigate some of the stress survivors experience.

Environmental Stressors and IPV Shelters

Although there is extensive research on the impact of environmental stressors (see Evans, 1984; Martin et al, 2019), there is no research that has evaluated the presence of environmental stressors within IPV shelter environments. However, research has suggested that environmental stressors are present within the shelter environment and need to be addressed (Grieder & Chanmugam, 2013). There is potential for known environmental stressors to effect shelter residents' outcomes. For example, shelter residents who are under stress from overcrowding and high rates of noise may be unable to complete requirements for them to stay in shelter, such as meetings with case managers and chores, due to cognitive overload. Similarly, the stress caused from being unable to control your environment, such as being able to eat at desired times, and lack of privacy, could increase feelings of anxiety and depression. Furthermore, the inability for parents to maintain their daily routine with their children due to special or policy restriction can cause stress on the family as a whole and potentially lead to conflict within the family. In addition, stress from the environment could increase tension among residents and lead to residents getting into arguments, which could result in survivors being removed from the shelter. Ultimately, environmental stressors have the potential to greatly impact survivors' experiences living within shelter, which can have implications for their success once they leave the shelter.

Given the potential for environmental stressors to impact survivors' experiences within the shelter and reduce their ability to positively gain from services and support, identifying environmental stressors present within the shelter environment is critical. Given that little research exists on the environmental stressors present within shelter, constructing a theoretical

framework is necessary in order to accurately identify and measure stressors within the built environment of the shelter.

Chapter 3: Theoretical Framework

Given the impact the built environment and stressors within the environment can have on the health and well-being of people, it is important to consider the interaction experiencing IPV can have with environmental stress while living within an IPV shelter. In order to do that it is first necessary to understand how coercive control impacts survivors and their ability to withstand stress. Then it is critical to review how survivors might perceive the shelter environment given their experiences of IPV and coercive control. Within this chapter a theoretical model will be outlined that first reviews Evan Stark's (2007) conceptualization of coercive control and the impacts it has on survivors' self of sense. Then theories by Michel Foucault and Aaron Antonovsky will be used to conceptualize two potential shelter environments survivors may face. Foucaultian theory will be used to conceptualize a shelter environment that is focused on power and Antonovsky's concept of salutogenesis will be used to conceptualize a shelter environment that is focused on healing.

Evan Stark: Conceptualizing Control

Evan Stark is best known for his book *Coercive Control: How Men Entrap Women in Personal Life*. In his book, Stark (2007) outlines coercive control theory, which has become one of the most influential theories related to IPV and how to assist survivors. Stark explains that coercive control is not primarily a crime of violence, it is first and foremost a crime of liberty. Coercive control is a means to restrict a survivors' autonomy through control, intimidation, belittlement, and entrapment without any noticeable signs of violence (Stark & Hester, 2019). Stark does not negate that coercive control can include physical violence. He explains that abusive partners use violence alongside a variety of tactics, such as isolation, manipulation, and degradation, to control their partners and strip away their personal liberties. Stark says that

coercive control theory helps conceptualize IPV as more than a physical fight, but a pattern of control that ultimately strips away a survivor's sense of self. Using coercive control theory to better understand IPV, survivors of IPV experience a cumulative form of violence in which a single physical incident is encompassed by a host of coercive behaviors that seek to demonstrate the abuser's power to force survivors into submission.

Experiencing coercive control has proven to have a host of negative consequences for survivors. Extensive research has found that survivors who experience high rates of coercive control experience higher rates of all forms of IPV (physical, psychology and sexual abuse) than women who experience IPV but low rates of coercive control (Coker, Pope, Smith, Sanderson, & Hussey, 2001; Dichter et al., 2018; Graham-Kevan & Archer, 2003; Hardesty et al., 2015; Johnson & Leone, 2005, Myhill, 2015; Nielson, Hardesty, & Raffaelli, 2016; Smith et al., 2002). Abusive partners who use coercive control also exhibit higher rates of strangulation than abusive partners who do not use coercive control (Thomas, Joshi, & Sorenson, 2014). In addition, experiencing coercive control is associated with negative mental health symptoms, such as higher rates of depression, posttraumatic stress disorder, intense fear, and suicidal ideation (Anderson, 2008; Cook & Goodman, 2006; Dichter & Gelles, 2012; Johnson 2008; Johnson & Leone, 2005; Levine & Timmons Fritz, 2016; Sackett & Saunders, 1999; Wolford-Clevenger et al., 2017). Witnessing coercive control also has impacts on children. Children who live in an environment where coercive is heavily used are more likely to have problems with internalizing and externalizing behaviors, such as depression and acting out in school (Jouriles & McDonald, 2015).

Experiencing coercive control has many negative effects, but arguably the most damaging are the effects to survivors' sense of self. Tactics of coercive control are used by

abusive partners with the intention to reduce their partners' abilities to make decisions, limit independence, and diminish their self-image and strength (Ehrensaft et al., 1999; Robertson & Murachver, 2011). Abusive partners often degrade their partners to make them feel incompetent, worthless, and useless without the abusive partner (Levine & Timmons Fritz, 2016). These tactics strip away survivors' sense of self and trap them in a world of fear (Sackett & Saunders, 1999; Stark, 2007). Coercive control ultimately breaks down survivors' sense of self-worth and their belief that they have the power to change their circumstances or regain control over their lives (Stark, 2007).

Coercive control theory has been abundantly used in the research related to IPV and many have taken Stark's work and expanded it (see Johnson, Erikkson, Mazerolle, & Wortley, 2019, Dragiewicz et al., 2018, and Dichter, Thomas, Crits-Christoph, Ogden, & Rhodes, 2018). Coercive control theory has been expanded to encompass severe forms of psychological abuse. Ultimately, the majority of survivors who enter shelters have experienced some form of coercive control which has damaged their sense of self and can greatly impact their abilities to take the steps necessary to regain their independence (Stark, 2007).

Michel Foucault: Conceptualizing Power

As a French historian and philosopher, Foucault's work has influenced many in the social science disciplines. His concepts have been applied to social services as a means of identifying the ways in which power and control are used in society and within social services. Although biopolitics and biopower are some of Foucault's foundational concepts, biopower is not explicitly outlined in a single book or lecture. For Foucault, biopower was and is a critical component of modern society. In his book, *History of Sexuality Volume 1*, he briefly defined biopower as a "power that exerts a positive influence on life, that endeavors to administer,

optimize, and multiply it, subjecting it to precise controls and comprehensive regulation" (Foucault, 1976, p. 137). Biopower is the idea that in modern societies the goal is to increase productivity through organization. This is accomplished by creating structures that have explicit rules for conduct that organize people, teach them to self-regulate, and essentially fall in line with the movement of society. Foucault would most likely describe the shelter as a structure rich in biopower.

Feminists have long been critical of Foucault for his views on women's subjective experiences with power (see Taylor, 2009, Hartstock, 1990; Frasier, 1989). However, applying Foucault's concept to a patriarchal society is important for understanding the norms that govern the role of women within society. In a patriarchal society, men exert power over women and the narrative or discourse is that women are to submit to that power. When women fail to submit to that power, women are then punished by their abusive partners. Abusive partners may use tactics of physical violence or manipulation to exert their control over their partners. The survivor's choice is then to stay in the controlling environment or leave and find shelter elsewhere. This causes a narrative in which the onus is placed on the survivors to find a solution, rather than correct or punish the abusive partners for their behavior, because the women are essentially at fault for their failure to align with social patriarchal norms. This idea is demonstrated by removing the children from mothers who are said to expose their children to violence by remaining in abusive relationships. Policastro and Payne (2013) found that a sample of university students endorsed punishment for mothers who exposed their children to violence by remaining in the home with their abusive partners. Similarly, in interviews with male perpetrators of IPV, Heward-Belle (2017) found that men use the societal norm of the "good mother" to control their

partners and keep them under their power. This societal norm about the submission of women governs women's behavior and women who do not submit should be punished.

In terms of IPV, researchers have applied Foucault to further illuminate male abusive partners' use of power and control over their female partners, which leads to a reduction in their agency and ability to exercise their personal power. Foucault's concept of biopower has been used to conceptualize how abusive partners exercise control. For Foucault (1976), his concept of biopower represents two mechanisms. First, the disciplinary power or the "anatomo-politics of the human body", in which the human body is viewed as a machine or "docile body", is used to optimize the body's capabilities for production and efficiency. Second, regulatory power or bio-politics, later called governmentality, uses disciplinary power to control the population in order to maintain social norms. Towns and Adams (2009) completed interviews with female survivors and used Foucault's construct of biopower to examine ideological dilemmas survivors face in abusive relationships. They found that apparatuses of abusive partners' power have the ability to subjugate women, causing them to submit to power while being unable to exercise their own power (i.e., they are unable to exercise their own biopower). Abusive partners eliminated women from discourses that were concerned with their well-being leading to increased isolation, and ideologies of the patriarchy that articulated male-dominant norms that threatened the equal participation of women in society. Similarly, researchers have used Foucault's concept of disciplinary power to describe how men in a United States based context (Westlund, 1999) and a Middle Eastern context (Zakar, Zakar, & Kraemer, 2013) view their partners as "docile bodies" that should be modeled to meet the specifications of the abusive partner. Finally, the reproductive physiology of women has been examined through the lens of anatomo-politics in that women are further subjugated under men because of their function in society as the vessel

for men's offspring (King, 2004). Women are influenced by men's disciplinary power because they are driven by a biological instinct to be the receptacle for men's desires to ultimately bare his offspring and propagate society.

Biopower has been applied to the larger societal issue of IPV, in which the norms surrounding women and treatment of women promote the continued subjugation of women's role in society and open doors for violence against women (Taylor, 2009; Merry, 2001). Roychowdhury (2015), in an article highlighting the necessary changes that need to be made to laws that govern gender-based violence in India, described how social norms surrounding the role of women in society prevent prosecution of criminal abuse offenses. Roychowdhury discussed how governmentality or bio-political power prevents women from successfully challenging their abusive partners in criminal courts due to this inability to align with the socially constructed norms of women. In addition, survivors' departure from socially constructed norms of the ideal survivor, such as being transgender or perceived as difficult to work with, have presented challenges for survivors of IPV to access resources (see Poleshuck et al., 2018; Ulmestig, 2018; Guadalupe-Diaz & Jasinski, 2017; Simpson & Helfrich, 2014).

In addition to biopower, another concept applied to society and interactions with social services is the panopticon. In *Discipline and Punish* (1975), Foucault utilized Bentham's design of the panopticon to explain his theory of disciplinary power. In 1791, Bentham designed a prison structure in which all the inmates residing in the prison could be seen from a single security guard in one space in the prison. Bentham titled this design the panopticon, which comes from the Greek word *panoptes* meaning "all-seeing". Bentham believed that the potential anticipation of punishment would be more effective at regulating prisoners' behavior than the severity of the punishment. If prisoners were kept in an anticipatory state, never knowing when

they would be punished, Bentham believe it would be easier for prison staff to maintain order. Foucault used Bentham's panopticon to represent how people in power use surveillance to control others due to an individual's desire to avoid punishment. Boyd and colleagues (2016) utilized the concept of the panopticon, to describe a housing program in which police and social workers controlled the conduct of residents through the use of surveillance and intimidation. Similarly, Morris and Seibold (2012) interviewed pregnant women who were in a substance abuse program and applied Foucault's concepts of agency and panopticism to describe how the women felt as though they were removed from the pregnancy experience given the perceptions of the social workers that they were incapable of caring for themselves and their unborn children. Finally, Peckover (2002) and Flint (2012) applied Foucault's concepts of surveillance as a means to better understand child welfare involved mothers' tendencies to hide problems from their social workers in an attempt to project a mothering ideal. Peckover (2002) found that although the social workers were perceived as being kind and helpful, mothers described fears related to discipline and punishment over failing to meet up to ideal standards of parenting and were therefore hesitant to seek help from their social workers.

Based on the accounts of survivors of IPV residing in shelters (Wood, Heffron, Voyles, & Kulkarni, 2017; Fisher & Stylianou, 2019), and following Foucault, some IPV shelters can be interpreted as panoptical in nature. For example, Wood and colleagues (2017) interviewed survivors about their experiences in the shelter and found that the residents felt triggered due to cameras, which they described as monitoring their every move. Survivors felt the staff identified rule-breaking through the use of the surveillance cameras. This gave survivors the fear that they could be terminated from the shelter for any minor infraction. In addition, the cameras had the potential to mimic the surveillance of an abusive partner leading survivors to be potentially

retraumatized. Similarly, Bergstrom-Lynch (2017) in interviews with shelter residents identified several additional features of the shelter that could be perceived as panoptical, such as shelter staff having keys to unlock residents' rooms and entering the locked rooms unannounced and without consent. In addition, residents described how the staff offices where on the first floor of the shelter, while the living quarters were on the second floor. This created a physical barrier in which residents were concerned about exiting through the first floor of the shelter for fear the staff might punish them for breaking an unknown rule. This structure creates a controlled environment that survivors struggle to adapt to.

Foucault's concepts of biopower and the panopticon highlight the potential for social services and IPV shelter to perpetuate power dynamics. Whether intentional or unintentional, these power dynamics have the ability to create an environment where survivors feel controlled. This feeling of control has the potential to retraumatize survivors who have experienced coercive control. Therefore, the environment of the shelter should be closely monitored to ensure that power dynamics don't cause unnecessary harm.

Aaron Antonovsky: Conceptualizing Healing

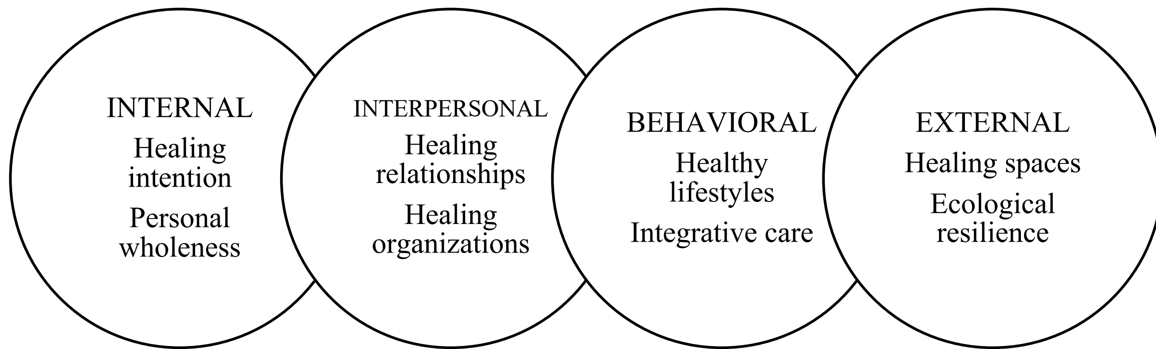
Aaron Antonovsky was an Israeli American sociologist who was concerned with the interactions between stress, health, and well-being. In his seminal work, *Health, Stress, and Coping* (1979) Antonovsky coined the term "salutogenesis" as a new framework for conceptualizing healing. According to Antonovsky (1987), salutogenesis is the process of healing and health creation. Salutogenesis requires health practitioners to focus on an individual's personal resources and their capacity for healing rather than focus on health risks, ill health or disease (Antonovsky, 1987; Linstrom & Eriksson, 2005). Salutogenesis is meant to shift health practitioners view from pathologizing patients to a more strengths-based approach by

considering their capacity for healing and health promoting behaviors. By focusing on salutogenesis rather than pathogenesis, Antonovsky suggested practitioners focus on an individual's sense of coherence, or their process of healing. Individuals who develop a sense of coherence are able to move toward healing even in the midst of trauma and change or when a cure is not possible (Antonovsky, 1979). This sense of coherence is akin to scholars' definitions of resilience in that a person's salutogenic capability is often their innate ability to recover from disease (Jonas, Chez, Smith, & Sakallaris, 2014). During this time, Antonovsky revolutionized health practitioners view of healing and shifted the paradigm from illness and disease to health resources and resilience.

Over three decades later, modern health scholars took Antonovsky's concept of salutogenesis and incorporated it into the design of healing spaces. Jonas and colleagues (2014), using Antonovsky's work as a starting point, developed a framework for designing healing spaces called the optimal healing environment (OHE) framework. Within this framework, concepts of salutogenesis were applied to four environments within a healing space: the internal environment, the interpersonal environment, the behavioral environment, and the external environment. The belief behind the OHE framework is that if spaces were designed to stimulate and support salutogenesis, or peoples' innate resources and capacity for healing, people could heal faster and achieve health goals at greater rates (Jonas et al., 2014). Jonas and colleagues expanded Antonovsky's work and created a new definition of salutogenesis which is, "The processes of recovery, repair, renewal, and reintegration that contribute to a whole person's (physical, mental, social, and spiritual health) health and well-being" (Jonas et al., 2014, pg. 82). Under this definition, healing processes can be preventative, restorative, and palliative even when recovery and cure are not possible.

Optimal healing environments target four environments for healing: internal, interpersonal, behavioral, and external (Figure 1).

Figure 1. *Optimal healing environments framework.*



Within the internal environment are healing intentions and personal wholeness. Healing intention is a conscious belief toward healing, well-being, and the highest good for oneself or another (Sakallaris, MacAllister, Voss, Smith, & Jonas, 2015). OHE must ground their patients in the belief that they can heal and foster expectations toward healing. This intentionality requires self-awareness into one's pain and suffering and full acceptance of one's current circumstances (Schmidt, 2004; Zahourek, 2012). OHE must also help patients achieve personal wholeness through the integration of mind, body, and spirit (Jonas et al., 2014; Sakallaris et al., 2015).

Within the interpersonal environment, OHE should foster connections between people who have the healing intentions and expectations (Jonas et al., 2014; Sakallaris et al., 2015). These relationships require connection and trust. Social support during healing has proven to improve health outcomes (Beach, Keruly, & Moore, 2006; Grosso, 2010; Neri et al., 2011; Robles & Kiecolt-Glaser, 2003), therefore OHE need to be spaces that promote social connection rather than separation. OHE environments must also create healing organizations with staff that are skilled and caring, who demonstrate a commitment to healing and focus on the whole patient

(Miller & Crabtree, 2005). The commitment from the staff and the social support patients receive can greatly impact patients healing capacity.

Optimal healing environments must also foster health promoting behaviors. OHE environments must be person-centered in which patients are involved in the creation of a healing lifestyle in order to change unhealthy behaviors (Thomas, Bendtsen, & Krevers, 2014). Behaviors which promote health can include a healthy diet, exercise, relaxation and stress management, as well as sufficient sleep and creative outlets (Sakallaris et al., 2015).

Finally, OHE must use concepts of design and sustainability to create a space that fosters intentionality, connection, and health promoting behaviors (Jonas et al., 2014; Sakallaris et al., 2015). This involves considering light, sounds, air quality, and temperature within a space as (Harris, Ross, McBride, & Curtis, 2002) as well as access to nature (Ulrich, 1984; Ulrich et al., 2008). Factors of healing environments have been extensively explored within the literature (see review by DuBose, MacAllister, March, & Sakallaris, 2018) and have proven to greatly impact health outcomes (Sherman, Varni, Ulrich, & Malcarne, 2005; Ulrich, 1984; Ulrich et al., 2008). Sakallaris and colleagues (2015) provided a table of definitions for each environment within the OHE framework that can be operationalized to design and create OHE (Table 1).

Table 1. *OHE framework definitions* (Sakallaris et al., 2015).	
INTERNAL ENVIRONMENT	
Healing intention	A conscious and benevolent mental activity (thought) purposefully directed toward health, wellbeing, healing, or highest good for oneself or another. Healing intention is manifested in the care setting in various ways, including setting intentions, prayer, and assessing patient hopes and expectations for healing and incorporating hopes into the plan of care.
Personal wholeness	The congruence of mind, body, and spirit, experienced through relationship with self and others, resulting in completeness and wellbeing. Mind-body-spirit congruence is enhanced through mind-body practices and interventions and attending to spirituality.
INTERPERSONAL ENVIRONMENT	
Healing relationships	Healing relationships are the connections between persons who hold an intention for healing to occur. The attributes that distinguish a healing

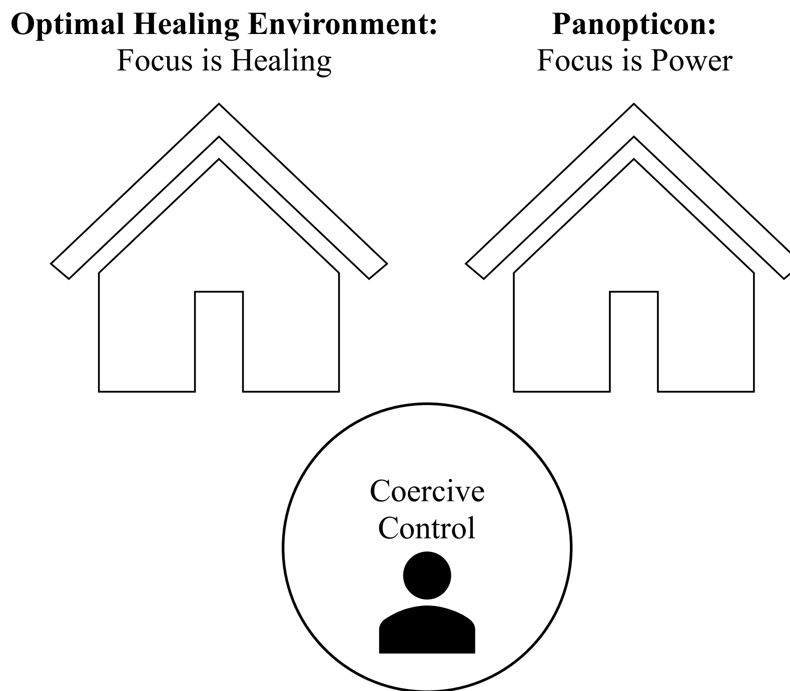
	relationship from other positive relationships that are the connection is intentional and covenantal in nature and the connection involves positive emotional engagement and provides mutual benefit.
Healing organizations	Healing organizations are driven by a mission to promote healing and health creation. They provide appropriate structures, processes, and resources to stimulate and support healing through intention, relationships, person-centered strategic planning, and shared decision-making. Healing organizations optimize the potential for wellbeing of their employees and the people they serve.
BEHAVIORAL ENVIRONMENT	
Healthy lifestyles	A healthy lifestyle involves making choices in diet, activity, relaxation, stress reduction, and sleep that create and maintain health. A healthy lifestyle is a way of life that optimizes potential for maximal healthy life years.
Integrative care	Integrative care is team-based care that is person-focused and family-centered and incorporates multidisciplinary care providers at their highest skill level. Integrative care blends the best of complementary therapies with conventional medicine in order to enhance self-care skills and ameliorate suffering.
EXTERNAL ENVIRONMENT	
Healing spaces	Healing spaces incorporate evidence-based design and healing principles to optimize and improve the quality of care, outcomes, and experiences of patients and staff. Healing spaces use physical design to enhance the individual's innate healing potential.
Ecological sustainability	Organizations and individuals can foster ecological sustainability by reducing their footprint and supporting the health of the planet. The chemical impact and energy use of their operations is considered. Products or practices that are resource-intensive can be replaced with more ecologically friendly, less harmful, and cruelty-free alternatives.

Given the definition and intentions behind OHE, IPV shelters should aimed to incorporate the tenants of an OHE Shelters demonstrate a commitment and intention to help survivors heal from trauma while providing support and resources to help them regain their lives. Therefore, using principles of OHE, shelters can be created and retrofitted to promote healing following a salutogenic perspective that is strengths-based and person-centered.

Theoretical Framework

Survivors of IPV who enter shelter have experienced coercive control which may have diminished their belief in the control they have over their lives as well as their own self-worth and belief that they can impact their circumstances. When survivors enter shelters, they have the

potential to interact with two differing shelter environments: control focused or healing focused (Figure 2).



Applying Foucaultian theory, shelters may be panoptical in nature in which the emphasis is on power. Through rules and regulations around safety and security, survivors are taught to regain control of their lives. By giving survivors a secure environment and rules and regulations with regards to services, they are able to heal themselves and regain independence from abuse. However, the focus is on control and surveillance in order to achieve maximum results. Survivors must follow rules around the amount of services they complete, the chores they are assigned, and their comings and goings from the shelter. This model focused on power has the potential to retraumatize survivors due to attempts to control survivors in order to protect them. The power coming from the shelter structure may be similar to the abusive power survivors experienced from their abusive partners and therefore survivors may be triggered from past trauma. The second environment survivors may encounter is the OHE in which the focus is on

healing and wholeness. Through reintegration of mind, body, spirit and through healing connections survivors are able to regain their ability to heal themselves from trauma or regain the intentionality that they have the capacity to heal themselves. In shelters that foster connection and social cohesion, survivors are given the support necessary to heal, even when a cure or solution is not readily visible or possible. Within OHE environments, the focus is on healing and flexibility is given to rules and regulations when necessary, since some survivors may take longer to heal.

Stressors within the shelter environment can greatly impact whether survivors will perceive the shelter environment to be a panopticon or an OHE. In addition, previous trauma from existing in an environment based on coercive control can also cause survivors to perceive shelter environments as helpful or harmful. Given these factors, identifying environmental stressors within shelters that impact trauma and healing is critical in order to design and create shelters that foster healing and increase self-efficacy. Therefore, this study will use the concepts developed by Stark, Foucault, and Antonovsky to identify and measure environmental stressors within IPV shelters.

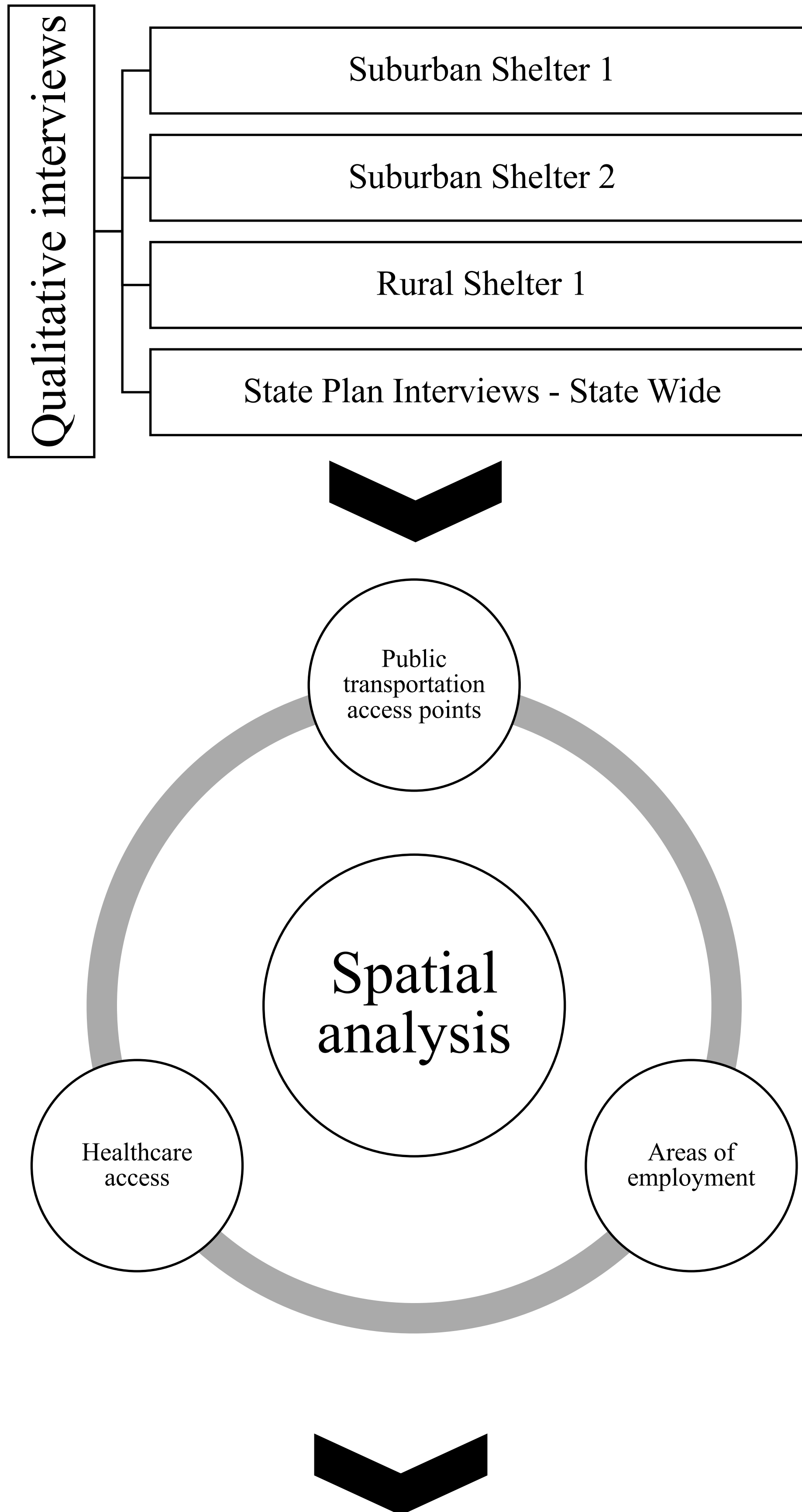
Chapter 4: Methodology

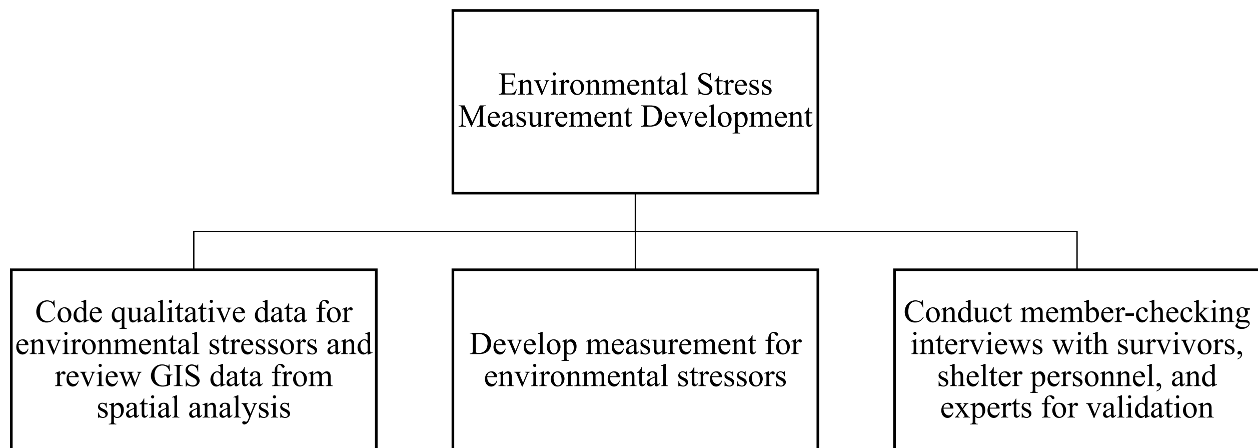
This chapter provides an overview of the methodology used to identify and measure environmental stressors in IPV shelters. The purpose of this study was to first identify environmental stressors present within the shelter and then construct a measurement that could be used to capture the impact of those environmental stressors on health.

Study Design

This study utilized a sequential exploratory mixed-methods approach across two phases. Phase one involved a descriptive phenomenological study using semi-structured, one-on-one interviews with survivors currently or recently residing in shelter to discover environmental stressors they experience while in shelter. In addition, a secondary data content analysis of 150 qualitative interviews from survivors based across the state of Texas was conducted to identify additional stressors that might be present in other shelters. Finally, a spatial analysis of the surrounding areas of the shelter was conducted to identify stressors related to the location of the shelter. Phase two involved developing a measure of environmental stressors based on the data obtained in the qualitative interviews and spatial analysis. Once the measure was developed, member-checking with three survivors, two shelter staff, and three experts who research shelter environments was conducted using qualitative interviews. See Figure 1 for a visual of the sequential mixed methods study. This study received institutional review board approval.

Figure 1. *Visual of study.*


Qualitative interviews
Suburban Shelter 1
Suburban Shelter 2
Rural Shelter 1
State Plan Interviews - State Wide
Public transportation access points
Spatial analysis
Healthcare access
Areas of employment



Phase One: Identification of Environmental Stressors

Phase one of this study utilized both primary and secondary data related to the lived experiences of survivors and spatial analysis of the surrounding area of the shelters to identify environmental stressors present within IPV shelters. First, a descriptive phenomenological design was used to capture the lived experiences of environmental stressors for women currently residing in intimate partner violence shelters.

Primary data collection: Qualitative interviews with survivors currently in shelter

With the belief that all human consciousness has meaning, a descriptive phenomenological approach allows the researcher to gain a deeper understanding of a specific phenomenon (Lopez & Willis, 2004) and is appropriate to explore a relatively unexplored topic. Ten women participated in semi-structured, one-on-one interviews using open-ended questions to gather data to identify environmental stressors within the shelter and understand their experiences of the stressors they identified.

Survivors were recruited from three shelters in north Texas and special attention was taken to recruit survivors from rural and suburban shelter environments. Two suburban shelters and one rural shelter were used as recruitment sites. Purposive sampling was used to recruit ten

participants who were at least 18 years of age, spoke English, were able to provide verbal or written consent, and resided in intimate partner violence shelters or had recently done so. Participants were recruited by reaching out to advocates based at each shelter and having the advocates distribute the flyer to their clients. Participants then responded to the flyer via phone or email to state their interest in participating in the study. Interviews were scheduled at a time that was most convenient for the participant. Interviews were conducted over the phone.[1] At the time of the interview, the researcher reviewed the consent document with the participant and obtained oral consent. Participants were given the opportunity to ask questions before the start of the interview. Participants were also asked if they would like to receive a copy of the consent form via email or mail.

Interviews were conducted using a semi-structured interview guide with open-ended questions. See appendix A for interview guide. Interviews lasted from 30 minutes to one hour depending on the participant. Participants were allowed to discontinue the interview at any time. If they wished to stop the interview, they still received the incentive provided for the interview. At the conclusion of the interview, participants were given a $20 gift card to Walmart or Target for their time. Participants had the option to receive the gift card electronically or through the mail. If the participant requested an electronic gift card, the participant's email address was obtained and noted on the consent form. If the participant requested to receive the gift card through the mail, the participant's address was obtained and noted on the consent form. Interviews were audio recorded and then professionally transcribed using rev.com for accuracy.

[1] Since data were collected during the coronavirus pandemic, interviews were conducted exclusively over the phone in order to comply with social distancing requirements issued by the state of Texas. The original design included the opportunity for interviews to be complete in person, however this was not possible due to social distancing regulations.

At the conclusion of the interview, participants were asked if they would like to be contacted for participation in phase two the study. If they wished to continue their involvement, their names and contact information were documented on a spreadsheet which was stored on a secure online and IRB approved cloud storage platform. Participants' responses to continued participation in the study did not affect their receipt of the gift card for completion of the interview.

Given that survivors of IPV are often at risk for their safety, several precautions were taken to ensure safety before, during, and after the interview. This involved scheduling the interview at a time and location at the participants' discretion, since survivors are the most knowledgeable of how to keep themselves safe (Davis & Lyon, 2014). Steps were taken to protect participants' confidentiality. At the time of the interview, participants were assigned a letter designating their location classification (i.e., R = rural, S = suburban) followed by a number. I created a spreadsheet to house participant data that was stored on a secure online cloud storage platform. On the spreadsheet, items recorded were the participants' identification number, the date of the interview, documented consent, whether the consent form was provided to the participant, whether an audio recording was taken of the interview, whether the audio recording had been professionally transcribed, the type of gift card the participant requested, and how the gift card was delivered to the participant.

In addition, I also took precautions when collecting participants' names and contact information during the interview scheduling process. On the consent form participants' names, phone numbers, and email addresses or physical addresses depending on the way in which the participant requested to receive the gift card incentive were noted. Then a linking file that lists the participant's names and identification number was created and stored in the secure online

database. If participants wished to continue their involvement in subsequent phases of the study, their participation was documented on the consent form. Further, all audio recordings of interviews were stored on the secure online database. Once the audio recording of the participant's interview was transcribed, the audio recording was deleted.

Instrumentation. In qualitative research, the researcher is considered the instrument for the study and therefore it is critical the researcher possess skills to conduct research with the population included in the study. The researcher has a little over two years of experience working with survivors of IPV. As a licensed masters social worker, she worked as a case manager at an outreach agency for survivors and then she also worked as a victims' advocate for the criminal courts. While working as a case manager, she frequently assisted survivors with entering shelter. She often sat with them while they completed the screenings required by each shelter in order to be approved. She frequently advocated for my clients with shelter staff in order to get them a bed when shelters were at capacity. She even accompanied survivors to shelters when they did not have transportation to get to shelter. From my interactions with clients who were staying in shelter, I know that shelter can be a very stressful time. She frequently had clients choose to exit shelter due to the environment being overwhelming stressful on them and their children. These experiences ground my work on this project. In addition, she have conducted several research studies with survivors of IPV and have developed skills to conduct qualitative research through those projects.

A semi-structured interview guide was developed for conducting the qualitative interviews. The semi-structured interview guide contained three sections: demographic questions, housing description and assessment questions, and questions related to experiences of environmental stressors. See appendix A for the interview guide. Demographic questions asked

participants to provide their age, gender, race/ethnicity, education, employment, number of children they have and their children's' ages, number of children residing with them in shelter, questions related to experiences of homelessness, questions related to their stay or stays in IPV shelters, and questions about the partner who used violence against them that caused them to seek shelter. Participants were also asked to describe their current housing (i.e., the shelter) and assess whether the shelter meets their housing needs. Finally, participants were asked to discuss their experiences with known environmental stressors while residing in shelter. Participants were asked questions related to noise levels, crowding, housing quality, and transportation.

Data analysis. The data analysis plan followed the steps of a descriptive phenomenology analysis outlined by Colaizzi (1978). First, each transcript was read three times to achieve a deep understanding of the data. Second, the transcripts were reread and phrases were extracted that directly related to the phenomenon of study, specifically women's experiences with environmental stressors in shelter. Third, meanings of each statement were formulated and assigned a code. Fourth, the codes were consolidated into themes or categories of meaning. Fifth, themes were consolidated to represent an exhaustive description of the phenomenon of study. Finally, the essential structure of women's experiences of environmental stressors were developed. The structure included factors which could both increase stress within the shelter as well as factors which could mitigate stress and promote healing.

Given that little is known about the environmental stressors present in shelters, data collection and data analysis took place concurrently to ensure that an accurate picture was captured of life in shelter. Upon completion of each interview, steps one through three of Colaizzi's (1978) data analysis plan were completed to identify codes related to environmental

stressors. This allowed for data to be collected iteratively by using prompts to identify potential stressors.

In a descriptive phenomenological study, it is important for researchers to bracket their experiences before the data analysis process (Connelly, 2010). To increase the credibility of the analysis, the researcher sought outside guidance from two researchers who have extensive experience conducting qualitative research with survivors of IPV during the analysis process and theme generation. Member checking was also utilized to ensure there was minimal bias and verify the accuracy of the findings. Participants were contacted after the data analysis was completed to review the major qualitative findings. They were also given the opportunity to reflect on their shelter experience and offer additional insight given that they were no longer staying in the shelter. In phase two of the study, participants were asked to review a list of environmental stressors generated from participant interviews and were asked if the list was comprehensive or if revisions need to be made.

Secondary data analysis: Qualitative interviews with survivors across Texas

Given that this study took place during the coronavirus pandemic, an additional secondary data analysis of qualitative interviews conducted across the state of Texas was incorporated to ensure that a comprehensive list of environmental stressors was developed. The coronavirus pandemic significantly impacted shelter life, which had the potential to influence participants' experiences with stress. The data selected for the secondary data analysis was collected from 2017-2018, before the pandemic began. The data was collected by a team of researchers based at several universities in Texas and was used to inform the Texas State Plan 2018 for the Texas Council on Family Violence (Wood et al, 2018). One hundred and fifty survivors who were using services at 16 agencies across seven key regions were interviewed

across the state. The regions represented were the Houston Gulf, Central Texas, Dallas-Fort Worth, East Texas, The Rio Grande Valley, The Panhandle, and West Texas. Researchers recruited participants who were at least 18 years of age and self-disclosed a history of intimate partner violence. Participants were invited to participate in interviews that lasted approximately one hour and received a $20 incentive for their participation. Consent was obtained verbally before the interview began. The study received institutional review board approval. The researcher of this study completed a confidentiality agreement in order to receive access to the data.

Instrumentation. A semi-structured interview guide was used that included a mix of qualitative and quantitative questions. For the qualitative questions, participants were asked about their experiences accessing services for IPV, disclosure of IPV to their support networks, and experiences within residential services, such as shelters or transitional housing programs.

Data analysis. The qualitative data was analyzed using a directed content analysis (Hsieh & Fang, 2005) of pre-coded transcripts. In the original study, two researchers independently reviewed four transcripts to create a comprehensive codebook. The codebook was then verified by using it with three additional transcripts. The current studied utilized coded data from two main themes: *accessing services and help-seeking* and *service needs.* These themes were chosen based on the definitions within the codebook which included experiences within shelter, experiences with shelter staff, and needs from the shelter. The pre-coded data was coded with the new codes established from the analysis of the primary data collected from qualitative interviews with survivors currently in shelter. In addition, new codes were generated based on items identified from the literature and the theoretical framework utilized by this study (see Chapter 3). Given that the study used for secondary data analysis originally took place before the

coronavirus pandemic, there was potential for new codes to be identified so the researcher relied on previous literature and theory to inform the generation of new codes. Factors were reviewed for environmental stressors identified via the literature review as well as those identified by participants who were interviewed for this study. Factors related to environmental stress were coded and used to develop themes along with the primary qualitative interviews.

Spatial analysis

In addition to the shelter description within the qualitative interviews, a spatial analysis of the surrounding area of the shelter was conducted to gain additional insight about the presence of environmental stressors related to mobility and transportation access. This study utilized GIS mapping software to conduct a spatial analysis of the surrounding area of the shelter to identify public transportation access points, healthcare locations, and locations of employment that survivors can potentially utilize while staying at the shelter. One of the primary goals of IPV shelters is to help women gain economic independence (Stylianou & Pich, 2019). Therefore, identifying locations of potential employment as well as public transportation access points and routes that can be used by survivors to access employment can reveal barriers that survivors may face when pursuing economic independence. Barriers to transportation access and mobility has been identified as an environmental stressor (Robin, Matheau-Police, & Couty, 2007), so incorporating a spatial analysis is important in revealing insights into the larger built environment of the shelter and how it impacts survivors.

Spatial mapping was conducted of the surrounding areas of the two shelters used as recruitment locations for this study: one suburban and one urban. Only one of the suburban shelters was used for analysis since both of the suburban shelters included in this study have the same public address. An additional rural shelter location was used in order to increase the

diversity of the analysis. This shelter was originally chosen as a recruitment location, however due to challenges with recruitment due to the coronavirus pandemic, no participants were able to be recruited from this location. The public addresses of the shelters were used in order to protect the confidential locations of the shelters.

Three resources were selected for spatial mapping given the frequency they appeared in the qualitative data: healthcare locations, employment opportunities, and public bus stops. To identify healthcare locations, a GIS map created by the U.S. Department of Homeland Security which plotted hospitals across the U.S. (U.S. Department of Homeland Security, 2017). Employment locations were identified through a GIS map created by the North Central Texas Council of central governments which plotted all employment opportunities at businesses in North Texas (NCTCOG, 2021). Employment locations included commercial businesses, residential businesses, and special locations such as churches, museums, and theme parks that could employ people. Finally, the location of transit stops within the cities were plotted on the map. The Bureau of Transportation Statistics GIS map of transit stops was used to identify public transit stops around each shelter (Bureau of Transportation Statistics, 2021). This GIS map contained stops for all public transportation opportunities. In order to capture the availability of resources surrounding the shelters, spatial buffers were used to indicate how many locations were within one mile and five miles of the public address of the shelters.

Phase Two: Measurement Development

Phase two consisted of formulating a measure of environmental stress based on the stressors identified by the participant interviews and spatial analysis in phase 1. DeVellis's (2017) guidelines were followed for scale development. First, the term environmental stressor was operationalized using theory and a literature search (DeVillis, 2017). This study utilized a

theoretical framework, as described in Chapter 3, constructed from three theories: coercive control theory, Foucaultian theory, and optimal healing environments framework to define environmental stressors. Environmental stress is defined as negative psychological stress response to a stimulus within the environment (Evans, 1984). Therefore, for the purposes of this study, an environmental stressor included any aspect of the shelter environment that participants perceive to be stress inducing. In addition, aspects of the shelter which promote healing were also incorporated into the definition given their ability to reduce or mitigate stress. Furthermore, given that the location of the shelter within the larger community could cause stress, environmental stressors present within the larger community were also considered.

Second, scale items were generated by coding participant interview transcripts to identify environmental stressors. An inductive method of grouping items from participants to identify scale items was utilized (Hinkin, 1995). Qualitative data can be used to inductively identify scale items (Morgado et al., 2018). In addition, GIS data obtained from the spatial analysis was used to identify potential environmental stressors related to the location of the shelter. The spatial analysis revealed stressors related to the built environment of the location of the shelter by creating stressors related to mobility and employment. In addition, environmental stressors previously identified in the literature, such as noise (Wass et al., 2019), crowding (Wells & Harris, 2007), housing quality (Burdette, Hill, & Hale, 2011), lack of privacy (Latina & Stattin, 2018), and transportation (Robin, Matheau-Police, & Couty, 2007) were also considered as part of scale development. Care was taken to develop scale questions that did not require an advanced reading level and were brief.

Third, the format of the scale was determined. Since the purpose of the measurement is to determine whether participants experience an environmental stressor and the level of intensity

that stressor is felt, two scales of perceived stress were used as a model. The scale format was modeled after two known and validated scale of stress perception: *The Perceived Stress Scale (*Cohen, Kamarck, & Mermelstein, 1983) and *The Perceived Housing Stress Scale* (Campagna, 2016). *The Perceived Stress Scale* is a 10 item self-report measure that asks a person to rate the degree to which life events are stressful. It captures a person's perception of their stress levels over the last month The scale is measured on a five-point Likert scale using the response options of 0 = never, 1 = almost never, 2 = disagree, 3 = sometimes, 4 = fairly often, and 5 = often. Higher scores indicate more stress. Scores ranging from 0 to 13 indicate low stress, 14 to 26 indicate moderate stress, and 27 to 40 indicate high levels of stress. Sample scale items are "In the last month, how often have you been upset because of something that happened unexpectedly?" and "In the last month, how often have you felt confident about your ability to handle your personal problems?" This scale has reported good reliability and validity with survivors of IPV. Cronbach's alpha scores range from .81 to .93 (see Buttell, Cannon, Rose, & Ferreira, 2021, Heazell et al., 2021; Islam, Broidy, Baird, & Mazerolle, 2017; Michalopoulou, Tzamalouka, Chrousos, & Darviri, 2015; Parade, Newland, Bublitz, & Stroud, 2019; Slim et al., 2020; Weiss, Nelson, Contractor, & Sullivan, 2019). This scale was chosen as a model given its reliability of capturing perceived stress among survivors of IPV. However, since this scale only captures general perceptions of stress not related to a specific stimuli or place, new scale items needed to be generated in order to capture stress specifically related to shelter life.

The Perceived Housing Stress Scale (Campagna, 2016) was created from a modification of the *Perceived Stress Scale* (Cohen, Kamarck, & Mermelstein, 1983). *The Perceived Housing Stress Scale* is a 12-item self-report measure which focuses on perceived stress related to maintaining a home-like environment. The scale is measured on a Likert scale exactly as the

Perceived Stress Scale, 0 = never, 1 = almost never, 2 = disagree, 3 = sometimes, 4 = fairly often, and 5 = often, with higher scores indicating more stress. Sample items include "how often have you been upset because of some unexpected problem with the physical condition of your home?" and "how often have you felt that you could not manage everything you had to do to take care of the place where you live?" This modified version was created to identify and measure stress specifically related to a person's home. Within the scale are environmental stressors previously noted within the literature such as crowding (Chambers, Fuster, Suglia, & Rosenbaum, 2015; DeCelles, DeVoe, Rafaeli, & Agasi, 2018; Regoeczi, 2003), noise levels (Evans, 1984; Evans & Stecker, 2004; Honold, Beyer, Lakes, & van der Meer, 2012), and housing quality (Beyer, Wallis & Hamberger, 2015; Brown, Werner, Altman, 2006; Burdette, Hill, & Hale, 2008). However, this scale has not been tested with a sample population, therefore reliability is unknown. Further, this scale fails to capture potential stressors associated with living in a shelter environment in which autonomy is reduced and the environment is communal living. Therefore, a measure of perceptions of environmental stress in shelter environments is needed.

Fourth, member-checking by a panel of experts was used to assess the scale for content and face validity (DeVellis, 2017). Practitioners who work in IPV shelter, experts who conduct research on IPV shelters or issues related to housing for survivors, and survivors who participated in phase one were asked to provide feedback on the developed measure. Advocates involved in a previous study were contacted (Robinson, Nordberg, Voth Schrag, & Ravi, under review) and experts known to the researcher through other projects were also contacted to provide their feedback. Participants were asked to complete a brief semi-structured, one-on-one interview to discuss the validity of the scale. Each interview lasted approximately 30 minutes

and participants were asked to evaluate the items for clarity and conciseness. Involving both practitioners who work at the shelters as well as survivors will allow me to gain diverse perspectives on the included environmental stressors within the measurement as well as gage content and face validity (Boateng, et al., 2018). All survivor and advocate interviews were conducted over the phone and expert interviews were conducted via zoom. Advocates and experts were provided a draft of the measure before the interview while survivors were read the measure at the time of the interview. Participants were asked to provide verbal consent before the interview. Each interview was recorded and professionally transcribed using Rev.com. Participants were given a $20 gift card to Walmart or Target for their participation.

Once consent was obtained, participants were first asked to review and complete the measurement in its entirety. Participants were then asked three questions during the interview: 1) what is the scale trying to measure? 2) does the scale appear to measure that construct, and 3) what do you think is missing? Or how could the scale be improved?

Finally, feedback from the member-checking panel was incorporated to finalize the draft of the scale of environmental stress. Participant transcripts were used to identify any areas of the scale that need revisions as well as identify any potential stressors that are missing from the scale.

Chapter 5: Results

This chapter presents the results of this study. First, demographics are described for the primary and secondary data participants. Then results related to aim one of this study are presented by outlining themes related to environmental stressors present in shelter. In addition, the results of the spatial analysis are presented which highlighted more environmental stressors related to the built environment. Results related to aim two are then presented and includes the developed measurement as well as results from the feedback received from survivors, staff, and content experts. The results conclude with the finalized measurement.

Participant Demographics

Primary Data Participant Demographics

Ten participants were recruited from the three shelters in North Texas. Seven participants were currently staying in two shelters located in suburban areas and three participants were currently staying in a rural shelter. Participants all identified as female, were primarily Black/African American (n = 5, 50%), and had an average age of 37.4 years old. The majority of participants had children (n = 9, 90%) with the number of children ranging from one to five children. Table 1 includes all participant demographics collected for this study.

Table 1. *Participant demographics (N = 10)*

Item	Number of participants (%)
Average age	37.4
Gender	
Female	10 (100%)
Race/Ethnicity	
Black/African American	5 (50%)
Caucasian	2 (20%)
Latinx	1 (10%)
Multiracial	2 (20%)
Children	
Yes	9 (90%)
No	1 (10%)
Total number of children	

Zero	1 (10%)
One	3 (30%)
Two	1 (10%)
Three	3 (30%)
Four	1 (10%)
Five	1 (10%
Education	
Some high school	1 (10%)
GED	1 (10%)
High school graduate	4 (40%)
Some college	4 (40%)
Employment status	
Unemployed	7 (70%)
Part-time	1 (10%)
Full-time	2 (20%)
Lifetime homelessness	
Never	3 (30%)
Once	5 (50%)
Three times	1 (10%)
Four times	4 (40%)
Family violence homelessness	
Once	4 (40%)
Twice times	5 (50%)
Three times	1 (10%)
Total stays in DV shelter	
Once	5 (50%)
Twice	4 (40%)
Three times	1 (10%)
Length of current shelter stay	
Less than one week	3 (30%)
Less than one month	1 (10%)
One month	1 (10%)
2 months	4 (40%)
Longer than 2 months	1 (10%)

Secondary Data Participant Demographics

One hundred and fifty survivors were interviewed as part of the state plan study which took place 2017-2018. Participants were fairly geographically diverse primarily were seeking services for their experiences of IPV. Participants had an average age of 38.7 years old and were all female and primarily Hispanic/Latinx. A little over 45% of survivors were currently staying

in an emergency shelter with rest either in a transitional housing program or another living arrangement[2]. Table 2 presents participants' demographics for the state plan data set.

Table 2. *State sample participant demographics (N = 150)*	
Item	Number of Participants (%)
Region	
Central Texas	32 (21.3%)
East Texas	9 (6.0%)
Dallas-Fort Worth	17 (11.3%)
West Texas	19 (12.7%)
Rio Grande Valley	15 (10.0%)
Houston Gulf	42 (28.0%)
Panhandle	16 (10.7%)
Average Age	38.7 (Range: 19-67)
Race/Ethnicity	
Black/African American	24%
Hispanic/Latinx	40%
White/Caucasian	20%
Additional Race/Ethnicity	16%
Primary Language	
English	65.8%
Spanish	26.8%
Other	7.4%
Sexual Orientation	
Heterosexual	93.8%
Not Heterosexual	6.2%
Average number of children	3
Current Housing	
Emergency shelter	45.3%
Transitional housing	11.3%
Other	43.4%
Homelessness	
Homelessness because of family violence (lifetime)	
Never	10.0%
Once	44.7%
Twice	9.3%
Three times	10.7%
Four times	6.7%
Five or more times	18.7%
Other experiences of homelessness (lifetime)	

[2] The researcher was unable to determine from the coded data which participants were currently staying a shelter or transitional housing program and those that had experiences staying in shelter. Therefore, the entire sample was used for the secondary data analysis.

Never	52.0%
Once	21.6%
Twice	12.8%
Three times	3.4%
Four times	2.0%
Five or more times	8.1%

Qualitative Interviews Results

Analysis of the qualitative interviews, both primary and secondary, identified four key themes which highlight the presence of stressors within the interior environment of the shelter, relationships within the shelter, the exterior space around the shelter, and the location of the shelter itself within the community. In addition, rural and suburban differences were found as a result of the qualitative and spatial analysis.

The Interior Space

When participants were asked to describe the shelter, they spoke most frequently about the interior space and factors within the interior of the shelter that either increased their stress or contributed to their ability to heal. Participants spoke most frequently of their personal rooms and the accommodations within their room that made them feel comfortable within the shelter. In their personal rooms, participants cited comfortable sleeping arrangements and storage space as impact factors which helped reduce stress. Having enough beds and bedding for themselves and their children helped them sleep well and therefore be able to begin their healing. One rurally based participant described her room saying,

> For community living they did a really good job of making this feel like a home. I have our own beds, own blankets, own pillows. Multiple pillows. Not just a little flat one. It's not a mat. You sleep on an actual bed, and a TV in the room… they did a really good job at this facility of making it feel like home.

In addition to comfortable sleeping arrangements, participants also felt that having enough space to store their items helped them to stay organized and ultimately calm in a potentially chaotic environment. One participant described her room saying,

> On either side of that, there's wooden bars in which I can hang my clothes up or store anything on the shelves above it. There's a built-in four-square shelf on either side which I would put extra stuff. I could put my baby's things there as well. So I feel as though there's enough space for me and my son that we can use to store the items that we have, either what we came with or what we got here within the shelter and stuff.

They also spoke about the other spaces within the shelter, such as the bathrooms or eating spaces, which contributed to their stress or helped them heal. Participants also commented on the importance of having bathroom access and privacy within the bathroom as important factors to help with their stress. Several survivors related stories of encountering teenage males or grown males in the bathroom and that causing them stress. One participant in a suburban shelter described her experience saying,

> They have several bathrooms here. Four total. They're all public except one. I like that one better because usually the other ones, they have teenage boys up in here, so they'll end up coming in here to use the bathroom. If you're showering you gotta hurry and get out of there. They know better not to go in there if there's someone in there, but I've got caught twice.

One of the shelters allowed men and women to cohabitate and the survivors recruited from that shelter frequently discussed how encountering males within the shelter and the bathroom caused them distress. Ultimately, the majority of participants desired more privacy in the bathroom. One participant put it very simply saying, "I wish for privacy honestly. Especially when it comes down to the bathing of the kids and stuff like that."

Similar to bathroom privacy, participants also desired private space to be able to eat and feed their children. Participants frequently discussed challenges trying to feed small children who were often distracted by other families during mealtimes. Also, since participants were

living in the shelter during the coronavirus, additional social distancing measures which reduced the amount of time participants had to feed their kids caused stress. Once participant described her experience saying,

> Then with lunchtime, they say no more than a couple of people in the cafeteria when there's the same people who be in the cafeteria every day. It's just like, you guys only give us a time limit and a lot of us it takes a lot of time for our kids to eat lunch and stuff like that. So I feel like they should have more time instead of specific times or when we can eat it, and it's like that. Hurry up and eat. Twenty-five minutes to eat or five minutes to clean. My kids, I have twins and then a two-year old. Sometimes I be needing a whole hour for lunchtime in case my daughter wants seconds, because they close the doors early.

Having adequate time to feed their children was critically important to participants. Furthermore, having adequate food was also important. Several participants commented on the amount of food available as well as the quality of food. For participants in other parts of the state, they really struggled with food access and quality. One participant described her challenges with food access saying,

> So Saturdays and Sundays us a bit difficult because they don't feed here. That is, they do feed by don't give more than soups, sandwiches all day. It's the only thing I see bad about this agency, the food on the weekends.

Having enough quality food as well as enough time to eat together as a family impacted the stress levels of participants, particularly for participants who were parents.

In addition to bedrooms, bathrooms, and eating spaces participants also added that having common spaces helped reduce their stress. They spoke frequently about having comfortable lounging spaces so they can speak with other residents. One participant said, "They have a common room for TV in case you can't get a personal TV that they give you for about an hour." These common spaces gave participants spaces to come out of their rooms, mingle with other residents, and gave their children spaces to play. Finally, participants commented on the importance of having access to a washer and dryer in order to freely wash their clothes was an

important stress relieving factor. One participant in a suburban shelter said, "The laundry room was nice. They have four washers, and eight dryers in one of the rooms." Participants with young children commented how they frequently needed to wash clothes and since they often had minimal clothing it was important to be able to do laundry in a timely manner.

Participants also commented on the other more atmospheric factors within the shelter space that impacted their stress. Participants frequently cited noise levels as a main source of stress. Participants with young children discussed challenges getting their children to sleep and having them stay asleep. In addition, loud noises and yelling often retriggered participants by reminding them of the yelling within their homes with their abusers. One participant described how the noise levels impacted her saying,

> Noise levels, but I'm also introverted myself, so I'm used to things being quiet. And this is community living, and it's a lot of families coming from and used to types of aggressive, violent backgrounds. And everybody just has to get to know each other, and then figure their act out. So different times at night, if they're screaming, that triggers me, and it triggers my kids too. So that's something. Yeah I mean that's what this place is, they're in places they're going to be at, everybody's trying to make that habitation.

In addition to noise levels, participants also commented that the temperature impacted them while they were in shelter. Participants in one shelter that was experiencing challenges with the air conditioning system discussed how the elevated temperature elevated their stress. One participant described the experience saying,

> Well my room is hot. Yeah, I mean they've been trying to fix the AC around the area. I think my room has access to the unit or something that's stored up there or something like that. So they've already fixed it one time, but I'm just the type of person, if it's not necessarily constantly on my mind I'll forget about it, but at the same time, as the temperature has been rising outside I have been noticing that it's been pretty hot in my room and it's cool outside in the hallways. So I would say because of the temperature increase, it's become more hot in my room.

Similarly, participants also commented on the air quality and at times how the lack of air flow increased their stress. One participant said, "We don't know how to explain that, but it smells

like mashed potatoes, if that makes any sense." The lack of fresh air inside caused participants to feel more tense inside and desire to open a window in order to feel some relief. Having access to a window and natural light did decrease stress for several participants. They felt the natural light helped their personal rooms not feel as cramped or stuffy. One participant described her window saying,

> I do have a window. I like natural light, so it's good to open that from time to time and I can lay my son on the bed and tilt the blinds open so he can see the sky. So that's good.

Lastly, participants commented on the frequency of cameras around the interior of the shelter. Participants had mixed feelings about the presence of cameras. Some participants appreciated the cameras within the shelter. They felt that if their items were to be stolen or something happen to their kids, the camera would catch it and the offender would have consequences. However, some participants felt as though they were living in a fishbowl under constant supervision. One participant said, "They have a jail system. It's sort of like that. Cameras all over the place." The presence of cameras made these participants feel on edge and fearful that at any moment they could face punishment for violating a rule or for their kids misbehaving.

Finally, participants commented on how the shelter having a reduced capacity due to the coronavirus pandemic helped them adjust to living in the shelter. One participant said, "No it feels comfortable. It's spaced out well. It's accommodating, from what I know. I don't feel like it's crowded." Several participants commented that the shelter was not crowded and they couldn't imagine how stressful the shelter would be if it was at full capacity. However, participants interviewed before the coronavirus pandemic who were part of the Texas state plan project did comment on stress related to crowding. They reiterated that factors related to the shelters being more crowded, such as increased noise levels, less space for their children to play,

and increased concerns over privacy and safety from other residents, made them feel on edge and constantly on guard.

Overall, participants commented on the importance of having a calm environment where their needs are met and they have the freedom to take care of themselves and their children. One participant described what she liked most about the shelter saying,

> I think the fact that it is calming, the fact that it's just a calming, quiet environment helps me out in a lot of ways because that's not something I've had in a long time due to my abuse. So I'm able to actually calm and sit and thing about things, and actually sit and work on what I need to.

Relationships Within the Shelter

In addition to factors noted within the interior space of the shelter, participants also cited relationships within the shelter as a source of stress. Participants frequently discussed how relationships with the shelter staff as well as other shelter residents either increased their stress or helped them feel more comfortable. In addition to relationships, participants also commented on several relational factors related to being in a communal environment were a source of stress. For example, participants were frequently concerned within their perceptions of privacy, safety, and judgment.

First, relationships with staff had the potential to either increase or decrease stress levels within the shelter. When staff were understanding and empathetic, participants described feeling calm and at peace. One participant at a suburban shelter described how she received some bad news about her health, and the staff member provided her comfort. She said, "She [advocate] let me cry for a while and she was like 'I'm here for you'". Another participant in a suburban shelter echoed the same sentiment saying, "The staff is really nice and really wonderful, really caring and very helpful." Alternatively, when staff weren't caring and supportive, participants reported feeling on edge and not welcome. One participant said, "I felt like there was a lack of solid

interest in what was going on as far as the staff members" (state plan survivor). The lack of understanding was echoed by several participants. One participant at a suburban shelter described her experience saying,

> Some of the staff, they could be a little bit better, especially ones that haven't been in a domestic situation. I empathize more with the ones that have, just because they understand my situation, especially when it comes out to my kids and the amount of kids I have.

Participants who had positive interactions with staff reported the interactions significantly helped their stress. However, for those who had negative interactions, their stress within the shelter was elevated. One way in which it elevated their stress was that they frequently felt judged by staff as a result of the negative interactions. Participants who were parents spoke frequently of their parenting being judged and this causing them significant stress. They felt they were unable to freely care and discipline their children without occurring some penalty from staff or comments from other residents. In addition, several survivors felt misunderstood by staff members who had not experienced IPV. One participant said,

> It feels, it seems like it's more judgmental and more of a bias basis to me and it has nothing to do with us as women in the situation where we're coming from and what we've been through. More on how we react or respond to them as people.

This participant felt that the staff did not understand the trauma she had experienced and therefore were biased towards her when she acted out at times or struggled to follow the rules.

Participants also described negative interactions with staff related to their privacy. For participants who struggled to get along with the staff, a main source of conflict was frequent invasions of privacy. Participants in one shelter also commented that staff frequently go through their private rooms and belongings to check for contraband which felt like a significant violation of privacy. One participant described staff coming into her room saying, "You're not getting privacy. You don't have a lot of privacy in here. People walk in your rooms. They're [staff]

supposed to know you first, but they were walking in the room." The disregard of staff for the participants' privacy caused participants to continually worry about someone coming into their rooms when they were not prepared. Conversely, when staff respected the participants' privacy, they felt safe and respected. One participant said,

> Oh yeah they [staff] do knock, it's not like they barge in. I tell my kids, nobody in our room, that's a rule. You don't go to nobody else's room. So our privacy is very well respected. And you have to sign a release so they could discuss information.

When staff respected the participants, they felt comfortable and safe. However, if participants felt judged and disrespected, they struggled to relax and trust the shelter staff.

Similarly, participants cited interactions with other residents another source of stress within the shelter. Several participants commented on fears related to cohabitating with people with mental health challenges or who appeared to abuse substances. One participant described her experience with other residents saying, "There are people who just start screaming like a crazy person. The start to curse in front of the children. There are all sorts of people here like I told you." Participants frequently felt on edge around other shelter residents who were unable to control their emotions or were on some sort of substance. The presence of cameras throughout the shelter had the ability to make participants feel safe. However, the majority of survivors felt that the safety measures in place around the shelter would keep them safe from their abusers, but they did not feel the safety measures would keep them safe from other residents. One suburban shelter resident said,

> So the fact that they don't do background checks and stuff and the people that come in here, it's a 50/50 chance they may be on something. Or you have may have had a person who is on something and probably got her kids taken away or something like that. It kind of scares me you know.

Several participants expressed the desire to have on-sight security guards to help keep them safe from other residents who might be unstable.

In addition, participants cited the need to protect their children from other residents as a constant stressor in their minds. One participant at a suburban shelter said, “I can’t stop anybody from basically taking my kid when I’m asleep if they person lives here and they don’t catch it on camera in time. She’s going to be already gone down the street somewhere.” Participants related stories of other residents yelling at their children, offering their children candy, and having to protect their children from other children as factors which greatly impacted their stress. These interactions between other residents and their children caused participants to have significant sleep disturbance because they were unable to lock their door at night to keep their families safe. One rurally based participant said,

> It makes me nervous about being asleep, because if I sleep too hard and somebody comes in my room, and things like that. My kids are there. And that’s nerve-racking to me, the fact that somebody could just walk in there.

Another participant echoed the same sentiment saying, “I feel safe in my room but I can’t lock it. That’s the only thing that bothers me.” The inability to lock their personal rooms caused significant stress for the majority of participants because they were afraid residents would enter without their knowledge and potentially harm their children. Overall, relational factors within the shelter significantly impacted participants and their stress levels. Relationships with staff and other residents had the ability to increase or decrease stress. In addition, safety concerns related to staff and shelter residents significantly impacted participants and caused them to feel on edge.

The Exterior Space

Similar to the interior space, participants also described factors exterior to the shelter which either helped increase or reduce their stress. All of the participants who were parents described the play areas outside for children and commented on the importance of having an outdoor space for the children. One rural participant said, “They have a large backyard with

swings and little different play toys for the kids to play with." Participants related that the playground allowed their children to play and get their energy out while it also gave the participants time to breathe and not have to constantly monitor their children. One suburban participant said, "They also have a little play park and that's very helpful because I need my daughter to get her energy out instead of trying to take a walk outside in the park there." Participants also enjoyed having an outdoor space where they could relax with other residents and smoke. One suburban participant said, "There's a smoking area that no children are allowed in there. It's free time for moms and stuff." These outdoor spaces allowed families to spend time together, exercise, and get some fresh air away from the at times chaotic interior environment of the shelter.

In addition, participants also appreciated the security measures present around the exterior of the shelter. Participants spoke frequently of doorbells, cameras, gates, and fencing which helped them feel safe while they were outside with their children. One rural participant said, "They have a privacy fence behind [the playground] so it's very secure, it a nice little set up back there." Another participant echoed appreciation for the security features saying, "'I like the fact that there is gating and what not." These safety measures also increased their overall sense of safety within the shelter and decreased their stress levels. The safety features, combined with the freedom to be outside helped participants to feel safe and calm in the exterior space of the shelter.

The Shelter Location

Finally, participants commented on factors due to the locations of the shelters which impacted their stress. Participants spoke frequently of the location of the shelter itself and how that impacted their mobility. One suburban participant said, "The location is the biggest thing."

Three participants staying in rural shelters commented on how the location greatly impacted their ability to get to their work or activities around their place of origin. One rural participant said,

> It's taking me a lot longer to get anywhere. It's an hour from my residence where I was living, and an hour even from [the major city]. So, just takes a lot longer to commute. I've only been a couple of days. I'm just trying to get a lead on my goals and everything right now, so I'm making the commute, but it's a little bit more if a challenge due to the commute, gas and everything, the wear and tear on the car and stuff.

The rurality of the shelter also presented challenges with accessing other services, such as counseling and healthcare. One rural participant said, "There's really not a hospital out there. If there is, I don't know where it is at. Just hypothetically, if there was an emergency, it's way out there."

Participants with and without a vehicle expressed transportation challenges both due to being in an unfamiliar area as well as the lack of available transportation or the inability to afford the costs associated with transportation. Two participants talked about how being transplanted into a new area increased their stress since they were unsure how they would get back to their jobs. One of them said,

> I've just started yesterday and I'm trying to figure out how I'm going to get to and from work for the next week, because this program that I'm in, they don't really help with transportation. I'm just like, "I don't know what I'm going to do (suburban survivor).

Heightening the stress of being in a new area was the lack or unfamiliarity with public transportation or other transportation resources. Participants in rural areas commented that there was no public transportation and the transportation resources available to them were often too costly to be feasible. For participants in suburban areas, public transportation was available, however they struggled to navigate the complex transportation systems in order to get where they needed to go. Furthermore, two participants commented they faced challenges getting on the bus. One suburban participant said,

> I didn't know how to use it [the bus]. So I'm on the bus looking stupid. I was like "where do you put this little thing? Where do you put the money in?' And the bus driver looking at my like, girl. It's like girl you come out here. I'm just like, 'I ain't from around here. Don't be looking at me like that and be judging me'.

In order to get around, participants frequently had to rely on friends and family to come and pick them up to take them to resources and employment opportunities. Friends and family members would either come to the shelter to pick up participants and participants would meet them at a location away from the shelter or for some family members loaned them a vehicle so they could get around. In addition, participants also commented that they would sometimes get rides from other residents. One suburban participant said, "It's hard to get around, but I mean, I also have a couple of friends who have cars too, so I take rides with friends." Several participants commented that even though they had a vehicle, they struggled to afford the gas to get to places. One participant said, "I just need to basically get the transportation. My problem is the gas and trying to get around" (state plan survivor). Another survivor echoed the same sentiment saying,

> I have a car. It's just trying to, like I said, get back and forth to where the least gas is high. I get where I need to go. I might be on E but I'm going to get there (state plan survivor).

Overall, transportation and mobility presented a significant stress to participants both in rural and suburban areas.

Participants who were based at suburban shelters commented how the neighborhood around the shelter made them feel unsafe. Several participants talked about being fearful of leaving the shelter due to beliefs that they could be assaulted of robbed because the neighborhood was not safe. One suburban participant said,

> It's right in the hood. We could walk past, walk right past a meth-head or something like that. Ghetto. So it's like a mess because I have no choice where I live. But I would like to be in a better area. So it's like a conflict.

In addition, being in an unfamiliar city greatly increased the stress of several participants. They commented that they were fearful of exiting the shelter because they could get lost and not be able to find their way back. However, participants commented that they were appreciative of the shelter being located in a suburban neighborhood because they were closer to shopping, public transportation was available, and for parents their children's school was very close. Four participants appreciated that they could walk to access different shops and restaurants. One suburban participant said, "I mean it's a pretty good location, because you're within a mile of shopping. If you want to go shopping, get food or whatever…" Another suburban participant commented that she appreciated being so close to her child's new school, saying "Where my son is in school is just outside. I can look out my patio and see his school."

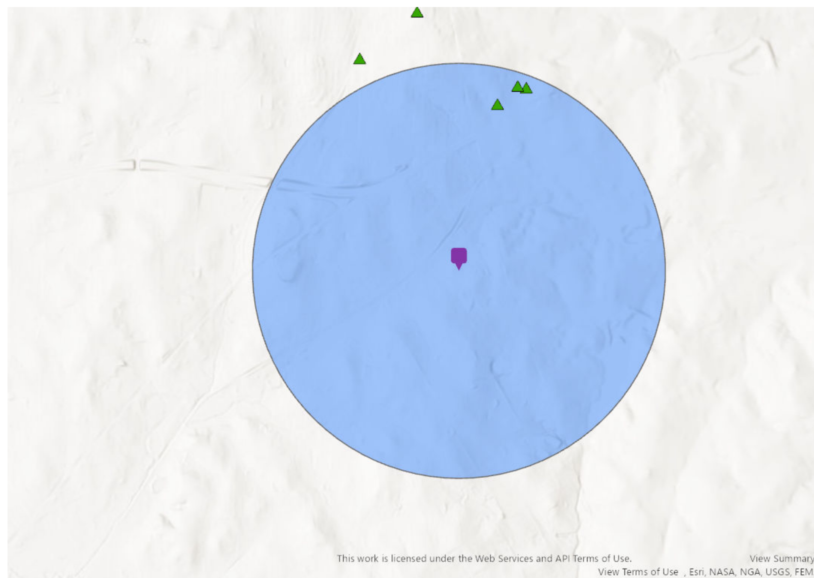
Spatial analysis results

Challenges with mobility and transportation resources as well as challenges associated with the physical location of the shelter itself presented significant stress to participants. To give additional insight in the stressors associated with the location of the shelter, spatial maps were created of the surrounding areas of the shelters at one mile and five miles intervals to highlight healthcare facilities, employment opportunities, and transit stops given these items were frequently mentioned in the qualitative interviews.

Resources within one mile. Spatial maps were created to reveal employment locations, healthcare, and transit stops within one mile of the three shelter locations. The maps reveal significant differences between the three locations in available employment and healthcare options. The rural shelters both have significantly less employment opportunities (shelter 1: $n = 3$, shelter 2: $n = 0$) when compared to the suburban shelter ($n = 26$). In addition, the rural shelters did not have any healthcare resources within a mile of the shelter when the suburban shelter had

a hospital within one mile of the shelter. Finally, in terms of transportation, the shelter locations were similar in that there were no public transportation stops within one mile of the shelter[3]. See Figures 1, 2, and 3 for maps of the one-mile buffers around the three shelters[4].

Figure 1. *Rural shelter one: One-mile buffer.*



[3] The address used to represent the suburban shelter is the public address for a non-profit that operates two shelter locations. One of the locations is in a suburban city that does not have any public transportation, while the other is in a city that does have public transportation. The public address is in the same city as the shelter that does not have transportation. Therefore, no transportation stops were found. However, in the qualitative results, participants were recruited from the shelter that does have public transportation resources available. Therefore, the findings related to bus stops and public transportation are from participants who resided in the suburban shelter with public transportation.

[4] Legend for the maps: purple squares represent the shelters, green triangles represent employment locations, blue square with "H" represent hospitals, red circle with "+" sign represent clinics, and orange circles represent transit stops.

Figure 3. *Rural shelter two: One-mile buffer.*

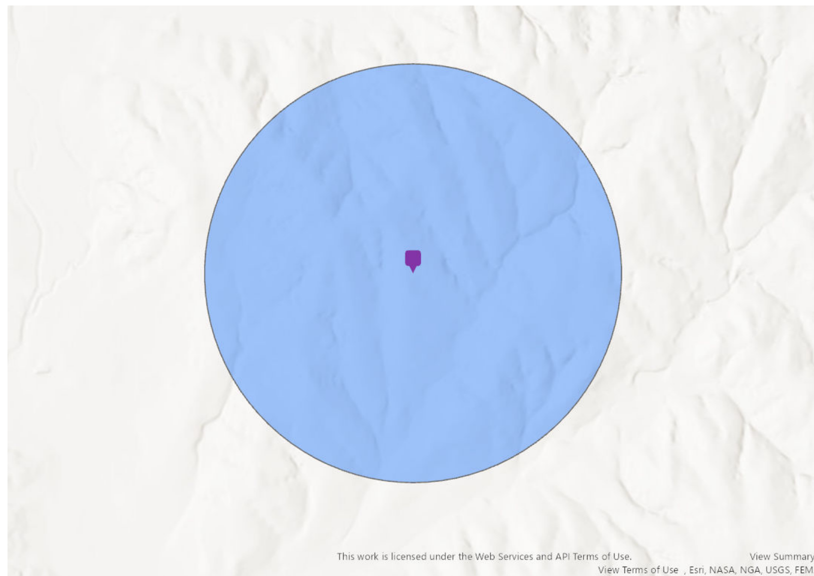
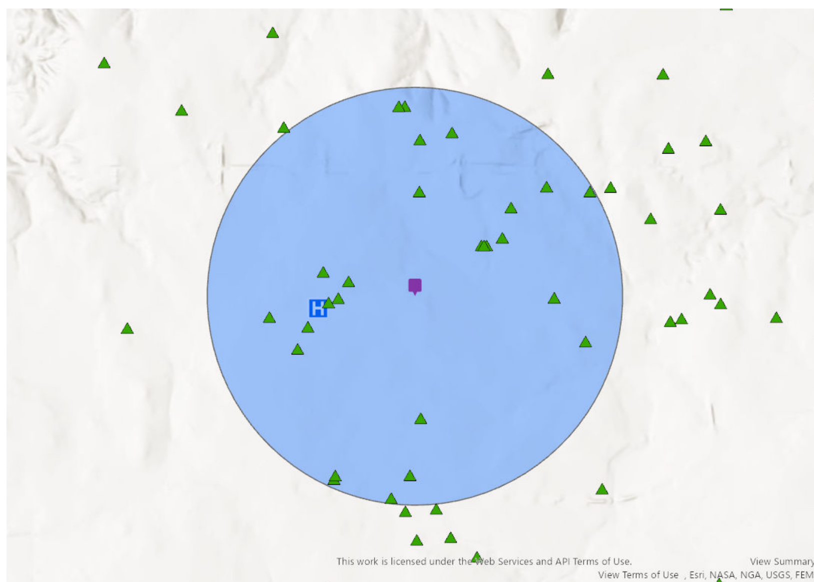


Figure 5. *Suburban shelter 1: One-mile buffer.*



Resources within five miles. Maps created with five-miles buffers around the shelters revealed even more significant differences between the rural and suburban areas. Employment options increased for both of the rural shelters (shelter 1: n = 24, shelter 2: n = 14). In addition, a healthcare clinic was within five miles of shelter 2. However, for the suburban shelter, employment options exponentially increased to over 100 locations. Furthermore, two additional

healthcare options were within five males of the suburban shelter. Similar to the one-mile buffer, no transit stops were located within five miles of each of the shelters.

Figure 2. *Rural shelter one: Five-mile buffer.*

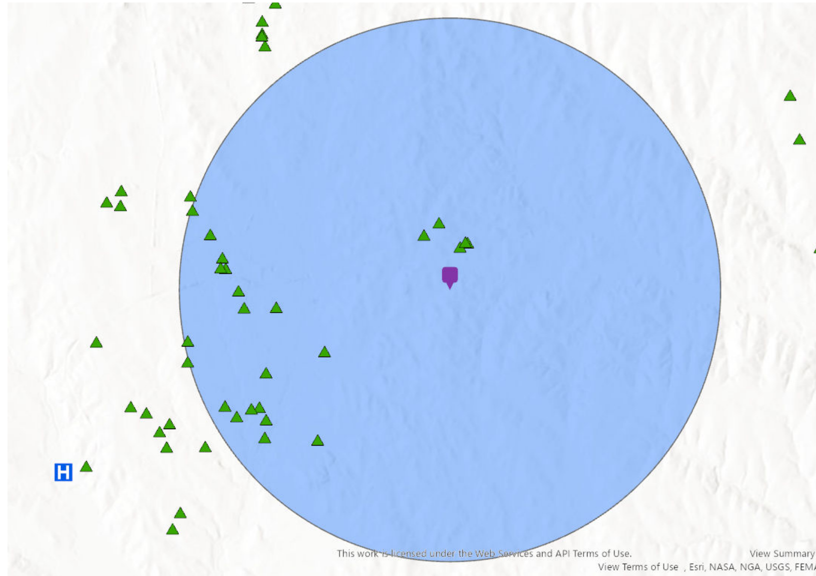


Figure 4. *Rural shelter two: Five-mile buffer*

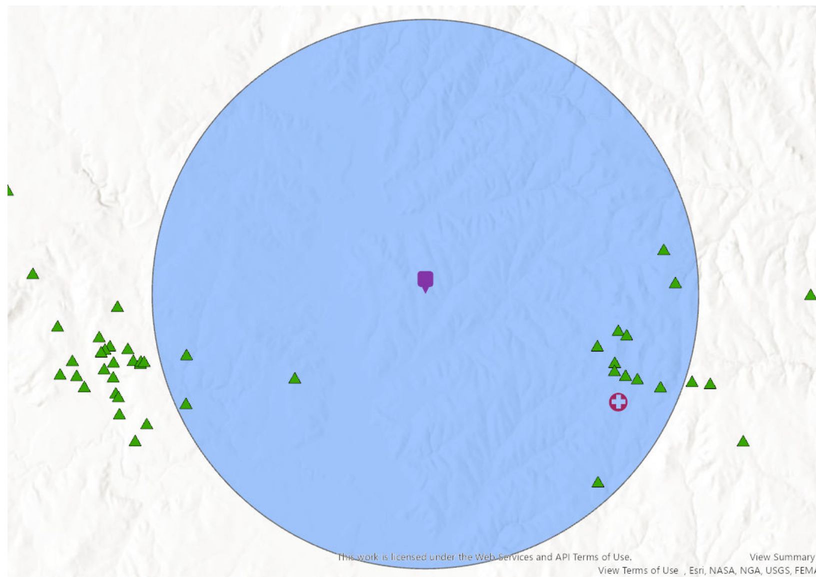
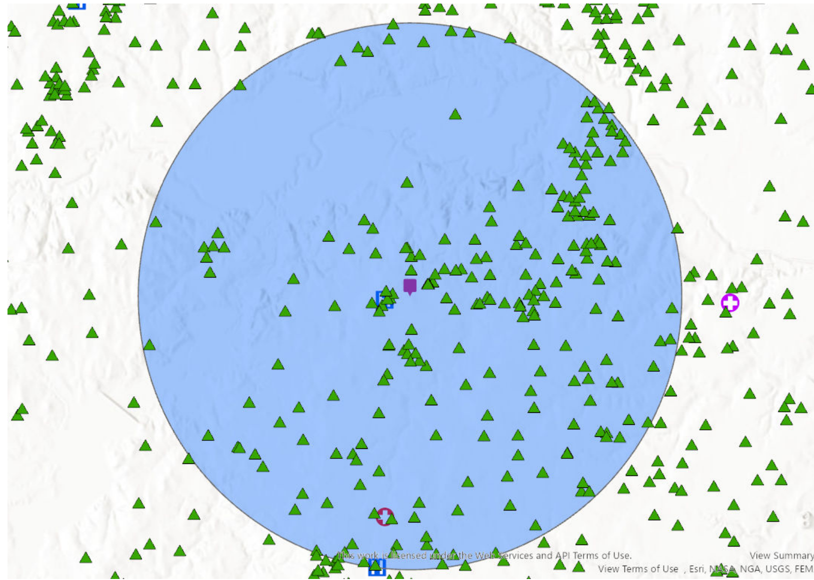


Figure 6. *Suburban shelter 1: Five-mile buffer.*



Rural and Suburban Differences

Rural and suburban differences were noted most frequently in two areas. First, participants staying at the rural shelter explained that the shelter was open to male and female survivors as well as persons experiencing homelessness. They explained this was due to the lack of resources in the rural area so people needing assistance with housing all came to the same place. Participants staying in this shelter felt significantly more stress due to the presence of males. Although males were housed on the first floor, and were instructed to not go upstairs, there were no physical boundaries which prevented males from going upstairs. Participants also experienced additional stress due to cohabitating with persons who had not experienced IPV. They frequently felt misunderstood when they would struggle to socialize with residents that didn't understand that they had just experienced a significantly traumatic event. This caused them to either stay in their rooms in order to avoid conversations or in one participant's experience, confront another resident who didn't understand what she had been through. The

presence of males and the inability of residents who had not experiences IPV led to residents in the rural shelter to encounter additional stressors.

Second, rural and suburban differences were noted in the stress related to mobility. For participants staying in the rural shelter, there was no transportation available, and services often required them to travel long distances. However, they felt safer because they were farther away from infrastructure and felt as though they were well hidden from their abusers. For participants staying in the suburban shelters, they expressed they were frequently able to leave the shelter and utilize transportation resources to get around. However, they perceived their safety outside of the shelter as more tenuous due to being in a high traffic area. They were more concerned about their abusers spotting them while they were waiting for public transit or making their way back to the shelter.

Finally, spatial mapping revealed significant differences in opportunities between rural and suburban areas. Rural areas had significantly less employment and healthcare options within walking distance while the suburban areas had plenty of opportunities available. For participants who were transportation disadvantaged, spatial mapping furthers the impact that lack of transportation can have on stress levels for shelter residents. The inability to access healthcare and employment in a timely manner has the opportunity significantly delay the completion of goals and therefore inhibit a shelter resident's journey to economic independence.

Measurement Development

Having identified factors within different aspects of the shelter which can either promote or mitigate stress, questions were then generated to best represent those factors to formulate a scale. Scale items were selected based on the frequency they appeared in the qualitative data as well as the intensity with which participants experienced the stressor. The first version of the

scale was divided into four subscales which were indicative of the themes generated during the qualitative analysis: the interior space, the exterior space, the shelter location, and relationships within the shelter. Given that participants most frequently identified stressors within the interior of the shelter itself, 22 questions were created for that subscale. The exterior space subscale contains five questions. The location subscale contains six questions. Finally, the relationships subscale contains eight questions. The scale was titled *Perceptions of Environmental Stress in Domestic Violence Shelters Scale.* See appendix C for the first draft of the scale.

Validation Interviews

Interviews were conducted with three survivors, two advocates who work in shelters (one case manager and one shelter director), and three content experts who research housing. Two experts have extensive experience conducting research on IPV residential services and the other is director of a non-profit which primarily conducts research on shelters for persons experiencing homelessness. All seven participants provided feedback on the developed measure using their experience and their background.

Survivor feedback

Three survivors reviewed the factors used to create the measurement as well as the finalized measurement. Survivors provided feedback on the importance of certain items to be included within the measure. One survivor highlighted the importance of the questions related to staff members and reiterated that during her experience in the shelter she had several negative interactions with staff which greatly increased her stress level. All three survivors commented on the noise levels and highlighted the importance of the sleep questions within the measurement. Two survivors discussed the questions related to food and both reiterated the importance of having good quality food within the shelter. Finally, all survivors reiterated their fears related to

living with people they didn't know. All three survivors related experiences of conflicts or residents being on drugs which increased their stress levels and made them fearful for their kids. They highlighted the importance of keeping those questions within the scale.

Survivors were also asked if there were any factors missing from the measurement. One survivor noted that the stress of being a parent within the shelter was particularly challenging. She commented that having to constantly monitor her children while completing chores within the shelter was very stressful. She said, "Bringing my kids into the institution was a whole different ball game." She suggested adding questions related to the availability of day care as good indicators of stress. In addition, another survivor highlighted her challenges getting her children into school. She related that she had moved from a different state in order to get away from her abuser and really struggled getting her children into school near the shelter.

Finally, survivors were asked about the general format of the scale. They were asked if the scale was easy to complete, if the format made sense, and if they would have any challenges completing the scale. All three participants commented that the scale was easy to read and understand. They all felt the scale was acceptable in its current form. Overall, the survivors' feedback was positive. One survivor even commented on the importance of the scale in terms of helping survivors express the trauma they have experienced. She said, "I'm still wigged out in my head about who is watching me, because I was hunted by my ex-husband for 10 years" and discussed how she didn't realize being watched in the shelter would be triggering. She said it was only in hindsight that she was able to realize why the shelter experience triggered her. She felt the scale would help survivors have increased self-awareness about their feelings and also help advocates recognize when survivors are struggling.

Advocate feedback

Two advocates currently working on shelters were also asked to provide their feedback on the *Perceptions of Environmental Stress in Domestic Violence Shelters Scale.* The advocates provided feedback on what is potentially missing from the measurement as well as the potential for the measurement to be used with survivors currently in shelter. In terms of what was missing from the scale, one advocate suggested adding more questions related to the stress of being a parent in shelter. She commented that survivors in shelter who are parenting their children are often overwhelmed with the fact that their children must be supervised at all times. She talked about how the shelter has strict rules that do not allow parents to watch children that are not theirs due to safety concerns. So, shelter residents often feel overwhelmed with watching their children while also trying to accomplish their goals. She said this adds significant stress and is an important facet of shelter life. The other advocate also shared a factor that was missing from the measurement. She commented that cultural factors need to be considered within the measurement as well. She related that shelter residents often feel increased stress when they enter the shelter and don't speak English well or their racial or ethnic group is not represented within the shelter. The advocate identifies as a Latinx female who is also bilingual in Spanish. She related that her clients are often relieved when they are able to speak to her in their native language and they feel comforted that their cultural values will be respected. She suggested a question related to cultural competence or cultural representation be added since these factors can increase stress levels in shelter residents. Overall, both advocates felt the rest of the items were appropriate for the measure and agreed the constructs within the measure had the potential to increase or mitigate feelings of stress among shelter residents.

Advocates also provided feedback on the usage of the measurement within the shelter and the possibility of using the measurement with survivors. Both advocates felt the measurement could help give them additional insights into the different types of stress survivors feel when they are in shelter. They commented that survivors are often very stressed while in shelter and although the advocates try to work with them to understand their stress, some are resistant. They commented that taking a survey would be a simple way to help break through any walls survivors have. Overall, they felt the measurement in its current form would be easy for survivors to take and it would be a useful tool within the shelter.

Content expert feedback

Finally, content experts who research housing among vulnerable populations were asked to give their feedback on the measurement. Three content experts were interviewed: two professors who research housing for survivors of IPV and one director of a non-profit who conducts research with persons experiencing homelessness. Experts provided their feedback on the structure of the measurement as well as the questions themselves. They also suggested changes that could be made to expand the measurement to other environments besides IPV shelters.

First, the experts gave their feedback on the structure of the measurement. All of the experts felt the scale was too long and should be edited so that it could be completed quickly. They also felt that the scale was too heavily focused on the interior space and should be revised so that the questions are more evenly distributed. They also were unsure about how the Likert scale was structured for the measurement. One expert suggested the Likert scale categories to be revised to aid in scoring the measurement. She suggested changing the categories to include a percentage of affect so when scored the scale could indicate the degree to which a participant is

affected by a particular stressor. Finally, they all commented on the inclusion of both positively and negatively worded questions. They cautioned having too many questions worded a particular direction as it would confuse persons while they are taking the scale.

In addition to the format of the scale, they also suggested revisions to the individual questions themselves. Experts had mixed feedback on the importance of some questions over others. For example, the experts were conflicted over the inclusion of the question related to washer and dryer access. Some felt the question was irrelevant as some shelters do laundry for residents while others felt the question was an important part of autonomy within the shelter space. They also had suggestions for combining questions that were essentially measuring the same construct in order to reduce the number of items on the scale.

Finally, the experts suggested incorporating additional questions and a subscale. The experts suggested adding questions related to cultural awareness within the shelter in order to capture survivors' perceptions of their safety from racial bias or judgment. They also suggested adding questions for persons with disabilities and if those disabilities were accommodated. Lastly, the experts suggested adding a subscale for questions related to children and parenting stress within the shelter. They commented that some shelter residents might not have children with them in shelter, so adding a separate subscale for children that could be omitted for participants without children would make the measurement stronger.

Overall, the experts felt the scale would make a significant contribution to the field and to the understanding of survivors' stress within shelter environments. They also suggested revising the scale for other housing environments, such as transitional housing programs and shelters for persons experiencing homelessness. They felt that very little is known about how survivors

perceive the shelter itself and what impacts they have to their mental health as a result of being in the shelter environment.

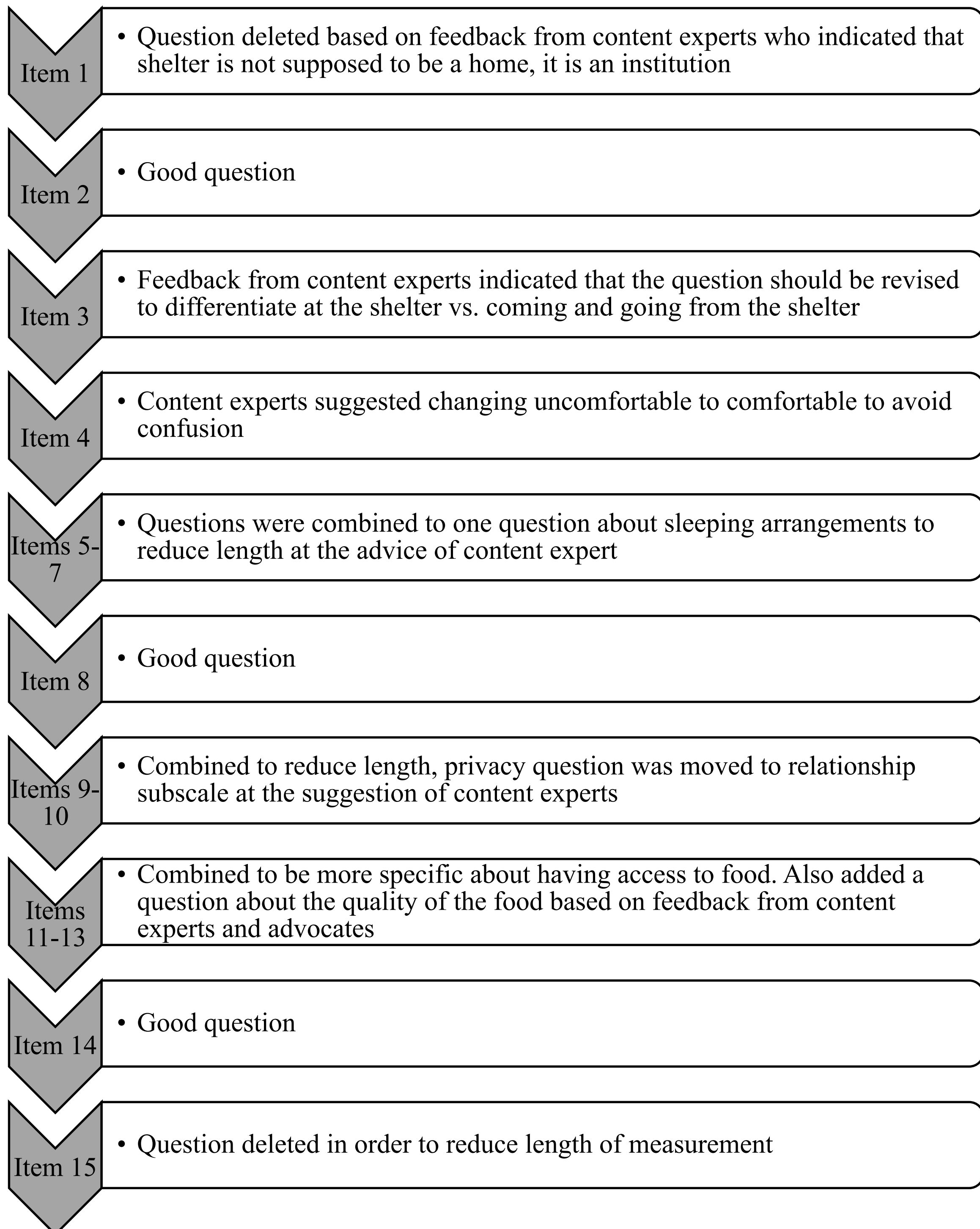
Revised Measurement

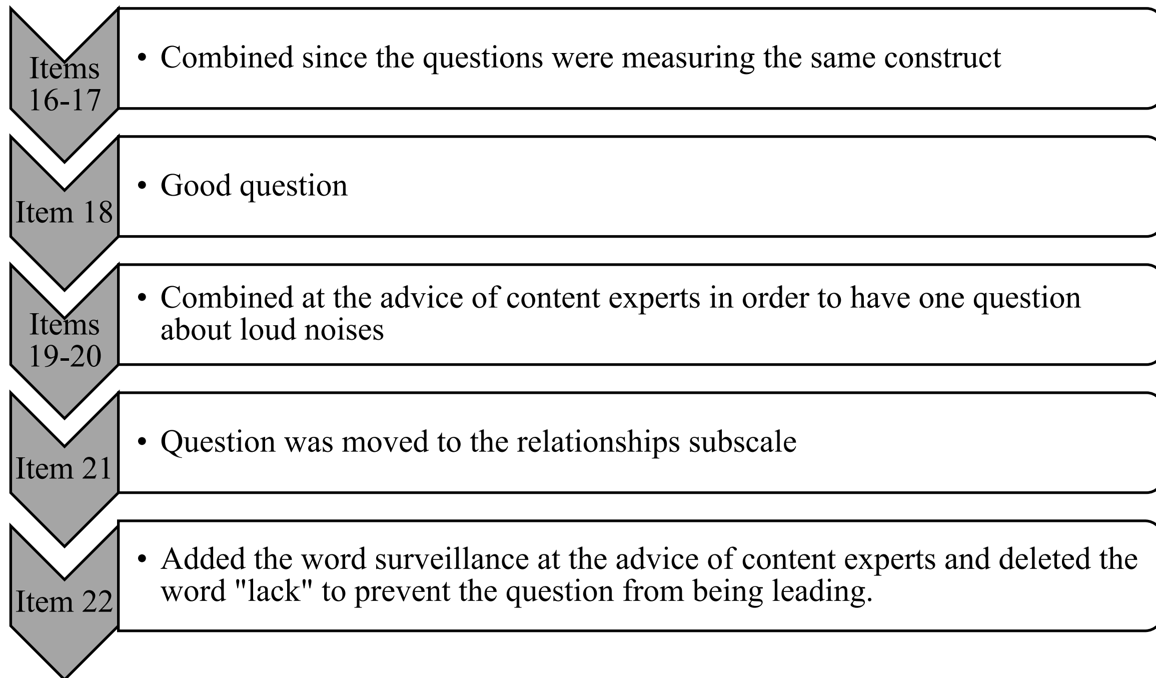
Feedback from the expert panel was used to revise the scale. Based on feedback, several questions were eliminated or combined with other questions to reduce the number of questions. See appendix D for a flow chart of the feedback and revisions made to the measurement based on the feedback.

Interior and exterior space

Feedback from the expert panel revealed that the items listed in the interior space subscale needed to be reduced in order to be closer to the number of items in the other subscales and reduce the length of the scale overall. Several items were deleted due to the repetitiveness of the constructs or the lack of applicability to the shelter environment. In additional, questions related to children were moved to a subscale in order to prevent confusion related to scoring items for people that don’t have children. A detailed description of item revisions is presented in Figure 7.

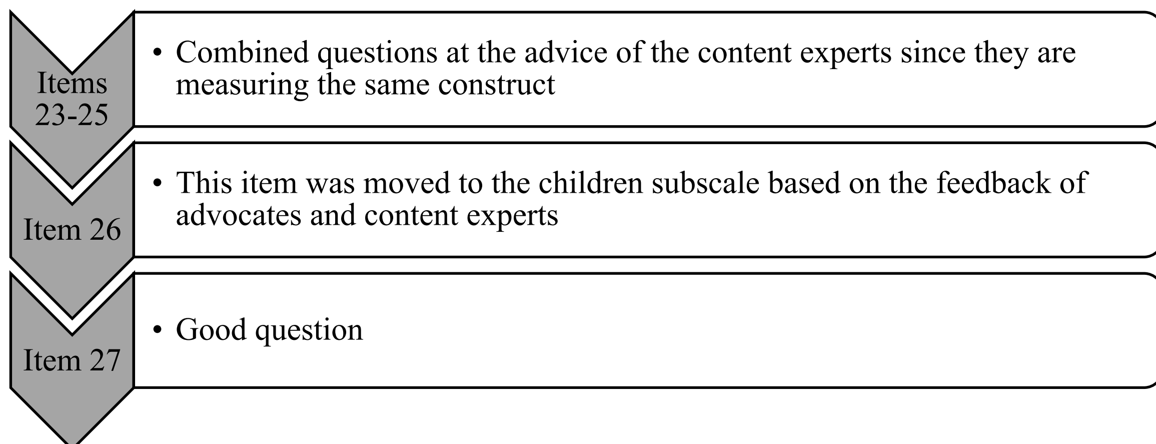
Figure 7. *Interior space item revisions.*





After revisions to the interior space scale, it became clear that it might be best to combine the interior and exterior subscales in order to reduce the length of the measurement and have a single subscale related to the shelter itself. The original exterior space subscale only contained five items. Those items were then reduced to two items focused exclusively on the availability of outdoor spaces. Revisions to the exterior space subscale are presented in Figure 8.

Figure 8. *Exterior space item revisions.*

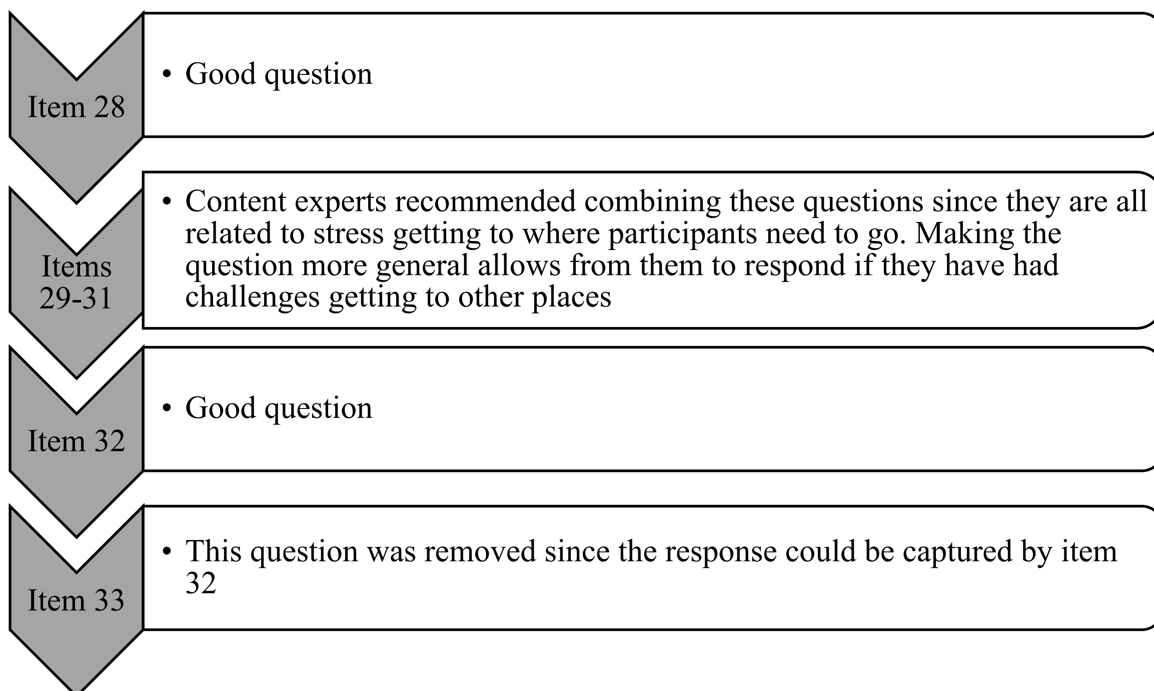


The final version of the interior and exterior space subscales, now titled the shelter space subscale, contained 15 items.

Shelter location

Feedback from the expert panel was mostly positive. The panel felt that the length of the subscale was appropriate and the constructs within the subscale were important factors related to stress from the location of the shelter. The questions in this subscale were mostly revised in order to capture accurate information about stress related to the location of the shelter. A couple of questions related to mobility were combined and revised. In addition, two questions were added, one related to using expensive transportation to get to and from the shelter and one general question about being about to freely come and go. See Figure 9 for revisions made to the shelter location subscale.

Figure 9. *Shelter location item revisions*

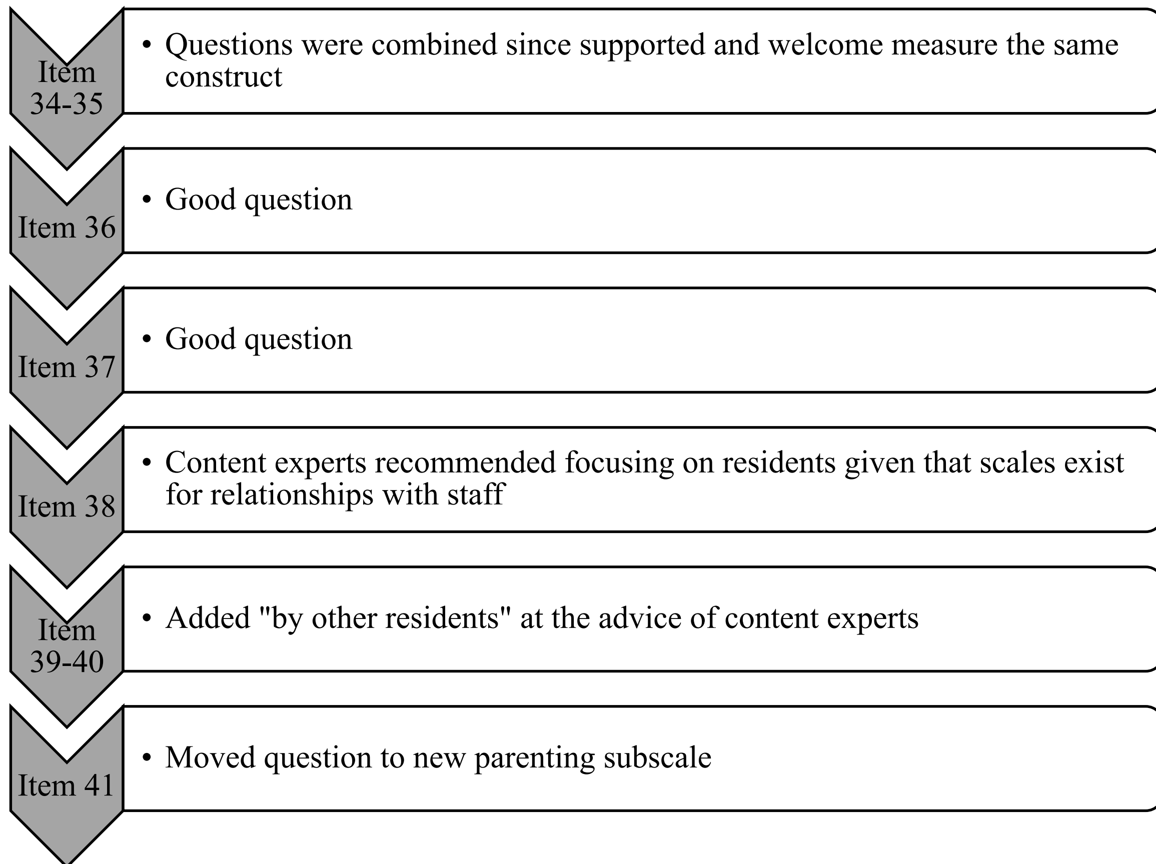


The final version of the shelter location subscale contained five items related to stress occurring from transportation and mobility challenges.

Relationships within the shelter subscale

The relationships within the shelter subscale received the most feedback from the expert panel. Survivors, advocates, and content experts all talked about the relationships within the shelter and how those have the potential to increase stress levels. Survivors related stories of being fearful of other residents within the shelter. Advocates talked about how conflicts between residents have the potential to increase stress. Finally, the content experts suggested that since there are several scales about relationships between residents and staff, the purpose of this subscale should be to explore the impacts of the relationships between residents in the shelter. Therefore, this scale was revised to be more focused on relationships between residents and less emphasis on relationships between staff and residents. However, one question related to residents feeling watched by staff was included as that was frequently mentioned by survivors on the expert panel as well as study participants. Questions related to privacy were shifted to this section as participants within the study spoke frequently about there being a lack of privacy in the communal living environment. Finally, based on feedback from the expert panel, a question related to social and cultural identities was added. Revisions to the relationships within the shelter subscale are presented in Figure 10.

Figure 10. *Relationships within the shelter item revisions.*



Parenting in the shelter subscale

Based on feedback from all members on the expert panel, an additional subscale was also added to represent stressors related to being a parent in shelter and caring for the needs of children. Survivors and advocates spoke of the stress of having to constantly monitor children while staying in a shelter. In addition, content experts described hearing stories from residents who felt that being in the shelter often took away their authority as a parent. Finally, items related to children's experiences of the shelter were moved to this subscale. The parenting shelter subscale contains six questions and is only taken if the participant had children staying with them in shelter.

Scoring the *Perceptions of Environmental Stress in Domestic Violence Shelters Scale*

The finalized *Perceptions of Environmental Stress in Domestic Violence Shelters Scale* is presented in appendix E. Similar to *The Perceived Stress Scale (*Cohen, Kamarck, & Mermelstein, 1983) and *The Perceived Housing Stress Scale* (Campagna, 2016), the *Perceptions of Environmental Stress in Domestic Violence Shelters Scale* is scored by summing all of the responses together. Values are assigned to each response on the Likert scale with never = 0, almost never = 1, disagree = 2, sometimes = 3, fairly often = 4, and often = 5. In order get an accurate score, some questions have to be reverse coded. Those items are questions 1-5, 7-11, 14, 18-19, 21-22, 25, 31, and 33. Additionally, if the participant does not have children, they are directed to omit answering the parenting in the shelter subscale. For this scale, higher scores indicate high levels of environmental stress.

Chapter 6: Discussion and Conclusion

The aims of this study were two-fold: first to identify environmental stressors present within IPV shelter environments and second, to develop a measurement to capture the impact of those stressors on various outcomes for survivors residing in shelters. Participants in this study highlighted several factors about the shelter environment which either induce stress or help mitigate stress and promote their healing. The factors were identified in four areas of the shelter: the interior space, exterior space, relationships within the shelter and the location of the shelter itself. These factors were incorporated into questions which were grouped to formulate a measurement of environmental stress. The measurement was then reviewed by survivors, advocates, and content experts for content and face validity. The panel of experts provided feedback that was used to revise the measurement. In its current state, the measurement, now titled *Perceptions of Environmental Stress in Domestic Violence Shelters Scale,* is ready for quantitative testing.

This study is the first study known to the author which has attempted to capture environmental stressors present in IPV shelters. Participants spoke of four key areas when asked to describe the shelter: the interior space, relationships within the shelter, the exterior space, and the location of shelter. Factors within these spaces either increased stress or promoted healing. First, participants frequently described their own personal spaces. Participants felt that having comfortable accommodations, such as bedding and pillows, and an organized environment helped them to feel calm within a potentially chaotic environment. In addition, having this space be a private space where they could be with their kids as a family was critical to navigating shelter life. This finding demonstrates the impact having autonomy and control within a space has on mental health. For survivors of IPV, their autonomy has been significantly diminished by

their abusive partners, the ability to have a private space of their own that they can manipulate to suit the needs of their families could help them regain their sense of control over their environment. Additionally, the ability to organize and create a clean space could improve their mental health.

This study also identified several stressors present within the shelter that are already known to exist in other healing spaces, such as noise levels (Evans, 1984; Evans & Stecker, 2004; Honold, Beyer, Lakes, & van der Meer, 2012), temperature (Harris, Ross, McBride, & Curtis, 2002), and crowding (Chambers, Fuster, Suglia, & Rosenbaum, 2015; DeCelles, DeVoe, Rafaeli, & Agasi, 2018; Regoeczi, 2003). These factors had the ability to impact participants positively or negatively. These findings demonstrate the environmental stressors present in other environments function similarly in shelter environments. Therefore, in designing shelters, practitioners should look to designs of hospitals and other healing spaces to help mitigate these stressors and reduce the impact they could potentially have on the mental health of survivors in shelters.

Relationships within the shelter presented significant challenges for participants. Participants were mostly concerned with other residents and expressed many different fears related to living with people they didn’t know in an unsecure environment. Particularly of interest, participants commented that they frequently felt judged by other residents, especially from those who had not experienced IPV. In addition, participants were also concerned with staff watching them and invading their privacy. This finding demonstrates the importance of being surrounded by people who promote healing intentions (Jonas et al., 2014; Sakallaris et al., 2015). Being around people who are not supportive, unstable, and judgmental significantly impacted the healing of participants by impacting their stress levels. Participants reported experiencing more

stress if there were conflicts or a lack of disrespect and distrust of the residents around them. Shelter staff should recognize the impact that relationships within the shelter have on stress levels. Staff have the ability to model supportive behavior to other residents as well as promote healing intentions within the residents by providing encouragement, respect, and stability. In addition, having every resident of the shelter be a survivor could foster common healing goals and prevent judgment or bias from those who have not experienced IPV. Being surrounded by people who encourage healing and model healing behaviors could help survivors recover from the trauma they have experienced (Beach, Keruly, & Moore, 2006; Grosso, 2010; Neri et al., 2011; Robles & Kiecolt-Glaser, 2003).

Another relationship that was highlighted as a source of stress was the parent child relationship. Participants who were parents expressed significant challenges managing their children within a communal environment. Participants related their fears of having their children around other residents who were potentially dangerous. They also had concerns about their children playing with other children and what behaviors their children would glean from other children who had witnessed trauma. Furthermore, the stress associated with having to constantly monitor their children created significant stress. Participants discussed having to complete chores and attend meetings while having to watch their children. Frequently participants were concerned that if they were not about to keep up, they would face punishment or be exited from shelter. This finding demonstrates the significant impact that parenting and surveillance from staff related to parenting within the shelter has on survivors' mental health (Fauci & Goodman, 2019). This finding has important implications for parenting within the shelter. Shelter staff need to recognize that parents may struggle with keeping up with their children while simultaneously getting the services and support they need to heal themselves. Programming for children as well

as having plenty of toys and games for children to play independently in their private rooms are critical resources to help mitigate stress for parents and give them some space to themselves while their children. In addition, shelter staff need to recognize that parenting after a significant trauma can be very challenging and be supportive of parents rather than overly critical.

One factor which helped mitigate stress related to relationships within the shelter as well as assisted parents was having plenty of outdoor space for shelter residents to socialize and for children to play. Participants frequently described outdoor spaces, such as playgrounds, outdoor activities, and smoking areas as a factor that helped reduce their stress. Participants were able to sit outside and get some fresh air while their children played and got their energy out for the day. The impact of being outdoors on mental health demonstrates the impact of nature on healing. Having access to nature has found to be restorative and reduce stress to base levels (Bailey, 2002; Diette, Lechtzin, Haponik, Devrotes, & Rubin, 2003; Perkins, 2013; Ulrich et al., 2003; Ulrich et al., 2008; Weeks, 2004). Therefore, these spaces are critical resources for shelter residents who are healing from trauma.

In addition to having an outdoor space, having the exterior environment of the shelter be perceived as a safe environment was critical. Participants appreciated having security features outside like gates, privacy fences, and cameras. These features helped participants to feel safe outdoors and not worry about their abuser finding them. The juxtaposition of the perceptions of surveillance between indoor and outdoor areas reveals insight into survivors' needs regarding safety and security. Within the exterior environment, participants desired more security due to safety concerns about being outside of the shelter. However, within the shelter, particularly within their private spaces, having security features felt like an invasion of privacy. Understanding survivors' beliefs and perceptions about their safety needs is important in creating

shelter spaces that are safe and meet survivors' needs. Considering reducing the security within the shelter while still maintaining outdoor security features might be a way to give survivors feelings of safety without invading their privacy.

Lastly, these findings have implications for the location of shelters. When considering the location of a shelter, practitioners should consider the impact the neighborhood will have on survivors and their ability to get where they need to go. Participants in rural areas struggled with the lack of infrastructure around the shelter, but appreciated the safety afforded to being in a rural area. Participants in suburban areas liked being close to shops and restaurants as well as having public transportation to help them get around, but they experienced stress as a result of being in a high traffic area that was potentially unsafe. Neighborhood quality has been found to impact the mental health and neighborhoods that are poor in quality are perceived to be more dangerous and violent (Beyer, Wallis & Hamberger, 2015; Cunradi, Caetano, Clark, & Schafer, 2000; Miles-Doan, 1998, Miles-Doan & Kelly, 1997; Pearlman, Zierler, Gjelsvik, & Verhoek-Oftedal, 2003). Therefore, taking into consideration the location of the shelter is critical. If the location presents a challenge to mobility, practitioners should consider incorporating transportation resources to reduce survivors' stress (Lee & Glenmaye, 2014; Okohio et al., 2017). If the neighborhood surrounding the shelter is poor in quality and could be perceived as unsafe, shelter staff should consider incorporating additional safety features to the exterior of the shelter to help survivors feel safe outside. In addition, providing survivors the opportunity to be picked up by friends and family at the shelter location rather than having to meet offsite or providing an escort to public transit stops could increase survivors' safety and reduce their stress levels.

The results of this study also highlight the importance of studying the impact of the built environment of the shelter on survivors (Grieder & Chanmugam, 2013). Participants in this study spoke frequently of the impact of the environmental stressors on their experiences in shelter and how those stressors either retraumatized them by reminding them of their experiences with abuse or made it challenging to gain positive outcomes from the shelter. In addition, survivors highlighted health promoting aspects of the shelter which aided in their healing. These factors point to the importance of designing a shelter space that mitigates stress and promotes healing from trauma (Jonas et al., 2014; Sakallaris et al., 2015). By creating a supportive environment, survivors are more likely to be able to positively receive the services they need to regain their independence (Grieder & Chanmugam, 2013).

Limitations

This study is not without limitations. This study encountered many challenges since it took place during the coronavirus pandemic. First, recruitment was challenging given the inability to go to shelters and conduct interviews in person. In addition, shelters had to significantly reduce their capacity during the pandemic to comply with social distancing regulations. Finally, staff were significantly impacted during the pandemic and did not have the bandwidth to assist with recruitment. Therefore, this study is based on a small number of participants. While the incorporation of additional qualitative data collected from a previous study aided the analysis, future researcher is necessary in order to gain more insight into environmental stressors present in shelter.

In addition to challenges with recruitment, the results of this study are primarily based on survivors' experiences in shelter during the pandemic. Safety measures incorporated in order to keep survivors safe and healthy in the shelter had the potential to augment survivors' perceptions

of the shelter. For example, due to social distancing the shelters significantly reduced their capacity which had the potential to make the shelter a less crowded and quieter environment. Data from before the pandemic indicated that crowding and noise levels had the potential to severely impact survivors' stress levels while in shelter so the results of this study should be taking within the context of the pandemic. Future research is necessary to determine if the stressors noted before the pandemic resurface and increase survivors' stress levels. Finally, this study was unable to quantitatively test the measurement to determine if it is a valid and reliable measurement. Additional testing is necessary to determine the scale's use with shelter populations.

Implications for Social Work Policy and Practice

The results from this study have several impacts to social work policy and practice. This study identified environmental stressors present within IPV shelters. This information can be used to inform grants and funding sources related to the development and improvement of IPV shelters. Understanding environmental stressors within the shelters can lead to the identification of changes that could be made in existing shelters, such as improving current facilities by adding new furniture or noise reduction tools to reduce stress. Furthermore, this study could inform new policy for designing and creating shelters that emphasize priorities identified by the optimal healing environment framework so that shelters can contribute to survivors healing from the trauma of experiencing IPV. Funding sources should consider increasing funding for shelters to be retrofitted if an existing building is selected for a shelter location in order to incorporate design features, such as windows, noise reducing materials, and fencing around the shelter, to help reduce environmental stress. In addition, interdisciplinary teams between practitioners and

architects should be promoted to incorporate evidence-based design into shelter spaces in order to make them more trauma-informed.

Although the focus of this study was to identify environmental stressors with IPV shelters, the results of this study could inform future research to identify environmental stressors in other shelter environments, such as shelters for those experiencing homelessness. Survivors of IPV often turn to homeless shelters when IPV shelters are at capacity. In addition, persons experiencing homelessness have often experienced trauma and have the potential to be retraumatized within a shelter environment. The results of this study could identify environmental stressors that may impact those staying in homeless shelters and the measurement of environmental stress for IPV shelters could be modified to measure environmental stress within homeless shelters.

In addition to policy, this study will have implications for practice with sheltered survivors. Understanding that survivors may be experiencing stress from the shelter environment itself could give practitioners a glimpse into the lives of survivors and help practitioners identify ways in which environmental stressors can be mitigated, such as giving residents increased outdoor time or control over their environment within the shelter. Similarly, understanding that survivors may be experiencing stress and potential retraumatization from the shelter itself could allow practitioners to give survivors more grace when it comes to rule violations or hostility. Furthermore, the results of this study could impact the development of rules and policies regarding resident behavior for shelters, such as adopting a rules reduction framework in which residents are given more autonomy to govern their own lives. This study emphasized the importance of practitioners within shelters adopting a trauma-informed approach when working with survivors in shelter.

Implications for Future Research

Future research is needed to continue to capture environmental stressors found in IPV shelters. Survivors from different shelters in different geographical areas should be interviewed about their experiences in shelter in order to determine if they are additional stressors related to different shelter environments in other areas. Survivors from diverse groups should also be interviewed in order to reveal additional insights into stressors experienced related to social and cultural differences. Furthermore, more survivors should be given the opportunity to review the measurement to determine its feasibility with shelter residents. Increasing the diversity of reviewers could make the measurement stronger and more reliable and valid with diverse groups.

Additionally, psychometric testing is necessary on *The Perceptions of Environmental Stress in Domestic Violence Shelters Scale* in order to determine its psychometric properties, reliability, and validity. A quantitative survey should be developed that incorporates *The Perceptions of Environmental Stress in Domestic Violence Shelters Scale, The Perceived Stress Scale* (Cohen, Kamarck, & Mermelstein, 1983), and *The Perceived Housing Stress Scale* (Campagna, 2016) in order to assess convergent and concurrent validity. The results of the quantitative survey could then be used to conduct an exploratory factor analysis on the scale to determine the number of factors included in the scale and if any items need to be omitted. Once an exploratory factor analysis is complete, further psychometric testing is needed to determine test-retest reliability and psychometric testing with diverse racial/ethnic groups and geographic regions.

Furthermore, covariates highlighted by the panel of experts should also be included within the survey in order to capture an accurate picture of each participants' level of environmental stress related to the shelter. Covariates to be included are length of shelter stay,

children present within the shelter, presence of a roommate, available transportation, and level of danger from abusive partner that could be captured by a validated scale such as the *Danger Assessment* (Campbell, Webster, & Glass, 2009). These covariates could reveal additional insights into why some participants might rate higher levels of perceptions of environmental stress. The covariates along with the two scales of perceived stress will allow for accurate psychometric testing of *The Perceptions of Environmental Stress in Domestic Violence Shelters Scale.*

Once the scale has demonstrated good reliability and validity, the scale could be used to assess the impact of environmental stress on different outcomes for survivors. The scale could be included alongside mental health assessments, housing stability, length of shelter stay, and overall satisfaction scales to determine the environmental stress has on key outcomes for survivors. Additional research is needed in order to determine the true impact of environmental stress on survivors in shelter and how environmental stress impacts the positive gains that survivors get from resources provided in shelter. If environmental stress is shown to impact mental health and satisfaction with shelter life, this could reveal important implications for the need to consider environmental stress in the design and creation of IPV shelters.

After the scale has been validated with IPV shelter populations, modifications and revisions of the scale could be conducted to example the applicability of the scale to other housing environments. The scale could easily be revised to explore environmental stress related to transitional housing environments for survivors of IPV. In addition, modification and additional testing of the scale could be conducted to explore environmental stressors within shelters for persons experiencing homelessness. Given that survivors of IPV often turn to

homeless shelters as a resource for housing, there is potential for the scale to have implications in the design of homeless shelters.

Conclusion

Environmental stressors within IPV shelters can greatly impact survivors' mental health and physical well-being as well as the positive gains they glean from services. Modifying existing shelters to be health promoting spaces and constructing shelters using the optimal healing environments framework could reduce survivors' premature exit from shelter, lead to more positive gains from the shelter and the services and support provided within the shelter, and ultimately reduce recidivism among survivors. This could ultimately lead to financial resources allocated to shelters having a greater impact as more survivors are able to gain their financial independence and have fewer shelter stays, which allows for more survivors to access shelter. Given the limits to shelter capacity nationwide, any changes that lead to more survivors receiving shelter should be considered.

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Appendix A: Semi-structured Interview Guide for Phase 1

Demographic questions:

1. What is your age?
2. How would you describe your gender identity (DO NOT READ RESPONSES)?
   Agender
   Another gender Cisgender (i.e. not transgender)
   Female
   Gender expansive
   Genderfluid
   Genderqueer
   Male
   Man
   Transgender
   Trans man/trans masculine
   Trans woman/trans feminine
   Two-spirit
   Non-binary/non-conforming
   Female
   Woman
   My gender identity is not represented in this
   I'd prefer not to say
3. What is your racial or ethnic identity? (please select all that apply, (DO NOT READ RESPONSES)
   White or European American
   Black or African American
   African
   Caribbean
   Latinx or Hispanic American
   East Asian or Asian American
   Southeast Asian or Asian American
   South Asian or Indian American
   Middle Eastern or Arab American
   Native Hawaiian or Other Pacific Islander
   American Indian or Alaskan Native, Multiracial
   Other (please describe): _______
   I'd prefer not to say
4. What is the highest level of education you have completed?
   Grammar school (up to 8th grade)
   Some high school
   High school or equivalent
   Vocational/technical school (2 year)
   Some college
   Bachelor's degree
   Master's degree

Doctoral degree (PhD)
Professional degree (MD, JD, etc.)
Other ______

5. How do you describe your employment status?
   Employed for wages
   Self-employed
   Out of work and looking for work
   Out of work but not currently looking for work
   A homemaker
   A student
   Retired
   Unable to work
6. If you are working, how do you get to work?
7. Do you have any children?
8. If yes, how many and what their ages?
9. How many of your children are currently staying with you in shelter?
10. Across your lifetime, how many times have your been homeless not because of domestic violence?
11. Across your lifetime, how many times have you been homeless due to domestic violence?
12. Across your lifetime, how many times have you had to stay in a domestic violence shelter?
13. What is the name of the shelter that are your currently staying in?
14. Across your lifetime, how many times have your stayed in (USE NAME THE SHELTER BASED ON RESPONSE TO QUESTIONS 10)?
15. How long have you been at (USE SHELTER NAME BASED ON RESPONSE FROM QUESTION 10) this time?
16. What is the gender and race of the person who used violence against you that caused you to come to shelter this time?
17. Do you have any children with this person?
18. If yes, how many children?
19. If yes, are they staying with you in shelter currently?

Shelter Description and Assessment

1. Please describe the shelter.
   a. What does the shelter look like inside?
   b. What does the shelter look like outside?
   c. Do you have access to nature?
      i. How does nature make you feel?
      ii. Would you like more nature?
2. Please describe the neighborhood where the shelter is located.
   a. Are you close to buildings and businesses? What businesses?
   b. Are you close to any transportation?
   c. How does the location of the shelter effect your ability to carry out your regular life?
3. Please describe your living quarters within the shelter.
   a. How is your space at the shelter different from your home?
   b. Do you have everything you need for you and your family to be comfortable?

   c. Tell me about the furnishings you are able to use.
   d. Do you have enough beds/bedding?
   e. Do you have access to sunlight/natural light?
   f. Do you have an window in your room?
4. What about the shelter do you like? Dislike?
5. What about your space at the shelter makes you feel safe? Unsafe?
6. What about your space at the shelter make you feel secure? Insecure?
7. What about the shelter makes you feel stressed? Less stressed?
8. Please describe a typical day in the shelter.
9. What do you do if you need something for your living space?
10. Is it challenging to get what you need?
    a. If yes, why?
    b. If no, why not?
11. What about the shelter would you change?

Experiences with Environmental Stressors

1. Social gatherings and relationships with family and other support
   a. How does the shelter impact your relationship with your kids?
   b. How do you stay connected with family, friends, and other supportive people while at the shelter?
   c. Are you able to see friends or family members at the shelter?
   d. Does the shelter have areas for you to be social with other residents?
2. Rules and policies
   a. Tell me about the rules you have to follow while living in the shelter.
   b. How do the rules make you feel?
3. Interactions with staff
   a. Tell me about your interactions with the staff at the shelter.
   b. Can you tell me about a positive interaction you have had with someone who works at the shelter?
      i. How did that make you feel?
   c. Can you tell me about a negative interaction you have had with someone who works at the shelter?
      i. How did that make you feel?
4. Privacy
   a. Do you feel your privacy is respected at the shelter?
   b. Does the shelter have areas for you to be alone or alone with your family?
5. Temperature
   a. Tell me about the temperature of the space.
      i. Is it comfortable? Uncomfortable?
      ii. Can you change it to meet your needs?
6. Air quality
   a. Tell me about the air quality.
      i. Are you able to get fresh air?
      ii. Does the air quality cause you to have any allergies?
      iii. Are there any smells within the shelter that are uncomfortable?

7. Noise
    a. Tell me about the noise level within the shelter.
        i. How does noise affect you?
    b. How are you sleeping?
        i. What helps you sleep well?
        ii. What prevents you from sleeping?
    c. How do your kids sleep?
        i. What helps them sleep well?
        ii. What prevents them from sleeping?
8. Crowding
    a. How many people live at the shelter?
    b. How does living with multiple people you don't know make you feel?
    c. What are your interactions like with the other residents?
9. Transportation
    a. What transportation resources do you have access to?
    b. What transportation resources do you need but don't have access to?
    c. Imagine you had access to a car-share program, how would that change your life in regard to transportation?
    d. Imagine you had access to a ride-share program like Uber or Lyft, how would that change your life in regard to transportation?

Personal experience of stress

1. What about the shelter helps you heal for your experiences of abuse?
2. What about the shelter prevents you from healing from your experiences of abuse?
3. What about the shelter could be changed to help you heal?
4. What about the shelter makes it easy for you to accomplish your goals?
5. What about the shelter makes it hard for you to accomplish your goals?
6. What about the shelter could be changed to make you be more able to accomplish your goals?
7. Is there anything else you would like me to know about your experience with the shelter?

Appendix B: Semi-structured Interview Guide for Phase 2

Questions for survivor participants.

Measurement assessment

The participant will be asked to review and answer each question. After each question, the participant will be asked:

1. What does this question mean to you?
2. What does your answer mean to you?

Measurement verification and validation questions:

1. What is the scale trying to measure?
    a. What construct is the scale trying to measure?
2. Does the scale appear to measure that construct?
3. Do think this it is measuring the construct well?
    a. If yes, how so?
    b. If no, why not?
4. How could the scale be improved?
    a. What do you think is missing?
    b. What changes would you make to the scale?
5. Do you think it is important to measure environmental stressors?
    a. If yes, why?
    b. If no, why not?

Questions for shelter staff participants.

Demographic questions:

1. What is your age?
2. How would you describe your gender identity (DO NOT READ RESPONSES)?

    Agender
    Another gender Cisgender (i.e. not transgender)
    Female
    Gender expansive
    Genderfluid
    Genderqueer
    Male
    Man
    Transgender
    Trans man/trans masculine
    Trans woman/trans feminine
    Two-spirit
    Non-binary/non-conforming
    Female

Woman
My gender identity is not represented in this
I'd prefer not to say

3. What is your racial or ethnic identity? (DO NOT READ RESPONSES)
   White or European American
   Black or African American
   African
   Caribbean
   Latinx or Hispanic American
   East Asian or Asian American
   Southeast Asian or Asian American
   South Asian or Indian American
   Middle Eastern or Arab American
   Native Hawaiian or Other Pacific Islander
   American Indian or Alaskan Native, Multiracial
   Other (please describe): _______
   I'd prefer not to say
4. What is the name of the shelter that you are working at?
5. How long have you worked at that shelter?
6. How long have you worked with survivors of intimate partner violence in shelters?

Measurement verification and validation questions:

1. What is the scale trying to measure?
   c. What construct is the scale trying to measure?
2. Does the scale appear to measure that construct?
3. Do think this it is measuring the construct well?
   a. If yes, how so?
   b. If no, why not?
4. How could the scale be improved?
   a. What do you think is missing?
   b. What changes would you make to the scale?
5. Do you think it is important to measure environmental stressors?
   a. If yes, why?
   b. If no, why not?

Questions for research expert participants.

Expert knowledge

1. Given your expertise, how would you define built environment?
2. What experience do you have researching the impact of the built environment on health and well-being?
3. Given your expertise, how would you define environmental stress or environmental stressor?
4. From your experience, what impacts do the environmental stressors have on shelters populations?

5. What environmental stressors have the most impact?
6. Where do you think the gaps in knowledge are surrounding the impact of the built environment for sheltered populations?

Measurement verification and validation questions:

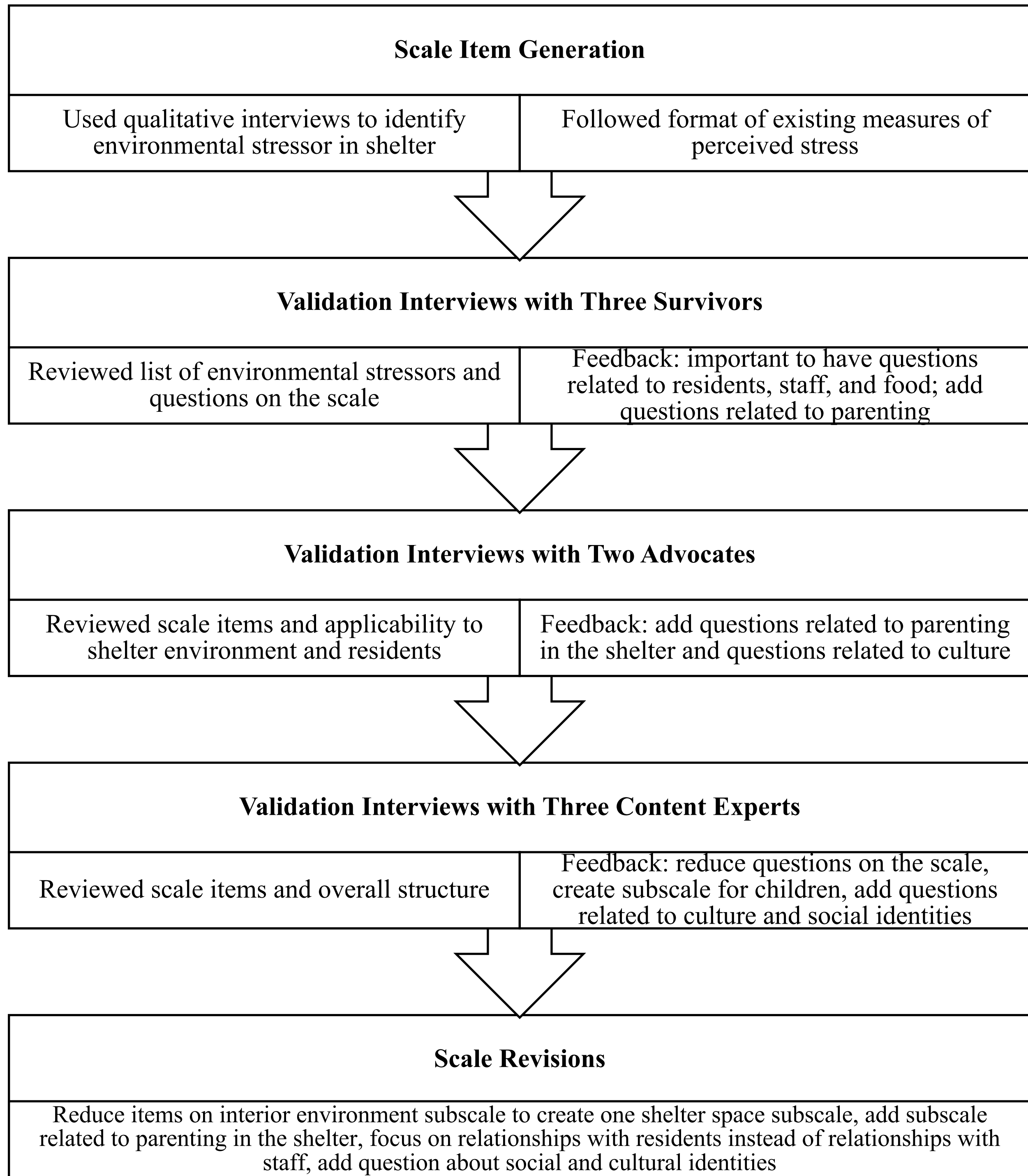
1. What is the scale trying to measure?
    d. What construct is the scale trying to measure?
2. Does the scale appear to measure that construct?
3. Do think this it is measuring the construct well?
    a. If yes, how so?
    b. If no, why not?
4. How could the scale be improved?
    a. What do you think is missing?
    b. What changes would you make to the scale?
5. Do you think it is important to measure environmental stressors?
    a. If yes, why?
    b. If no, why not?

Appendix C: First Draft of the *Perceptions of Environmental Stress in Domestic Violence Shelters Scale*

These questions are going to ask about your thoughts and experiences during your recent or current stay in a domestic violence shelter. Please indicate how often you felt a certain way or how affected you were by each item.					
Interior Space	**Never**	**Almost Never**	**Sometimes**	**Fairly Often**	**Very Often**
1. How often did the shelter feel like a home?					
2. How often did the shelter feel calm?					
3. How often did you feel free to do what you wanted?					
4. How often did you feel uncomfortable with the cleanliness of the shelter?					
5. How often did you have enough beds for you and my children?					
6. How often did you have comfortable sleeping arrangements for you and your children?					
7. How often did you and your children have trouble sleeping due to uncomfortable sleeping arrangements?					
8. How often did you have enough storage for your belongings?					
9. How often did you have privacy in the bathroom for you and your children?					
10. How often were you uncomfortable in the bathroom?					
11. How often did you have a place to eat and feed your children?					
12. How often were you able to make your own meals?					
13. How often did you have enough food for you and your children?					
14. How often was the temperature in your room comfortable?					
15. How often was the air stuffy or there are strong smells present?					
16. How often did you have access to natural light?					
17. How often did you have a view of the outside?					
18. How often were you able to access a washer/dryer for laundry?					
19. How often were you and your children affected by loud noises?					
20. How often did you or your children have trouble sleeping do to noise levels?					
21. How often did you feel like you were being watched?					

22. How often did you have concerns with the lack of security at the shelter?					
Exterior Space	**Never**	**Almost Never**	**Sometimes**	**Fairly Often**	**Very Often**
23. How often did you sit outside?					
24. How often did you want to go outside but were unable to?					
25. How often did you have the opportunity to do activities outside?					
26. How often did your children play outside?					
27. How often did you feel unsafe outside?					
Shelter Location	**Never**	**Almost Never**	**Sometimes**	**Fairly Often**	**Very Often**
28. How often did the location of the shelter make you feel unsafe?					
29. How often did the location of the shelter impact your ability to get to work?					
30. How often did the location of the shelter impact your ability to take your children to school?					
31. How often did the location of the shelter impact your ability to see your friends and family?					
32. How often did you have transportation?					
33. How often did you use public transportation?					
Relationships within the Shelter	**Never**	**Almost Never**	**Sometimes**	**Fairly Often**	**Very Often**
34. How often did you feel welcome?					
35. How often did you feel supported?					
36. How often did you experience conflicts with the people you lived with?					
37. How often did the people you lived with make you feel unsafe?					
38. How often did you experience conflicts with the staff?					
39. How often was your privacy respected?					
40. How often did you feel judged?					
41. How often did being in the shelter affect your ability to be a parent?					

Appendix D: Flow Chart of Measurement Revisions



Appendix E: Finalized Draft of the *Perceptions of Environmental Stress in Domestic Violence Shelters Scale*

These questions are going to ask about your thoughts and experiences during your recent or current stay in a domestic violence shelter. Please indicate how often you felt a certain way or how affected you were by each item.					
Shelter Space	**Never**	**Almost Never**	**Sometimes**	**Fairly Often**	**Very Often**
1. How often did the shelter feel calm? (i.e. tranquil and quiet)					
2. How often did you feel free to do what you wanted around the shelter?					
3. How often did you feel comfortable with the cleanliness of the shelter?					
4. How often did you have comfortable sleeping arrangements?					
5. How often did you have enough storage for your belongings?					
6. How often were you uncomfortable in the bathroom?					
7. How often could you make your own meals and eat at your own pace?					
8. How often were you satisfied with the quality of the food?					
9. How often was the temperature in your room comfortable?					
10. How often did you have access to natural light?					
11. How often were you able to access a washer/dryer for laundry?					
12. How often were you affected by loud noises?					
13. How often did you have concerns with the security and surveillance at the shelter?					
14. How often did you have a place to sit outside?					
15. How often did you feel unsafe outside?					
Shelter Location	**Never**	**Almost Never**	**Sometimes**	**Fairly Often**	**Very Often**
16. How often did the location of the shelter make you feel unsafe?					
17. How often did the location of the shelter impact your ability to get where you needed to go?					
18. How often did you feel free to come and go from the shelter?					
19. How often did you have transportation?					

20. How often did you have to use expensive transportation, such as Uber or Lyft?					
Relationships within the Shelter	**Never**	**Almost Never**	**Sometimes**	**Fairly Often**	**Very Often**
21. How often did you feel supported by other residents?					
22. How often did you feel like your social and cultural identities were respected? (i.e. your race/ethnicity, your sexual orientation, etc.)					
23. How often did you experience conflicts with the people you lived with?					
24. How often did the people you lived with make you feel unsafe?					
25. How often was your privacy respected by other residents?					
26. How often did you feel judged by other residents?					
27. How often did you feel like you were being watched by staff?					
Parenting in the Shelter *(answer only if you have children staying with you in shelter)*	**Never**	**Almost Never**	**Sometimes**	**Fairly Often**	**Very Often**
28. How often did being in the shelter affect your ability to be a parent?					
29. How often were you fearful for your children around other residents?					
30. How often did you become frustrated with having to monitor your children in the shelter?					
31. How often did you have comfortable sleeping arrangements for your children?					
32. How often were your children affected by loud noises?					
33. How often did your children have a place outside?					