RESILIENCE IN LGBTQ COLLEGE STUDENTS AND YOUNG ADULTS: THE KIDS ARE ALRIGHT

By Heather M. Flick

LGBTQ (Lesbian, Gay, Bisexual, Transgender, and Questioning) identified persons are subject to prejudice, discrimination, and gender-related physical/emotional violence. Limited research also shows that these individuals experience resilience, a positive response to stressors and adversity. The current study used a mixed methods design, combining published surveys, narrative writing, and EEG measurement, to examine resilience in LGBTQ young adults and college students.

Resilience was measured by the Connor-Davidson Resilience Scale (CD-RISC) and the Wagnild-Young Resilience Scale (W-YRS). Participants' conceptualization of adversity was measured by the Chinese Making Sense of Adversity Scale (CMSAS). Participants (N=21) were randomly assigned to an experimental or control condition, and completed scales with resilience or neutral content, respectively. Participants then reflected on the scales they completed. The link between resilience and cortical EEG activity during participants' reflection on the scales was examined by measuring hemispheric asymmetry. Written responses from both conditions on experienced adversity and resilience were recorded. It was hypothesized that participants would show evidence of resilience as measured by the CD-RISC and the W-YRS, the CD-RISC would be positively correlated with the W-YRS, and these two scales would be positively correlated with the CMSAS. An exploratory question addressed the relation of hemispheric asymmetry and resilience.

Analyses revealed a correlation between the resilience scales (p<.01). However, due to different scoring criteria of the two scales, participants' mean score on the CD-RISC fell into the lowest quartile while the mean score on the W-YRS was in the moderately high range. The difference was possibly due to different scoring criteria of the scales. Though no statistical significance was found from EEG results, the C4/C3 electrode pair approached significance with greater left hemispheric activity relative to the right hemisphere in the experimental condition. Themes from the written narratives included facing adversity, using resources, and maintaining a positive attitude.

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To Andrew, thank you for your help!

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Resilience in LGBTQ College Students and Young Adults:

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We all face hardships and struggles in life and sometimes (hopefully) we are able to bounce back. One of the groups that faces some of the most enduring struggles in life includes those who are LGBTQ (Lesbian, Gay, Bisexual, Transgender, and Questioning) identified. They are subject to prejudice, discrimination, and gender-related physical/emotional violence (Green, 2012; Mizock & Lewis 2008). Studies show that LGB[1] youths have overall higher levels of psychopathology, exposure to child abuse, and intimate partner violence compared to their heterosexual peers (McLaughlin, Hatzenbuehler, Xuan, & Conron, 2012; Nadal, Wong, Issa, Meterko, Leon & Wideman, 2011; Scourfield, Roen & McDermott, 2008). LGB youths age 18-27 also have greater rates of suicidality, depression, and symptoms of alcohol and drug abuse (McLaughlin, et al., 2012).

Although many studies explore the greater risks LGBTQ youths face, relatively few examine their resilience. Likewise, few studies include all sexual minorities: lesbians, gays, bisexuals, transpersons, and those who are questioning. Often studies look at the experiences of some groups while excluding others, which leads to research gaps (Fassinger & Arseneau, 2007). Additionally, the differences between sexual orientation and gender identity are often blurred in LGBTQ persons (Fassinger & Arseneau, 2007). This is particularly the case with transpersons who may undergo sexual reassignment surgery and then refer to their sexual orientation as heterosexual, gay, or lesbian (Fassinger & Arseneau, 2007). As first used by Fassinger and Arseneau (2007), this study

refers to LGBTQ persons as a sexual minority. This group includes people who "face common struggles with societal oppression related to their sexual minority status, and they therefore face similar difficulties in developing positive individual identities and healthy communities within that context of oppression" (2007, p.19). It is important to note that Fassinger and Arseneau assert that there are many differences among individuals in this group (2007). These authors also specify that some sexual minority people do not identify with any particular category, and often opt for terms "queer", "questioning", labels of their own, or no label (Fassinger & Arseneau, 2007).

Current trends show a positive change in attitudes toward sexual minorities (Dunn, 2012). Recently, the Supreme Court ruled the federal ban on same sex marriages as unconstitutional, further showing that the public's feelings toward sexual minorities are changing. Despite somewhat more acceptance of LGBTQ persons, research tends to focus on risk factors for mental health problems, victimization, and homelessness. In order to have a more complete picture of the experiences of those in LGBTQ groups, it is important that we acknowledge the risk factors but also highlight positive factors, such as resilience. As Ada Blenkhorn wrote in the 1899 hymn "There's a dark and a troubled side of life; there's a bright and a sunny side, too; tho' we meet with the darkness and strife, the sunny side we also may view."

Intersectionality

Multiple aspects of identity contribute to our lives and experiences, including membership in various social groups. Intersectionality is a term for an approach that

simultaneously examines the meaning and consequences of multiple categories of social and group membership including identity, differences in social and group membership categories, and disadvantage (Cole, 2009). The construct of intersectionality focuses on how the categories one fits into depend on one another for meaning and are collectively associated with various outcomes (Cole, 2009). Importantly, intersections create both opportunity and oppression depending on how one views them (Shields, 2008). To elaborate, while a woman may be oppressed in some ways because she identifies as lesbian, the intersection with her also identifying as white allows her racial privilege as compared to women who are racial minorities and lesbian (Shields, 2008). Intersectionality can help us better understand the experiences of individuals and social groups.

Historically, intersectionality theory has been employed in feminist research. It has changed how we look at gender today by encouraging researchers to view how multiple group membership comes together and helps shape individuals' experiences (Shields, 2008). Recently, intersectionality has also been used to understand the lives of older LGB adults by examining the interconnected influences on individuals (Cronin & King, 2010). Inspired by feminist theory and research, we can therefore view LGB adults' experiences in a complex and multidimensional manner.

It is key when utilizing intersectionality theory to interpret a variety of group memberships and identities. Cronin and King argue that intersectionality as a research method is sometimes inappropriately employed in an additive manner, by adding inequalities to produce a greater amount of marginalization (2010). The authors argue

that although inequalities are important, by only focusing on such, one overlooks differences that come together and form the experiences of everyday life within wider societal structures (2010). These differences can include positive aspects of social and group membership. Thus, with intersectionality, it is critical to look at the whole experience and range of identities of the individual in order to gain a complete picture versus simply focusing on the inequalities one faces. The current study attempts to provide a more complete view of the range of experiences of sexual minorities by focusing on a positive aspect of group membership: resilience.

College is a time of personal growth and new experiences. This is particularly the case for sexual minorities, who often face unique challenges such as maintaining self-esteem, coping with being different, establishing same-sex romantic relationships, and deciding who to come out to (Sanlo, 2004). Although sexual minority college students face many of the same stressors as other college students, they also have special challenges, such as stigmatization and harassment (Sanlo, 2004).

Sexual minority populations, including those on college campuses, also experience positive development in the face of stressors and adversity. For example, a study done with gay and bisexual men age 15-22 found that many expressed a number of "positive personal conceptualizations" that were directly related to their sexual minority status (Harper, Broadsky, & Bruce, 2012, p. 30). Some of these include: environmental flexibility (the ability to explore physical places and spaces such as gay friendly organizations); connectedness with others in the gay community; and gender flexibility (the ability to experiment with gender roles). The authors explained that these personal

conceptualizations aided in the development of self-acceptance and a rejection of stereotypes (Harper, Broadsky, & Bruce, 2012).

Similarly, a study of gay-straight alliances (GSAs) by Fetner and Kush (2008) notes that the emergence of GSAs in schools can be seen as an "act of resilience" that helps young people to lead LGBTQ activism and support in LGBTQ communities in new directions (p. 117). In this manner, we can see that multiple identities, such as being a sexual minority, a young person, someone involved in LGBTQ activism, and also a student, can come together to positively contribute in the formation of resilience. In the current study, participants were recruited through their involvement with an LGBTQ resource center, which has GSA programs and activities, at a Midwestern comprehensive state university. Although more research is needed to better understand the role of GSAs, this could potentially contribute to the expression of resilience in some of these participants.

Risk Factors for LGBTQ Populations

Studies about sexual minorities tend to focus on increases for risk and currently the atmosphere of research with LGBTQ populations has suffered from negativity bias (Stanley, 2009). This is due in part to efforts to document the many risks to health and safety affecting these populations. This research is important in understanding the experiences of sexual minorities, especially given the social and psychological challenges LGBTQ youth face.

According to Youth Pride Inc. (YPI), a lesbian, gay, bisexual, transgender, queer, and questioning youth advocacy organization founded in Rhode Island in 1992, approximately 1 in 3 gay and lesbian youth age 13-20 have engaged in suicidal behavior; they are 2 to 3 times more likely to attempt suicide than their heterosexual peers (Youth Pride Inc., 2010). Youth Pride Inc. is a nonprofit organization formed from the YWCA that seeks to empower young people's ability to lead and become advocates of change. YPI works with national LGBTQ youth programs such as It Gets Better Project, Make It Better Project, and the National Suicide Prevention Lifeline/Safe Place to help the development of healthy behaviors.

Suicide is one of the leading causes of death for persons in age categories 5-14, 15-24, and 25-44 (Centers for Disease Control and Prevention, 2010). In Wisconsin in 2009, 1 in 4 (24.8%) same-sex youth age 12-18 attempted suicide, as compared to just 5.7% of heterosexual youth (Karki, Gasiorowicz & Hollander, 2010). Internationally, studies find that LGBT young people are at a disproportionately greater risk for suicidal thoughts (Scourfield, Roen & McDermott, 2008). Gay and lesbian youth and adults have higher levels of psychological distress, are more likely to have used recreational drugs, and self-harmed than heterosexual men and women (Rivers & Cowie, 2006). LGB populations, including youth and adults, also have greater rates of psychiatric disorders (e.g. mood disorders and anxiety disorders) compared to heterosexuals (McLaughlin et al., 2012; Mustanski, Newcomb & Garogalo, 2011).

LGB youth age 16-24 are also at a greater risk for victimization due to their sexual orientation (Mustanski et al., 2011). This occurs at school, with family, and in

romantic relationships. Evidence shows higher rates of victimization among LGB populations in child physical and sexual abuse and intimate partner violence as compared to heterosexuals (McLaughlin et al., 2012). LGB individuals age 18-27 also face greater levels of verbal and physical assaults as compared to heterosexual individuals (McLaughlin et al., 2012). It has been hypothesized that increased rates of homelessness in LGB populations is due in part to victimization by caregivers and romantic partners (McLaughlin et al., 2012).

YPI reported that 84% of LGBT students have been verbally harassed and called names due to their sexual orientation, and 82.9% report that faculty or staff did not intervene at a time when homophobic comments were made. YPI also found that 80% of gay and bisexual youth age 15-21 reported severe problems with cognitive, social, and/or emotional isolation and 83% of their respondents considered themselves depressed. In 2005, the FBI reported that about 13.8% of all hate crimes in the U.S. were motivated by bias against the victim's sexual orientation (U.S. Department of Justice Federal Bureau of Investigation, 2005). These kinds of figures attest to the hardships LGBTQ persons can face.

Studies of bullying show that the majority of gay and lesbian youth report significant levels of verbal harassment or physical bullying occurring at school (Green, 2012). Similar reports of bullying and violence toward LGB individuals are found across the globe, such as in the UK and New Zealand (Henrickson, 2008). In the UK, 79% of LGB persons under age 18 have been subjected to verbal bullying, 24% experienced physical bullying, and 19% experienced severe physical bullying resulting in injury

(Henrickson, 2008). Data from a New Zealand study found that among LGB respondents, coming out early was associated with lower levels of educational attainment, due in part to bullying, and verbal and physical assault (Henrickson, 2008). A study of bullying and homophobia in UK schools found that 17% of the 119 participants age 16-66 (*M*= 29) showed symptoms of PTSD which was associated with school bullying experiences (Rivers & Cowie, 2006). In another study, 53% of surveyed LGB respondents age 16-25 had considered self-harming or suicide because of school bullying (Scourfield, 2008). Research on harassment on college campuses among sexual minority students found rates of victimization as much as four times higher for sexual minority students than the general student population (Sanlo, 2004).

LGB populations also face higher levels of individual and institutional discrimination, including ill-treatment in housing, employment, and marriage laws (Green, 2012; McLaughlin et al., 2012). Recently, attention has been given to microaggressions based on sexual orientation. Microaggressions are characterized by subtle forms of discrimination, intentional or unintentional, and can include verbal, behavioral, and/or environmental humiliation (Nada et al., 2011). In a qualitative study with LGB individuals age 18-55 (*M*=25), it was found that microaggressions are often experienced by this population (Nadal et al., 2011). One example of a microaggression that, Jeremy, an adult gay male, overheard at school is a classmate stating "all gay people have AIDS" (Nadal et al., 2011, p. 28). Some negative health consequences associated with the experience of microaggressions in LGB adults are depression, anxiety, suicidal ideation, and self-destructive behaviors (Nadal et al., 2011).

Though not frequently examined in research, current studies find that transgender populations are disproportionately affected by violence (Mizock & Lewis, 2008). One study found that over two-thirds of transgender youth age 15-21 experienced verbal abuse by their parents or peers and one-fifth to one-third experienced physical abuse (Grossman, D'Augelli & Frank, 2011). A national study with 402 transgender individuals found that 47% had been assaulted and 14% had been raped or survived attempted rape (Mizock & Lewis, 2008). Stories of discrimination of transgender persons are publicized in popular media as well, such as the 1993 death of a male-to-female transwoman Tyra Hunter. Hunter's story was brought to attention after a severe car crash, when emergency technicians and hospital officials gave her improper treatment and made derogatory comments once her birth sex was discovered. Hunter later died from medical negligence (Mizock &Lewis, 2008).

With such rates of risk factors and discrimination toward LGBTQ populations some have argued that it is "remarkable that, given the challenges, there are any LGB people at all who identify themselves publicly" (Henrickson, 2008, p. 68). Considering all the risk factors that LGBTQ individuals face, what helps these populations go on in the face of adversity and stigma? One possible answer is resilience. It is important to note, however, that the possibility of LGBTQ persons having resilience does not mean they do not face any risks or that all LGBTQ persons are resilient. Fetner and Kush observed that in research a concentration on risks has the possibility to mask experiences of resilience (2008). To elaborate, these authors state, "a focus on the risks of sexual minority status can hide the resilience, for which there is substantial evidence" (2008,

p.117). In other words, it is important to attend both to risks that can produce adversity and to resilience, while acknowledging that there will be a range of experiences.

Resilience

Resilience historically has been given many definitions, often depending on the concepts one is trying to capture and the questions one is trying to answer (Glantz & Johnson, 1999). This can give rise to much variability. One of the most commonly used definitions of resilience is by Luthar, Cicchetti, and Becker (2000). It characterizes resilience as "a dynamic process encompassing positive adaptation within the context of significant adversity" (p.543). This definition has also been used in studies by Grossman (2011) and Mustanski (2011). Masten (2001) defines resilience as "a class of phenomena characterized by good outcomes in spite of serious threats to adaptation or development" (p.228). Masten goes on to explain that one of the goals of research on resilience is to understand the processes that account for these good outcomes (2001). Connor (2006) defines resilience as "a measure of stress-coping ability, and it describes personal qualities that allow individuals and communities to grow and even thrive in the face of adversity" (p.46). From these definitions we are able to gain a better understanding of what resilience is.

Luthar et al. (2000) and Masten (2001) argue that there are two critical aspects to the notion of resilience: there must be exposure to a significant amount of threat or the experience of severe adversity and there must be accomplishments of positive adaptation despite significant obstacles in the developmental process. Multifaceted definitions of

resilience invite researchers to examine stress-coping skills, and describe characteristics that allow people to grow and thrive despite adversity (Connor, 2006). Connor describes resilience as a form of "personal hardiness" or emotional stamina (Connor, 2006, p.46). It is also a dynamic process, involving both personality and situational aspects. To elaborate, ones' personality may influence to some degree how one handles a particular situation or event. Masten (2001) notes that resilience can be viewed in terms of external adaptation (such as academic achievement or the absence of delinquency), internal criteria (such as psychological well being), or a combination.

From these descriptions, we can see that resilience is a process that involves many factors working together and influencing each other. This resembles the construct of intersectionality where many components of identity come together and contribute to persons' lives and experiences. Examining resilience in a similar manner, by looking at many different aspects and definitions of what it means to be resilient, gives a more complete understanding of the construct.

Just as there are many different definitions of resilience, there are likewise many models of resilience (Glantz & Johnson, 1999). These models vary in the conceptual frameworks used, research design, and operationalization of the concepts (Glantz & Johnson, 1999). Additionally, models can view resilience as an independent, dependent, mediating, or moderating variable. Resilience models can also differ in how variables describing the construct are viewed, which broadly fall into three main areas: outcomes, risk factors, or protective factors (Glantz & Johnson, 1999). Each of these has their own benefits and limitations. Likewise, the three broad variable categories by no means

exhaust the types that exist in models (Glantz & Johnson, 1999). The current study directly explores resilience in LGBTQ young adults, instead of focusing on variables such as outcomes, risk factors, or protective factors.

When looked at in terms of outcome variables (positive or negative) resilience is defined as having the desired outcome or not, and in terms of characteristics that enable the desired outcome. Self acceptance is one example of a characteristic that may produce a positive outcome. Models that focus on resilience in terms of risk variables examine possible predictors of later unfavorable outcomes. Possible risk factors include complications during pregnancy and delivery or socioeconomic adversity. Lastly, models of protective variables, focus on characteristics such as self-esteem that strengthen ameliorative effects. The overlap among these variables is debated in literature on resilience (Glantz & Johnson, 1999).

Masten (2001) argues there are two main approaches in resilience studies seeking to explain variation among the outcomes in high risk children. These include variable focused approaches and person focused approaches (Masten, 2001). Variable focused approaches test links in the measurements of risk, adversity, outcomes, individual and environmental factors. Person focused approaches compare people with different personal histories or across time in order to determine what makes resilient children different from other children (Masten, 2001). Luthar et al. (2000) note that one of the issues in the construct of resilience is a lack of consensus in the terms used in models of resilience.

Some researchers argue that resilience should not be confused with resiliency. Resiliency is generally used to refer to a personality trait (Luthar et al., 2000). More specifically, the term ego-resiliency is often used in a similar manner and refers to a personality trait that predisposes someone to less susceptibility to anxiety, as well as a more positive relationship with the world (Block & Kremen, 1996; Luthar et al., 2000). Another important distinction is between resilience and recovery. Bonanno (2004) notes that recovery describes when normal functioning temporarily recedes to a point of sub threshold or non-normal functioning following an unfavorable event or aversive life circumstance, and then gradually returns to normal levels again. Resilience reflects the ability to maintain and continue normal functioning, despite unfavorable circumstances (Bonanno, 2004). Here the difference is in the level of disruption in otherwise normal functioning after an event, such as an interpersonal loss or a traumatic event. For individuals in recovery, there is a moderate to severe disruption in normal functioning after an event, which then returns to normal. This gradual return can last from months to years. The resilient individual typically has no such disruption in normal functioning after the event (Bonanno, 2004).

The concept of resilience has a long history of being applied to examine how various at risk groups rise above and handle adversity and hardships in their lives. Seery (2011) describes how evidence now shows that experiencing difficulties in life can promote the development of resilience in handling other stressful situations. In this manner, resilience can be looked at like a muscle, which one builds up over time for easy use later on. Other studies have shown that resilience is far from an extraordinary

response to adversity, but instead arises from common phenomena which result from the routine operation of basic human adaptation systems (Masten, 2001). In other words, resilience is the result of normal protective bodily systems in the face of threat to human development. Masten argues that despite the experience of severe adversity, resilience can be expected if adaptation systems are working properly. These adaptation systems, according to Masten, include external factors such as human resources (e.g. families and relationships) and internal factors such as psychological well-being and low levels of distress (Masten, 2001). It is when these systems are not working as they should that maladjustment and developmental problems can occur (Masten, 2001).

Based on this, it seems that resilience is more common than previously thought in individuals who face many risk factors and experience significant adversity (Bonanno, 2004; Masten, 2001). This interplay between risk and resilience is important. Not only does it help us better understand the experiences of others, but on a broader level, public policies can be formed to allay risk, and effective interventions can be created from what we learn about individuals' resilience so that protective mechanisms (e.g. parental involvement with children's school activities) can be put in place (Schoon & Bynner, 2003).

Previous studies examining resilience have tended to focus on the concept as it applies to children and adults who are at high risk for problems and psychopathology (Overland, 2011; Tiet, Huizinga & Byrnes, 2010). For example, a 2010 study by Tiet et al. surveyed inner city youth living in high risk neighborhoods in order to find out why some youths had positive outcomes, while others were maladjusted due to their adverse

living environment. From survey items researchers determined that due to a number of different factors, such as life context variables like adverse life experiences and parental monitoring, some youths were able to adapt favorably despite their disadvantaged background because of resilience. This study also found a positive feedback loop occurring and that resilience predicted further resilience later on (Tiet et al., 2010). Tiet et al. found that participants who were resilient at time one (measured with composite scores of eight predictor variables), were also significantly likely to be resilient at time two using the same predictor variables (2010). These data were compiled from the Denver Youth Survey, the Pittsburgh Youth Study, and the Rochester Youth Development Study. Time one was in 1987 and time two was in 1988 (Tiet et al., 2010).

Others examining resilience have also looked at it in the context of adults who have faced significant adversity, such as survivors of refugee camps. We find some famous examples in literature, such as Aleksandr Solzhenitsyn's (1963) novel *One Day in the Life of Ivan Denisovich* which chronicles the experiences of Ivan, an innocent man convicted of spying and sent to the Russian gulag. From Solzhenitsyn's story, we learn that despite the many hardships Ivan, and others faced at the gulags, solidarity existed among the prisoners that enabled them to rise above their circumstances and survive. Viktor Frankl (1959) also gives us ample evidence of the ability of individuals to survive horrific circumstances. One such example is chronicled in his book *Man's Search for Meaning*. Frankl describes his experiences in concentration camps during World War II, where he and other prisoners were able to survive and grow through deep-rooted human desires to find meaning and purpose in life. At a fundamental level these experiences

depict the very essence of resilience, a "saying yes to life in spite of everything" (Frankl, 1959, p.139). In another example, a 2010 study examining the experiences of survivors of the Khmer Rouge regime in Cambodia found that resilience was a key contribution in the refugees' survival years later (Overland, 2011).

Adversity and how we make sense of and understand it are key components of definitions of resilience (Luthar et al., 2000). It is important, therefore, to examine aspects of adversity in order to understand resilience. LGBTQ persons may experience many different kinds of adversity, some that are related to sexual minority status, and some that have no relation to sexual minority status. Also, people perceive adversity differently. For example, Pan, Wong, Chan and Chan, (2008) describe making sense of adversity positively as reflective of positive beliefs about adversity. Accordingly, this can include things such as looking at adversity as offering learning experiences and opportunities to grow (Pan et al., 2008). Conversely, understanding adversity negatively is defined by Pan et al. (2008) as having negative views and beliefs about adversity such as believing one has wasted time due to experiences of adversity and that adversity is meaningless (Pan et al., 2008). From this we can see that how an individual experiences and makes sense of adversity can be crucial when examining resilience.

Recent research on resilience has addressed it neurologically. Some of this work employs electroencephalography (EEG) recordings to measure hemispheric asymmetries in cortical EEG activity (Cicchetti & Curtis, 2006). Hemispheric asymmetry in this instance refers to observations showing that the two hemispheres are involved in emotion in different ways (Cicchetti & Curtis, 2006). Specifically, the left hemisphere is

associated more with positive/approach emotions while the right hemisphere is associated more with negative/withdrawal emotions (Cicchetti & Curtis, 2006).

In research using EEG, the head is divided into proportional areas based on widely known skull features: the nasion, inion, and preaurical points (see Figure P-5) (Teplan, 2002). This allows for coverage of all regions of the brain. EEG measures electrical brain activity by regions on the cortical surface. Regions in the brain emit different brain wave frequencies and patterns, and EEG can examine the relative strengths and positions of electrical activity in different brain regions. The electrode placements on an EEG cap are labeled according to adjacent brain areas and include: F (frontal), C (central), T (temporal), P (posterior), and O (occipital). Additionally, EEG utilizes numbers to represent the hemisphere (odd numbers for left and even numbers for right) as well as anteroposterior (front to back) and superoinferior (upper to lower), to represent locations (see Figure P-6) (Teplan, 2002).

Applied to resilience, in a 2006 article Cicchetti and Curtis note that researchers should examine further the link between prefrontal hemispheric EEG activation in individuals who have experienced adversity in order to further determine the link between resilience and EEG hemispheric asymmetry (Cicchetti & Curtis, 2006). They conclude that it is "reasonable to hypothesize that resilient individuals might show greater left frontal baseline EEG activity" (Cicchetti & Curtis, 2006, p.38).

Curtis and Cicchetti found in a 2007 study with maltreated and non-maltreated children, that resilient children showed greater left hemispheric activity in baseline, with the strongest effect from the C3-C4 electrode, as measured from the alpha band. This was

in comparison to recordings from across the central, frontal, temporal, parietal, and occipital lobe sites. They also examined resilience among the children using composite scores from a variety of other measures including behavior ratings from counselors and self-report measures. As this study was the first to directly measure the link between EEG asymmetry and resilience, it was by nature exploratory (Curtis & Cicchetti, 2007).

Research examining EEG asymmetry and positive resilience related emotion has shown mixed results, with some studies finding greater left hemispheric activity in central lobe sites and some finding greater left hemispheric activity in frontal cortical regions (Curtis & Cicchetti, 2007; McGregor, Nash & Inzlicht, 2009). A study by McGregor, Nash, and Inzlicht (2009) examined the relationship between high self-esteem, threat, and reactive approach-motivation as measured by EEG asymmetry. Approach motivation can be described as the direction or orientation of behavior toward positive stimuli (e.g. objects, events, possibilities) (Elliot, 2006). Avoidance motivation on the other hand is the direction or orientation of behavior away from negative stimuli (e.g. objects, events, possibilities) (Elliot, 2006). Essentially, the difference between approach motivation and avoidance motivation can be viewed as the difference between "movement toward" (approach motivation) and "movement away" (avoidance motivation) (Elliot, 2006, p. 112).

McGregor, Nash, and Inzlicht examined reactive motivation in response to threat and observed that high self-esteem can produce either resilient, or approach, reactions to threat, or social withdrawal in the face of threat along with feelings of failure and uncertainty (2009). Additionally, greater left frontal EEG hemispheric activity has been

associated with approach motivation, risk-taking, and positive mood (McGregor, Nash & Inzlicht, 2009). Researchers sought to explore if the neural activity of people with high self-esteem in reaction to threat would be characteristic of approach motivation or avoidance. They found that participants with high self-esteem reacted to the experimentally manipulated threat (random assignment to a threat or no-threat condition) had greater left frontal EEG hemispheric activity, with the strongest effects across the F7/F8 electrodes, a common neural marker of resilient approach motivation (McGregor, Nash & Inzlicht, 2009). These findings provide additional evidence that greater left frontal EEG hemispheric activity is associated with resilience. Despite this, evidence is still scant and in the preliminary stages of determining the link between EEG hemispheric asymmetry and resilience.

Resilience in LGBTQ Populations

Although some researchers have studied components of resilience among LGBTQ populations, these are rare and focus on proxies of resilience instead of resilience itself, and/or related concepts, using indirect resilience measures. For example, Grossman et al. (2011) examined resilience among transgender youth through aspects of resilience including a sense of personal mastery, self-esteem, perceived social support, and emotion-orienting coping. Measurement included survey assessments of depression, mental health problems, trauma symptoms, coping skills, self-esteem, perceived support, personal mastery, and ability to internalize and externalize problems (Grossman et al., 2011). One drawback of this study was that it did not include a direct measure of

resilience, such as an established resilience scale. Another study examined factors affecting resilience and recovery in relation to bullying and homophobia in UK schools. This included measurements on bullying in school, life skills and experiences, relationship status and quality, life events, negative affect, internalized homophobia, and Post Traumatic Stress scores (Rivers & Cowie, 2006). Although these studies make important contributions to current literature, none directly measure resilience among LGBTQ populations.

A study that used an established resilience measurement item, the Wagnild and Young Resilience Scale (1993), examined resilience by determining possible protective factors that could contribute to the development of resilience and the timing of coming out among LGB young adults (Adams, 2006). The possible protective factors included social support, who participants are out to, and positive LGB identification. These protective factors were then analyzed to determine their possible contribution to timing of coming out and resilience. This study is important because it retrospectively had LGB participants assess what contributed to their coming out, but it is limited in that the primary focus is on attributes other than resilience such as social support, who participants are out to, timing of coming out, and positive LGB identification (Adams, 2006).

Research by Mizock and Lewis (2008) focused on risk factors and exposure to trauma that transgender populations face, but make only a limited connection to resilience. Here the authors assessed risk factors associated with traumatic violence among transgender populations, such as self-harm, suicide ideation, employment

discrimination, housing discrimination, health care problems and high risk behaviors. There was less focus though on the factors that could potentially contribute to resilience such as a clinician's office atmosphere, psychotherapy, and peer support (Mizock & Lewis, 2008).

An additional study sought to determine the possible relationship between victimization and internalization of mental health problems, along with the moderation of victimization by social support from family and peers, which was theorized as promoting resilience among LGB youths (Mustanski et al., 2011). This was done through surveys measuring psychological distress, victimization, family support, and peer support, with no direct measurements of resilience (Mustanski et al., 2011). This is problematic because without a direct measure of resilience, it can potentially make determination of the construct in participants difficult.

A related area of research applies minority stress theory to sexual minority persons. Minority stress theory addresses stress due to membership in a minority group that is marginalized or oppressed by the majority group including internalized homophobia, perceived stigma, and prejudice (Stanley, 2009). Minority stress theory has also been used to explain mental health disorders in LGB populations. The argument is that mental health disparities in LGB populations are a negative effect from the internal and external manifestations of prejudice, discrimination, and stigma (Mustanski et al., 2012).

Through an extensive literature review, Stanley (2009) concluded that although minority stress theory is commonly used to describe the experiences of LGB persons, it is

incomplete in that it stereotypes LGB persons being weak and vulnerable. Stanley argues that minority stress theory contains methodological and conceptual problems that make it inappropriate for application to sexual minorities. For example, Stanley notes that minority stress theory inappropriately suggests that the psychosocial effects of identity-based stigma outweigh the positive adaptations (2009).

The author argues that the framework of minority stress theory is flawed, as it looks for disease and suffering instead of also looking for strength and resilience (Stanley, 2009). Instead of using this model, Stanley proposes that future research with sexual minority populations should include a focus on resilience and positive coping skills, while also acknowledging suffering (Stanley, 2009). Another study, that qualitatively examined positive perceptions of being gay or lesbian calls for a similar goal with a focus on the need for more research among LGBTQ populations that examines the positive aspects of individuals belonging to these groups instead of the deficits (Riggle, Whitman, Olson, Rostosky & Strong, 2008).

Current studies of LGBTQ populations are limited in scope and often exclude some groups. As Fassinger and Arseneau (2007) argue, although the experiences of these sexual minority groups share some things in common, they are different as well. Some examples are in group specific paths in the development and representation of identity (Fassinger & Arseneau, 2007). Studies that exclude some sexual minority groups from research can give an incomplete view of the experiences of these populations. In addition, college students are often ignored in research on sexual minority populations (Sanlo, 2004). In a paper on sexual minorities in higher education Sanlo states "many sexual

minority students in higher education tend to be invisible; therefore, their presence and experiences are only known anecdotally" (Sanlo, 2004, p.97).

Other resilience research studies note the importance of examining diverse populations (Iwasaki, Bartlett, MacKay, Mactavish & Ristock, 2005; Keenan, 2010). Keenan states that "current literature in resilience that fails to properly examine diverse groups presents an erroneous view of resilience and can result in false assumptions regarding the nature of adversity and resilience for varying populations" (Keenan, 2010, p. 1039). Thus, there is a need for research that applies the concept of resilience to a greater number of different populations, such as sexual minorities, in order to avoid homogeneity in the field. Research that directly measures resilience, in conjunction with EEG recordings, combines both psychological and biological measures and allows researchers to view resilience in sexual minorities in a more complete way. Utilizing a combination of psychological and biological methods aids in clarifying and clearly establishing the construct within varied populations, where resilience has typically not been studied. It provides a more expansive view of the experiences of sexual minorities by examining a positive aspect of identity, resilience.

Current Study

The present study seeks to fill gaps in current literature on resilience among LGBTQ college students. The current study focuses on LGBTQ identified individuals, without a heterosexual majority comparison. Similar research designs excluding majority comparison groups have been used in feminist approaches to social science methods

(Harding & Norberg, 2005). For example, Fassinger and Arseneau's (2007) literature review notes that there is a shift away from heterosexual comparisons toward more alternatives in research on gender and sexuality, such as allowing for flexibility in identification among groups and refraining from having a dominant reference group. According to the authors, this shift reflects social changes in attitudes (2007).

In this study resilience was measured by the 25-item Conner-Davidson Resilience Scale (CD-RISC) (Connor & Davidson, 2003) and the Wagnild and Young 25-item Resilience Scale (Wagnild & Young, 1993). These two scales were used in conjunction with one another in order to test the convergent validity in resilience measurements, as neither resilience scale has been specifically tested for convergent validity with other resilience scales. In addition, as experiences with adversity and how one understands adversity play a critical role in the development of resilience, the Chinese Making Sense of Adversity Scale (CMSAS) was used (Pan, Wong, Chan & Chan, 2008).

An experimental design was used. Participants were randomly assigned to one of two conditions. In the experimental condition participants answered and reflected on statements related to resilience, and the control participants answered and reflected on neutral statements. The link between resilience and EEG activity was studied using measurements of hemispheric asymmetry during the reflection time by participants in both conditions. The experimental condition was designed to highlight or activate resilience that may possibly be already present in participants. It was assumed that the neutral statements of the control condition would not activate resilience as reflected in

hemispheric asymmetry. The current study tested both college students and young adults not attending college; because the majority of college students are young adults, the term "young adults" is used to describe the participants.

Hypotheses

Hypothesis 1: The 25-item CD-RISC will be positively correlated with the Wagnild and Young 25-item Resilience Scale.

Hypothesis 2: LGBTQ young adults will show evidence of resilience as measured by the CD-RISC and the W-YRS in accordance with their scoring criteria.

Hypothesis 3: LGBTQ young adults' resilience scores on the CD-RISC and the W-YRS will be positively correlated with the CMSAS.

Exploratory Question: Are there differences in the two groups in cortical EEG activity as measured by hemispheric asymmetry?

Methods

Participants

There were 21 participants recruited from a Midwestern comprehensive state university and the Northeast, WI community, including at a LGBTQ young adult support group at a local cafe operated by Goodwill Industries. Participation in the study was dependent on the individuals' identity as sexual/gender minority and requirements for EEG recording (exclusion of individuals with a metal plate or apparatus located in the skull or a pace maker). Out of 21 participants, 10 completed the experimental condition and 11 completed the control condition. The age distribution of participants was 18 to 30 years old, with 47% of participants 21 or younger. There were 7 freshman participants, 3 sophomores, 1 junior, 4 seniors, 1 graduate student, and 5 nonstudents. The majority of participants indicated having attended an event sponsored by a college LGBTQ Resource Center (61.9%). Every sexual orientation option listed was represented by participants (Figure P-1). There was also a range of participant responses for the gender identity including: man=6 responses, transman=1, transwoman=1, woman=12, and self identify=1 (Figure P-2); and biological sex questions including: male= 6, female=14, and other=1 (Figure P-3). Participation in the study was strictly voluntary. See Appendix M for the recruitment letter used in the current study.

Materials

EEG Items.

Checktrode UFI model 1089ES was used in the current study. The EEG caps used were the ECI, touchproof, CAP100C (Figure P-4). The international 10-20 system was used and data collected using Biopac Systems Inc., Acqknowledge 4 software and MP150 hardware/firmware. Electrode gel/paste GEL101 was used and obtained from Biopac Systems Inc in order to ensure that the gel/paste meets all of the recommended specifications for skin conductance recordings.

Assessment Items.

Chinese Making Sense of Adversity Scale.

The Chinese Making Sense of Adversity Scale (CMSAS) assessed how participants understand experiences of adversity, a key contributor to resilience (Appendix E). This 12 item scale has been shown to be reliable and valid in measuring both positive and negative attributes for making sense of adversity and meaning focused coping (Pan et al., 2008). This scale was chosen because according to Connor (2006) resilience can be looked at as a way to examine stress-coping skills. The CMSAS will also help confirm the construct validity of the two resilience scales with LGBTQ young adults. Scoring of the CMSAS is on a 6-point, Likert-type scale that ranges from 1(totally disagree) to 6 (totally agree). Higher scores indicate a greater tendency to positively make sense of adversity. Some items on the scale are: "Adversity not only causes pressure, but is also a motivation and adversity is normal and natural" and "Everyone will have to face it in life". According to the authors, making positive sense of adversity is associated with resilience and meaningful experiences (Pan et al., 2008).

25-item Conner-Davidson Resilience Scale.

The 25-item Conner-Davidson Resilience Scale (CD-RISC) was used to assess resilience (Appendix F). This scale was developed by Connor and Davidson for use in clinical and non-clinical settings and has been translated into many different languages (Connor & Davidson, 2003). The CD-RISC was used by Smith (2006) as a measure of resilience among LGBT persons in the development of a hardiness instrument. Because hardiness is only one aspect of resilience, scales measuring the construct of resilience were chosen as opposed to scales measuring hardiness. The 25-item CD-RISC has established internal consistency, test-retest reliability and is effective at differentiating resilience among populations, such as between a general population vs. patients with anxiety disorders (Connor & Davidson, 2003). Respondents rate 0 (rarely true) to 4 (true nearly all the time), for a score range of 0 to 100, with higher scores reflecting greater resilience. Some items on the scale are: "I am not easily discouraged by failure" and "Even when things look hopeless, I don't give up". The mean on this scale for the general population is reported to be at 80.4 (*N*=458, *SD*= 12.8), with scores in the first quartile reported to be 73 or lower and scores in the fourth quartile reported to be 90 or higher (Connor & Davidson, 2003). Therefore, a score of 73 (in the general population) would be considered low on resilience, a score between 74 and 89 would be moderate in resilience, and a score 90 or above would be considered high in resilience.

25-Item Wagnild and Young Resilience Scale.

The Wagnild and Young 25-item Resilience Scale (W-YRS; Wagnild and Young, 1993,2009) was also used as a measure of resilience (Appendix G). This 25-item scale is scored on a 7-point scale from 1 (disagree) to 7 (agree) with a score range of 25 to 175

with higher scores reflecting higher resilience. Examples of items on the scale include: "I am determined" and "I feel that I can handle many things at a time". Scoring is as follows: 25-100 is very low, 101-115 is low, 116-130 is moderately low, 131-145 is moderately high, 145-160 is high, and 161-175 is very high (Wagnild & Young, 2009). This scale was developed by Wagnild and Young and has established internal consistency, reliability, and concurrent validity as an instrument to measure resilience (Wagnild & Young, 1993). This scale was used by Adams (2006) to measure the correlation between resilience applied to coming out among LGB college students.

Neutral Surveys.

Neutral surveys of equal length and format as the CMSAS, CD-RISC, and Wagnild and Young 25-item Resilience Scale were designed for control condition participants to complete and reflect on instead of the resilience and adversity scales. These neutral surveys were specifically designed to be similar to the resilience and adversity scales except with questions about plants formatted like the CMSAS (Appendix H), animals formatted like the Wagnild and Young 25-item Resilience Scale (Appendix J), and furniture formatted like the CD-RISC (Appendix I). Examples of scale items include, respectively: "I enjoy aloe plants", "Snakes make bad pets" and "Bean bag chairs are the best kind of furniture".

Procedure

Participants were tested individually. Upon arrival, participants were greeted by an experimenter who led them to a chair and table at the back of a room approximately 6

x 25 feet and painted black. The room used includes the EEG and human physiology equipment necessary for the study. Participants were seated in a reclining chair at a brown desk approximately 2 x 2 feet and given the informed consent document (Appendix C). After completion of the informed consent document, questions from the participants were addressed. The experimenter then explained the goal of the study and provided a brief description of EEG procedures. Participants completed the demographics form (Appendix D) prior to set up of EEG equipment.

The participant was asked to remove any remaining jewelry and was comfortably seated in the chair used for data collection. As participants may have different head sizes, the experimenter measured the circumference of the skull from the nasion to the inion for fitting of the proper EEG cap (Figure P-5). The EEG cap (ECI, touchproof, CAP100C) was then placed on the participant's head and a small amount of electrode gel/paste inserted into each of the relevant EEG electrodes for data collection. The EEG cap is arranged in what is known as the international 10-20 system and data collected using Biopac Systems Inc., Acqknowledge 4 software and MP150 hardware/firmware.

EEG data collection and analyses was done according to that described by Curtis and Chicchetti (2007) unless otherwise noted. EEG data were collected from 10 corresponding electrodes across the left and right hemispheres (Fp1, Fp2, F3,F4, F7, F8, C3, C4, P3, P4) (Figure P-6) and two electrooculography (EOG) electrodes. Data were filtered for alpha frequency waves ranges of 8-13 Hz. EEG gain was set to 500, and gain for the EOG channels set to 150 and all data sampled at 2ms intervals (500 Hz). In contrast to Curtis & Cicchetti (2007) which used electrodes A1 and A2, electrode CZ was

used as a reference. The ECI cap used in the present study does not have these electrodes, so the alternate reference electrode site was used. This site is an established reference electrode and is commonly used in EEG methods (Teplan, 2002). The reference electrode is used in EEG to aid in measurement of potential changes in neuronal activity over time by providing a site in which the electric brain activity of all other electrodes are measured relative to. Thus, the measurement is between the signal or active electrode and the reference electrode (Teplan, 2002).

The EEG cap has a built in ground electrode. The ground electrode is used for grounding the system and EEG measurements and is necessary for proper management and operating condition of the EEG amplifiers. Literature notes that placement for the ground electrode does not play a significant part in EEG measurement and, can be placed anywhere on the body (Teplan, 2002). Two EOG electrodes were used for the removal of eye-blink artifacts not related to the study (Curtis & Cicchetti, 2007). A small amount of electrode gel/paste was inserted in the EOG electrodes, and held in place by small adhesive disks. The electrodes were attached to the skin above the right eye approximately located on the facial muscle frontalis and below the right eye approximately on the facial muscle orbicularis oculi, bisecting the midline (Figure P-7). The Biopac Systems Inc., Acqknowledge 4 software that was used for the current study has automated EOG eye blink artifact removal.

Once EEG and EOG set up was complete, all electrode sites were tested for proper impedance from a Checktrode (UFI model 1089ES). The Checktrode was first checked for proper operation, which was determined if the reading is 10Ω within 50Ω in

the "50KΩ test" position on the Checktrode (Figure P-8). Ω or ohm, is a unit of measurement used in EEG recording and is typically used to measure electrical characteristics (Teplan, 2002). Additionally, all electrodes were individually tested for impedance (goal < 5Ω) in the "contact KΩ" position on the Checktrode. After proper impedance was established, baseline data consisting of two 2-minute resting baseline periods with alternating eyes open or eyes closed were collected. The first condition (eyes open or eyes closed) was randomly assigned. A baseline recording period is used to make sure EEG equipment is working properly and to familiarize participants with having the EEG cap.

Participants were randomly assigned to the experimental or control condition, based on the experimenter placing one of two possible folders containing surveys in front of the participant. The experimental condition completed the 25-item Conner-Davidson Resilience Scale (Connor & Davidson, 2003), the Wagnild and Young 25-item Resilience Scale (Wagnild & Young, 1993) and the CMSAS (Pan, et al., 2008). The control condition completed the three neutral surveys. After participants completed the surveys associated with each condition, they were instructed to reflect on the content of the surveys they just completed. In both conditions participants were instructed to reflect with their eyes closed until told to stop. Alpha activity is enhanced by closing the eyes (Teplan, 2002). In line with McGregor et al. (2009) in which participants were assigned randomly to a threat or no-threat condition using EEG, participants in all conditions reflected for a total of two minutes.

After reflection, only participants in the control condition completed the 25-item Conner-Davidson Resilience Scale, the Wagnild and Young 25-item Resilience Scale, and the CMSAS. Participants in both conditions then completed the qualitative question (Appendix K). This was followed by participants being instructed to read a neutral story (Appendix L) after which participants were instructed to reflect on the content of the story they just read with their eyes closed until told to stop. Reflection on the neutral story is done in order to insure participants do not have any residual effects from prior aspects of the study. Participants reflected for a total of two minutes.

After EEG and EOG data were collected, participants were disconnected from all equipment. Participants were given a statement describing the nature of the study (Appendix O). After being given time to read the paper, participants were asked if they had any further questions before being discharged from the experiment. For a flow chart of experiment events, procedures, and participant instructions see Appendices A, B, and N.

Analyses

EEG data analysis was done with the methods outlined in Curtis and Cicchetti (2007). EEG analyses were from the two minute reflection period following the administration of the experimental condition scales and the control condition neutral scales. Raw EEG data was filtered for EOG artifacts. A fast Fourier transformation was applied to the remaining artifact free data, using a Hanning window to reduce spectral leakage. Spectral power from 1-Hz frequency bins was computed for each electrode site

and clustered into broad bands. The alpha peak was approximately centered in the 8-Hz to 13-Hz band. Raw alpha power from each electrode site was natural logarithm (ln) transformed, to normalize the distribution of alpha power prior to statistical analyses.

An asymmetry score was calculated for each of the 10 corresponding electrode sites for each participant by subtracting the ln- transformed alpha power for the left site from that of the right electrode site (e.g. ln F4- ln F3). For the alpha band, a positive asymmetry score reflects greater left side activity (Curtis & Cicchetti, 2007). A composite asymmetry score was also calculated by summing all five asymmetry scores across participants. Each participant had five asymmetry scores (from the 10 corresponding electrodes), and one composite asymmetry score. Due to the exploratory nature of the current study regarding EEG asymmetry and resilience, all five asymmetry scores and the composite scores were examined.

Hypothesis 1 assessing the relationship between the CD-RISC and the W-YRS was addressed by computing resilience scores for each of the resilience measures, and performing a Pearson Bivariate Correlation to determine if the two resilience measures were correlated. Participants' resilience scores were computed for Hypothesis 2 as described in Connor and Davidson (2003) and Wagnild and Young (1993) and compared to the standardized resilience indicators for the 25-item CD-RISC and the W-YRS. Hypothesis 3 assessing the relationship between the two resilience scales and the CMSAS was tested with a Pearson Bivariate Correlation computed for the CD-RISC and the CMSAS, and for the W-YRS and the CMSAS. The exploratory question was addressed

by conducting an independent samples t-test in order to determine differences in EEG asymmetry scores between the experimental and control condition.

In addition, the responses to the qualitative question were addressed using interpretive phenomenological analysis (IPA; Smith, Jarman, & Osborn, 1999). IPA explores the experiences of people and how they assign meaning to make sense of those experiences. One of its goals, is to try and make sense of the participant's world in a process of combining descriptive and interpretive techniques. As the interpretation of the participants' experiences are always subject to the researcher's own beliefs, using this technique takes time to acknowledge pre-existing values, assumptions, and beliefs that may affect the interpretation of the data and attempt to reduce their impact on these analyses. IPA involves analyzing transcripts by reading and rereading the transcripts many times while making margin notes about key points in the text. One then summarizes the notes, creates a list of the summaries, and groups them together into thematic areas. IPA employs an iterative process in which the content of the data produces the themes instead of the researcher matching established themes from literature. This is done both with individual responses and with the transcript as a whole so at the end one has a final master list of themes extracted (Smith et al., 1999).

Results

Preliminary Analyses

A Pearson Bivariate Correlation was conducted to test the relationship between the CD-RISC and the W-YRS, Hypothesis 1. In order to address this hypothesis, a composite variable was calculated for the CD-RISC and the W-YRS by summing the individual items for both scales separately. Analyses revealed a significant positive correlation between the CD-RISC composite variable and the W-YRS composite variable, $r(19)=.90$, $p<.01$, thus supporting Hypothesis 1.

Resilience, as measured by the CD-RISC and the W-YRS, was determined in accordance with the scales' scoring criteria (Hypothesis 2). The current study's mean for the CD-RISC ($M=67.67$, $SD= 12.39$) was below that of a sample from Connor and Davidson (2003) ($N=458$, $M=80.4$, $SD= 12.8$). In the current study, 28.8% of respondents had a score indicating moderate to high resilience. The current study's average score on the W-YRS indicated participants to be moderately high in resilience ($M= 132.76$, $SD= 17.11$).

There was no significant correlation of the CD-RISC with the CMSAS, $r(19)= -.141$, nor of the W-YRS with the CMSAS, $r(19)= -.105$ (Hypothesis 3). The exploratory question examining potential differences in the two conditions' cortical EEG activity, as measured by hemispheric asymmetry, was examined by conducting an independent samples t-test. The independent samples t-test revealed no significance, though electrode pair C4/C3 was approaching significance at the .05 level, $t(19)= .80$, $p=.08$ (Table Q-1).

Conducting this analysis with only right handed participants (experimental *N*=10, control *N*=10) did not reveal any statistical significance, but did cause the C4/C3 electrode pair to be closer to approaching significance at the .05 level *t*(18)=.82, *p*=.06 . Curtis and Cicchetti (2007) also grouped participants according to handedness.

Post Hoc Analyses

Although not hypothesized, an independent samples t-test revealed that there was a significant difference between the two conditions on the W-YRS, (experimental, *M*= 134.1, *SD*=23.06; control, *M*= 131.54, *SD*=10.17; *t*(19)= .33, *p*=.05). No significant differences were found in the two conditions on either the CD-RISC (experimental, *M*= 67.4, *SD*= 15.31; control, *M*= 67.9, *SD*=9.8; *t*(19)= -.09,*p*=.15) nor on the CMSAS (experimental, *M*= 46.2, *SD*= 3.15; control, *M*= 44.5, *SD*=6.62; *t*(19)= .72, *p*=.13).

Separating resilience scores on both measures by attendance at an LGBTQ event or activity on college campus, while not hypothesized, provided interesting trends. Analyses revealed those who indicated having attended a LGBTQ event or activity on college campus had higher averages on the two resilience scales (CD-RISC, *M*= 70.15, *SD*= 12.67; Wagnild and Young, *M*= 136.83, *SD*= 18.6) than those who did not (CD-RISC, *M*= 63.62, *SD*= 11.55; Wagnild and Young, *M*= 126.12, *SD*= 12.73). However, an independent samples t-test revealed no significant differences in scores on the two resilience scales (CD-RISC, *t*(19)= -1.18, *p*=.71; W-YRS, *t*(19)= -1.43, *p*=.46). Additionally, an independent samples t-test revealed no significant differences on the

CMSAS for those who indicated having attended a LGBTQ event or activity (*N*=13, *M*= 43.70, *SD*= 4.85) from those who did not (*N*=8, *M*= 48, *SD*= 4.90), *t*(19)= 1.97, *p*=.87.

Although the authors of the CMSAS provided no formal scoring criteria for adversity, they described scoring of this scale as higher scores indicating a more positive understanding of adversity and lower scores indicating a more negative understanding of adversity (Pan et al., 2008). By this definition one could calculate scores with a range between 72 (highest possible) and 12 (lowest possible). Participants of the current study had a mean of 45.33 (*SD*= 5.2). As with the resilience scales, a similar pattern was presented when separating scores by condition, with those in the experimental condition having a slightly higher, but not statistically different, mean than those in the control (experimental, *M*= 46.2, *SD*= 3.15; control, *M*= 44.54, *SD*= 6.62).

Although not hypothesized, a Pearson Bivariate Correlation was conducted to examine if resilience scores on the CD-RISC and the W-YRS would be positively correlated with asymmetry scores for participants in the experimental condition. Analyses revealed no significant correlations between either resilience scale and asymmetry scores on electrodes FP2/FP1, F4/F3, F8/F7, C4/C3, P4,P3, nor in the composite score of the electrodes (Table Q-2).

Qualitative Analyses

In addition to the above analyses, the free response qualitative question (Appendix K) was examined using IPA (Smith, Jarman, & Osborn, 1999), which revealed three main themes: facing adversity, using resources, and positive attitudes. See

table Q-3 for a list of examples of items coded as themes, subthemes, and items that were not included in a theme. Together they tell a story of the participants' lives. Though it was not required for participants to complete the qualitative question portion, all did so. Often, these responses were heartfelt and candid. Participants did not simply write a response to the question, they told intimate and personal stories, revealing hardships, struggles, and hopes for the future.

There were many different types of adversity faced by respondents. Examples include adversity related to family environment, school life and academics, deaths of loved ones, religious adversity, homelessness, coming out, and adversity faced with the restriction of governmental laws (i.e. in relation to marriage, access to health care, etc.). Respondents indicated facing adversity with employment opportunities also. Two participants mentioned struggling with homelessness, and the majority mentioned struggling with physical and mental health problems.

These examples falling under the theme facing adversity can be described in three subthemes: harassment/homophobia, isolation, and physical/mental health problems. Participants indicated experiencing harassment and homophobia in many different contexts. For instance, harassment and homophobia were described as occurring at school as well as at internships and extracurricular activities. Many participants expressed experiencing harassment and hearing homophobic comments from family, in employment situations, and during day to day life in general. This was often amplified during the coming out process to others.

The second subtheme-isolation-was reported in numerous circumstances. This often was in reference to adjusting to college life being LGBTQ identified, and separated from loved ones. Participants also reported feeling isolated by their friends and family because of their LGBTQ status. An additional dimension of isolation noted by participants was isolation from society because of non-equal legal treatment due to their sexual orientation.

Physical and mental health problems, particularly depression, were also often noted in the participants' responses. They frequently mentioned feeling depressed due to their life circumstances. This often resulted in participants taking action such as suicide attempts and running away. One participant noted frequent bouts of homelessness and another mentioned attempting to manage severe mood swings, all while trying to maintain composure in day to day life. At times participants stated that they felt their health problems were directly due to their environment, such as growing up and living with parents who suffered from addiction problems.

Nearly every participant mentioned using resources to help improve their life situation. This often involved reaching out to others for help. In many cases participants sought help and support from teachers, family, friends, and allies. Most frequently, participants discussed using the LGBTQ Resource Center for help and guidance during turbulent times. Seeking help and guidance also often required participants to look within themselves for inner support. This inner strength gave rise to a frequently occurring theme of using a positive attitude to handle unfavorable circumstances every participant cited as having experienced. Participants commonly wrote the words of encouragement

they told to themselves during tough times to help them see through the adversity. Such phrases include: "I can do this", "I won't let adversity control me", " I am doing well" and "accepting that I will be fine". At times, words of encouragement came from indirect sources as well, such as hearing stories of others who faced a similar struggle and made it through.

As we can see, there is a story embedded in the participants' responses to the qualitative question. Participants noted facing adversity in their lives that was difficult, even seemingly impossible. Sometimes the participants noted having to face the struggle alone and in other instances some had support or help along the way. Despite that, all 21 participants also noted rising above their situation and doing their best to make it through difficult circumstances. In short, they had a positive response despite facing a possibly difficult situation in their lives.

Discussion

Current Findings

The results of the current study present mixed findings regarding resilience in LGBTQ college students and young adults. As predicted by Hypothesis 1, the two resilience scales were correlated, suggesting a degree of convergent validity. There were mixed findings in the test of Hypothesis 2, which stated participants would show evidence of resilience on the two resilience scales. Overall, the CD-RISC classified participants as low in resilience, while the W-YRS classified participants as moderately high in resilience. This is likely reflective of the different Likert scales and more differentiated descriptions of levels or degrees of resilience. The CD-RISC classifies resilience scores on the basis of low, moderate, or high; the W-YRS has six different resilience classifications.

Although, while the authors of both resilience scales shared a common goal of creating a valid and reliable measure to quantify resilience and to establish reference values for resilience in the general population (Connor & Davidson, 2003; Wagnild & Young 1993), they differed in other aspects. The CD-RISC includes items that reflect personal competence, tolerance of negative affect, positive acceptance of change, control, and spiritual influences. The items on the W-YRS reflect equanimity, perseverance, self-reliance, meaningfulness, and existential aloneness (i.e. the realization that each person's life path is unique and that while some experiences are shared others must be faced alone). The authors' factor analyses of the scales confirmed the presence of these

categories. The W-YRS was further reduced to two factors: personal competence and acceptance of life and self. These differences in the scale items may have produced the differences found in this study between participants' overall resilience scores.

Although the two resilience scales were correlated, as predicted in Hypothesis 1, the resilience scales were not correlated with the CMSAS (Hypothesis 3). This could have possibly occurred because resilience is a complex construct and although it is linked with adversity, the exact mechanisms involved in that link are still being explored. To elaborate, many definitions of resilience state that there must be an experience of *severe* adversity or threat. However the CMSAS does not measure the severity of adversity, but instead measures how one understands and makes sense of adversity. Thus, it is possible that how one understands adversity is not as closely linked to resilience as much as experiencing adversity. Additionally, the CMSAS itself was not designed with the intent of measuring resilience and as such may not contain appropriate content in order to be able to be statistically linked with resilience measures. Additional studies should be done to further test the construct validity of the two resilience scales with LGBTQ populations.

The exploratory question examining differences in the two groups' cortical EEG activity measured by hemispheric asymmetry was assessed. Although an independent samples t-test revealed no significant differences, electrode C4/C3 was approaching significance at the .05 level. In a 2007 study by Curtis and Cicchetti examining resilience among maltreated and non-maltreated children across 16 electrode pairs, significant differences were only found on the electrode pair C4/C3. In this study, 37 children were classified as resilient while 50 were classified as non-resilient. A larger sample size in the

current study might have produced statistically significant differences in asymmetry scores between the two conditions in the same electrode pair.

Furthermore, variability existed between the asymmetry scores in both conditions. For example, asymmetry scores in the experimental condition for just the composite variable ranged from -.25 to .1. Variability was found in asymmetry scores in the control condition as well with composite scores ranging from -.07 to .09. The largest standard deviation was .1 (see table Q-1 for a full list of all standard deviations). While some of this variability was diminished by including only right handed participants, it could not be excluded entirely. This was illustrated in analyses done for the exploratory question in which exclusion of handedness other than right caused the electrode pair C4/C3 to be closer to statistical significance.

In the post hoc analyses, little difference was found in participants' scores on the CD-RISC separated by condition, although those in the experimental condition had slightly higher, but not statistically different, scores. Scores separated by condition on the W-YRS on the other hand did produce a statistically significant difference, with those in the experimental condition having higher scores than those in the control. In addition to the reasons described above, this also could have occurred from participants in the control condition taking the neutral surveys prior to taking the resilience scales. Taking the neutral surveys first may have reduced resilience scores on just the W-YRS because of its greater differentiation of levels of resilience. Fatigue from taking the neutral scales first could have also played a role, influencing the W-YRS because it has more

differentiated scoring criteria. There was no statistical difference found for scores between conditions on the CMSAS.

Though not hypothesized, scores on the two resilience scales for persons who attended LGBTQ events or activities on college campus were higher, though not statistically different. This overall trend is in line with current literature on GSAs, which note that such alliances in schools support resilience by helping younger people engage in LGBTQ activism (Fetner & Kush, 2008).

Additional analyses revealed no significant correlations between either resilience scale and asymmetry scores on electrodes FP2/FP1, F4/F3, F8/F7, C4/C3, P4,P3, nor in the composite score of the electrodes. This could be due to many reasons. For instance, scores on the resilience measures themselves differed by scale and ranged from low to moderate resilience. As the current study was the first to use such scales with LGBTQ young adults, this could potentially indicate that the resilience scales themselves are inappropriate to measure resilience within this population, and make any correlation between the scales and asymmetry scores difficult to determine.

Although results of the resilience scales, adversity scale, and EEG data produced muddled findings, it is clear from examination of the written narratives that there was evidence of participants facing adversity and experiencing resilience. Out of the 21 narratives, every participant indicated an event where adversity was faced. Likewise, all of the 21 participants indicated rising above or facing their adversity in a positive manner, which indicates resilience. According to the Luthar et al. (2000) and Masten (2001) criteria for resilience previously mentioned, these are the two critical aspects of

resilience: facing significant adversity and positive development and adaptation despite significant obstacles. Intersectionality can help us understand better the findings in the current study. Based on trends found, we can theorize that the intersecting relationships created by the participants' identity as a sexual minority, a young person, and a student, along with involvement in LGBTQ activism resulted in a positive aspect of group membership and identity: resilience. This resilience may have been further amplified by involvement with GSA programs through an LGBTQ resource center. More research is needed to further explore the connections between these relationships.

Limitations

One major limitation of this study relates to the small overall sample size (n=21). Splitting it into the individual conditions (experimental n=10, control n= 11), influenced the statistical tests of the resilience scales, adversity scale, and EEG measurements by reducing the power. The small sample was likely related to the method of recruitment and time constraints of the study. Recruitment was done solely through the researcher speaking of the study at LGBTQ events on and off a college campus, word of mouth, and fliers/posters on and off the campus. Although a sincere effort was made to gain as many participants as possible, participation in the study was solely determined by the individual participants. In other words, no participants were formally required to participate. This is in contrast to other psychological study recruitment done at the university through class requirements and the use of the SONA system. This was avoided in the present study to

retain greater confidentiality of the participants' identity, which participants noted as being a key factor in their participation.

The population sample itself also posed some limitations. Because of the recruitment method, many of the participants were involved in LGBTQ and GSA events and activities and many were also college students. Because such events have been related to resilience by other research, the population sample in the current study may be biased. Likewise, the fact that they have already made it to college, shows some degree of success. On the other hand though, it is equally important to note that not all participants in the current study scored in the moderate to high range of resilience. Resilience is a complex, multidimensional construct and as such many factors contribute to its formation and expression. Capturing resilience in any population presents a complex challenge.

Due to the time constraints of the current study (i.e. approximately one academic year), recruitment was also limited to approximately that same time period. In an ideal situation recruitment could have continued for more than one academic year and thus possibly increasing the sample. Another limitation to the current study is that the scales have not been used with LGBTQ young adults. Although this might make the results of the study more meaningful by applying such measurements to a diverse population, it also raises the possibility that the measurements are not applicable to LGBTQ young adults.

Likewise, the reflection periods also posed a potential problem. It is possible that participants were not truly reflecting on resilience but instead on other aspects of the surveys. As the participants were not explicitly instructed to reflect on resilience and

there was no manipulation check in the study, there is no concrete way to determine post hoc what aspect of the survey the participants were reflecting on. Perhaps participants in the experimental condition did not realize until debriefing that the survey was about resilience, as the survey questions themselves never asked about resilience.

It is important to note that the scales were not counterbalanced and the participants were not told to fill them out in a specific order. Thus, upon receiving the packet of scales, the participants had total control on the order they completed items. Any differences in scores from the scales caused by them not being counterbalanced are unknown. Additionally, though the scales themselves were highly correlated, some of the individual items on the CD-RISC may have caused resilience scores to be lower. For instance, item three on the CD-RISC reads "when there are no clear solutions to my problems, sometimes fate or God can help." On this question over half (57.1%) answered as not true at all or rarely true, which could have occurred due to conflicting religious views or misunderstanding of the question. Because resilience is a complex construct, it can be hard to fully capture the dynamic, interconnected processes at work.

Qualitative methods also have their own limitations in research. In the current study, the extraction of themes was done by a single researcher. This was necessary in order to secure confidentiality of the participants' identities and build their trust, but poses a limitation because there was no calculation of inter-rater reliability. Qualitative methods themselves have limitations as a research method. They assume people have accurate access to their thoughts, and that they can accurately describe their thoughts in written language. The problem is that one must acknowledge that people may not have

accurate access or descriptions of their thoughts when conducting qualitative research, and at the same time assume that participants are accurate in their self descriptions.

The language used in the study also poses a potential limitation. For example, while participants were instructed to ask if they had any questions, there is no way to determine how participants understood the questions and terms used in the current study. Did they really understand what the word "adversity" meant? Did they all understand it the same way? Additionally, the qualitative question itself was potentially leading in that it asked participants to write about personal experiences of resilience in the face of adversity. While none of the participants were required to complete this question, as outlined on the document, participants could have potentially felt compelled to write about an experience of resilience. Another potential limitation of the current study is that without a threat condition, there is no way to determine the severity of adversity experienced by participants. In this study there was a general assumption that some adversity had been faced by participants.

Additionally, the environmental context of the study itself could have affected the differentiation between asymmetry scores in the two conditions, as well as links between the asymmetry scores and the resilience scales. The study was conducted in a darkly painted lab in the basement of a classroom building with equipment unfamiliar to the participants. Participants' unfamiliarity with the lab environment and equipment could have influenced their reflection on the scales. Also, the link between EEG asymmetry and resilience is still largely exploratory and has not been formally assessed by other studies to date (Curtis & Cicchetti, 2007). Thus, although the current study hypotheses regarding

resilience and cortical activity as measured by EEG were not fully supported, the study suggests that such links should be explored further.

Future research

There are many directions for future research. One of the most important is to further explore the applicability of resilience scales to LGBTQ populations. This would involve determining if LGBTQ persons, particularly young adults, feel that the questions on such scales are applicable to their lives. As previously described, the experiences of LGBTQ persons are very diverse and as such scales measuring resilience may need to be reflective of their particular life experiences. For example, future research should explore the applicability and relevancy of the resilience scale's questions to LGBTQ populations in order to assess how the questions fit into the lives of these populations. Additional studies should also be done to determine how the CD-RISC and the W-YRS items relate to each other, perhaps by factor analyses. Similarly, future research should also explore the CMSAS in order to gain a better understanding of how diverse populations understand adversity. Further studies should exercise control on the severity of adversity experienced possibly by the use of a threat condition. Such studies should also examine possible differences and similarities between different types of adversity, such as general adversity and adversity related to sexual orientation, and their relationship to resilience. Future research should explore further the link between hemispheric asymmetry and resilience in order to gain a more complete picture of the neural activity associated with resilience. This would perhaps best be done by comparing baseline hemispheric

asymmetry scores to scores of participants after an experimental manipulation (McGregor et al., 2009).

An additional direction for future research is to gain a better understanding of the experiences of adversity and resilience in LGBTQ persons. It is important for additional studies to examine resilience in different contexts, such as those related to gender identity, sexual orientation, and life experiences in general. As evident from the current study's findings, this would perhaps best be done through semi-structured interviews. Future researchers could then triangulate back to ask participants how well they feel their experiences are being captured. In this manner, future researchers could gain firsthand knowledge about adversity and resilience in LGBTQ persons.

Implications

This study shows that despite current literature emphasizing the increased risk LGBTQ young adults face, they also show evidence of resilience and the ability to thrive and do well. The current study suggests that resilience scales may not be applicable to all populations and fully capture their experiences of resilience, particularly for LGBTQ persons. It also suggests that more research needs to be done to determine how well resilience scales capture the construct and whether they differ in their factor structures. Future research will aid in providing a clearer picture regarding the generalizability of resilience scales to sexual minorities. The current study also has implications for research examining the neural correlates of resilience by EEG, suggesting that the C4/C3 electrode pair should be further examined.

The current study has implications for applied settings as well. It suggests that although attitudes toward LGBTQ populations are improving, there is still much work to be done. For example, the findings suggest that communities need to increase awareness of LGBTQ issues in order to help lessen some of the struggles sexual minorities face. The importance of LGBTQ Resource Centers was clear in this study and future studies should explore further the direct impact of such centers.

Conclusion

Resilience is a complex construct. The current study examined resilience among LGBTQ young adults using a multi-method design. The evidence suggests that LGBTQ young adults and college students experience resilience despite facing significant amounts of adversity. However, measurement techniques using established scales and readings of cortical activity may not fully capture the nature of their resilience and the adversity they have faced. The current study shows that although more work needs to be done to examine resilience in LGBTQ young adults, overall this population is doing well. In conclusion, this study contributes to growing literature on resilience in a multidimensional way by examining the construct through cortical activity, qualitative methods, and quantitative surveys.

Endnote

[1]Although the current study includes LGBT and Q individuals, not all of the studies mentioned in this thesis proposal did so. Thus, when an article is cited that refers to some sexual minorities and not others (e.g., LGB), I note only the ones included in the article.

APPENDIX A

Flow Chart of Events

Informed Consent and EEG preparation

↓

4 minute EEG Baseline Measurement (2 min eyes open & 2 min eyes closed)

↓

Scales

Group 1: Chinese Making Sense of Adversity, 25-item Connor-Davidson Resilience Scale, 25-item Wagnild and Young Resilience Scale (see Appendices E, F, G)

Group 2: 3 neutral surveys of equal length and format to those for group 1 (see Appendices H, I, J)

↓

2 minute reflection and EEG Recording (eyes closed)

↓

Scales

Group 2: Chinese Making Sense of Adversity, 25-item Connor-Davidson Resilience Scale, 25-item Wagnild and Young Resilience Scale

↓

Qualitative Question

(see Appendix K).

↓

Neutral Story

(see Appendix L)

↓

2 minute reflection and EEG Recording (eyes closed)

Debriefing
(see Appendix O)

End
Participants will be asked if they have any additional questions or concerns before leaving.

APPENDIX B

Procedures

a. The researcher will explain all of the steps involved in being connected to the biomonitor that will collect the EEG and EOG data. The researcher will make clear that the physiological data to be gathered are naturally occurring physiological signals and that there are no short- or long-term medical risks associated with the experiment. After this, participants will fill out the informed consent form, which contains a description of the activities and instructions.
b. Participants will have been told to remove all metal jewelry, including earrings, necklaces and piercings that might interfere with the data signals prior to arriving to participate. Should participants arrive with such items, they will remove them and retain possession of all items. No researcher will ever be in possession of any of these items.
c. Establish a connection between the participant and the biomonitor for collecting and processing EEG and EOG data. For EEG signals, this includes the following steps:

1. The participant fits a stabilizing strap under the armpits and around the chest and secures it with Velcro® and elastic straps to create a comfortable but snug fit.
2. Head circumference is measured with a flexible tape measure (accurate head measurements are a critical component of EEG data analysis).

3. A clip electrode may be placed on each ear lobe to create a "reference" or control. An alternate reference that may be used is located within the cap itself. The reference will be either on the ear lobes or in the cap. This is necessary because normal heart activity creates a background electrical signal that can interfere with accurate EEG measurement. The ear electrodes control for this background activity so that valid comparison between EEG signals from different cranial electrodes can be made. The ear clip electrode is hollow, containing space for the conducting gel (ECI Electro-gel™, Biopac Inc.). The gel is applied with a blunt-tip syringe. The tip of the syringe is used to slightly abrade the skin of the earlobe directly under the electrode during gel application. This is done by inserting the blunt tip into the electrode and wiggling it back and forth while injecting gel into the hollow space. This is critical to improve the connection and provides for a good ground. This procedure will have been previously explained to participants (on the informed consent form). The second option involves using adhesive electrode pads instead of the clip electrode. The adhesive electrodes are simply stuck onto the earlobe, which has been slightly abraded by rubbing with the blunt end of the syringe as described above. Either method may be employed in the current study, depending upon which provides for a more valid overall EEG signal.
4. A washable mark is made on the skin at the "Fp" line. The position of this line is derived from the head circumference and is essentially on the forehead about 0.5 inches above the top of the nose bridge. This horizontal mark is made with a water-washable marker and is used as a reference point to position the electrode cap. The electrode cap is made of flexible, breathable fabric and contains 20

contact points or electrodes. These "recessed" electrodes have a smooth rubbery surface and a hole in the middle, which will be filled with Electro-gel. The two electrodes in the front of the cap have sponge disks attached to them for increased comfort. The leads from the electrodes (20 in all, positioned at various points in the cap in an arrangement called the international 10/20 montage) are gathered at the top of the cap and run in a flexible cable to the biomonitor amplifiers, which help process the EEG waves.

5. The cap is placed on the participant's head using the Fp marker line for proper positioning, and is secured to the stabilizing strap by snaps. This helps keep the cap in a steady (stabilized) position throughout the experiment, which greatly enhances the signal validity and reliability.
6. Each relevant electrode in the cap is then filled with Electro-gel and the skin under each electrode is slightly abraded with the blunt-end syringe using the method described above for the ear clip electrodes.
7. For EOG signals, electrodes are attached to the skin below and to the right of the right eye with surgical tape to stabilize them. The electrode is pre-coated with Electro-gel. Recording of EOG measurements is necessary to control for eye movements produced while participants read from the computer monitor. The eye movement artifacts are removed from the EEG data during prior to data analysis.
8. When all electrodes are properly arranged, participants are made comfortable in a slightly reclining position (in a reclining chair) and a small pillow is placed under the neck to support the head. Participants will be instructed to avoid any unnecessary movements of head or body.
9. Each relevant electrode is then checked for the proper impedance (or conductivity), which must be below 3K ohms. All of the electrodes must have this level of impedance prior to collecting data.
10. When all electrode impedances are within the proper range, each EEG and EOG lead is plugged into a separate amplifier (each with a separate channel for data collection), all of which are connected to the biomonitor.
11. Participants will be reminded to avoid any unnecessary movements of head or body for the duration of the study.

APPENDIX C

Informed Consent Form

You are invited to participate in a study conducted by a student at University of Wisconsin Oshkosh. We are studying coping skills among sexual minority college students.

If you decide to participate, the study should take 45 minutes to 60 minutes and will involve answering survey questions about your experiences related to your sexual orientation/gender identity and general opinions about yourself. We will also be looking at coping skills and brain wave patterns using an electroencephalogram (EEG). You were selected as a possible participant in this study because you met the guidelines required by this study.

Any information that is obtained with this study will remain confidential and will be recorded and kept in an anonymous manner. At no time will your name or other identifying information be used in conjunction with your responses in this study. The information provided will also not be distributed and will remain in the sole custody of myself, the principal investigator. The information you provide will be used for the completion of the study only. By signing the consent form you agree to provide us with information to enhance the progress of our study.

If you feel uncomfortable or unable to complete the study for other reasons at any point, you are free to withdraw your consent and you may decline further involvement at any time. You may also request that your data not be used and/or be destroyed. We cannot guarantee that you will receive any direct benefits from this study. The Institutional Review Board (IRB) has reviewed and approved the present research to be conducted.

Once the study is complete, we will be happy to give you the results. In the meantime, if you have any questions, please ask the experimenter. If you have any future questions please contact Heather Flick. Email: flickh18@uwosh.edu. Phone number: (920)784-4180.

If you have a complaint about your treatment as a participant in this study, please call or write:
Chair, Institutional Review Board for Protection of Human Participants, c/o Grants Office, UW Oshkosh, Oshkosh, WI 54901, (920) 424-1415; although the chairperson may ask for your name, all complaints are kept in confidence.

In addition, please read the following information about the procedures in this study and provide your signature at the bottom.

A. For this experiment, the following conditions will be in place:
1. All data collected will be confidential and anonymous. No participants' names will

appear in any subsequent presentation or publication involving any of this data. Data will be stored in a locked file cabinet in Clow Faculty 6.

2. I acknowledge that once I start the experiment, I can withdraw at any time without negative consequences, and I acknowledge that I will not receive credit for research participation.
3. During the experiment, any questions I have will be answered immediately and clearly.
4. Upon completion of or withdrawal from the experiment, I will be fully debriefed about the nature of the experiment.
5. I have been informed and recognize that there are no known short- or long-term medical risks associated with participation in this experiment.
6. I agree to remove and keep possession of all jewelry or other items that might interfere with data collection. I agree that at no point in the experiment will any researcher be in possession of any of my personal items.

B. During this experiment, the following are necessary parts of the procedure:

1. Wearing an EEG recording cap containing recording electrodes and attaching electrodes to near your right eye and applying electrode conductance gel underneath all electrodes.
2. If necessary, a slight abrading of any spot under the electrodes to enhance the signal; this is done by rubbing gently with a scrubbing sponge. Mild and temporary skin reactions to the conductive gel have been noted in a small percentage of participants in previous studies. There are no medical risks associated with this portion of the procedure.
3. Making a temporary mark on your forehead with a washable marker.
4. Fitting yourself with a stability strap looped under the armpits and anchoring it to the EEG cap.
5. A slight abrading of any spot under an EEG electrode to enhance the signal; this is done by inserting a blunt end syringe in the electrode hole, squeezing in some conducting gel, and wiggling the syringe back & forth in the electrode hole while the blunt end of the syringe is in contact with the skin. There are no medical risks associated with this portion of the procedure.
6. The entire experiment will take 45-60 minutes.

C. You will receive the following information/instructions during the study:

This study will focus on the relationship between coping skills and naturally occurring physiological signals, such as brain waves. This type of information is important when researching individual differences in perception.

To start, you will be connected to a biomoitor used to collect physiological signals: electroencephalograms (EEG) and electrooculograms (EOG). Once hook up is complete, recording of EEG & EOG signals will start and continue until the end of the study.

You will be asked to open and close your eyes. You will also complete a couple of questionnaires. These will not be timed; please make sure that you complete all parts of the study to the best of your ability.

D. General Information

Your participation in this study is voluntary and you may decline further involvement at any time. You may also request that your data not be used and/or be destroyed.

Information on all participants is confidential and will be recorded and kept in an anonymous manner. At no time will your name or other identifying information be used in conjunction with your responses in this study. The information provided will also not be distributed and will remain in the sole custody of myself, the principal investigator.

I acknowledge that I have read, understood and agreed to the procedures listed above. I am satisfied that I am proceeding with this research with full knowledge of the intentions and procedures involved. I understand that my participation in this study is strictly voluntary.

By providing your signature, you have decided to participate in the present study having read the information provided above. Please read all information prior to signing.

Printed Name Signature Date

_____

APPENDIX D

Demographics Form

1. What is your age? _____

2. What is your dominant hand?

a. left

b. right

c. ambidextrous

3. What is your year in school?

a. Freshman

b. Sophomore

c. Junior

d. Senior

e. graduate student

d. Other _____

4. Have you ever attended or participated in events and/or activities hosted by the LGBTQ Resource Center at the University of Wisconsin Oshkosh?

a. No

b. Yes

5. Which sexual orientation best describes you:

a. Heterosexual

b. Lesbian

c. Gay

d. Bisexual

e. Questioning

6. Which gender identity best describes you:

    a. Gender Queer

    b. Man

    c. Transman

    d. Transwoman

    e. Woman

    f. Self Identify (please specify) _____

7. What is your biological sex?

    a. Male

    b. Female

    c. Other (please specify) _____

APPENDIX E

Chinese Making Sense of Adversity Scale (CMSAS)

For the purposes of this study, please pay close attention to the questions and your responses to them. Don't worry, there is not a test, this is just so we can later find out what the questions mean to you and your life.

Please read the following statements and circle the number which best indicates your feelings about that statement. Please answer every question.

1. Adversity is normal and natural, and everyone will have to face it in life.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

2. Adversity is a fact of life and one cannot grow up without it.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

3. Adversity provides a good opportunity for learning.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

4. Adversity not only causes pressure, but is also a motivation.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

*5. Adversity means the end of the world and I am not able to resolve it.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

6. To me, coping with adversity is a process of accumulating life experiences.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

*7. Adversity makes me feel that life is meaningless.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

8. Adversity is indispensible in life.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

*9. I have lost a lot because of the adversity in my life.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

10. To me, adversity is a kind of discipline.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

11. Adversity constitutes a platform for future development.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

*12. I have wasted precious time in my life because of the adversity I have experienced.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

* indicates negative making sense of adversity item

APPENDIX F

25-item Connor-Davidson Resilience Scale (CD-RISC)

For the purposes of this study, please pay close attention to the questions and your responses to them. Don't worry, there is not a test, this is just so we can later find out what the questions mean to you and your life.

Please read the following statements and circle the number which best indicates your feelings about that statement. Please answer every question.

	not true at all	rarely true	sometimes true	often true	true nearly all the time
1. I am able to adapt when changes occur.	0	1	2	3	4
2. I have at least one close and and secure relationship that helps me when I am stressed.	0	1	2	3	4
3. When there are no clear solutions to my problems, sometimes fate or God can help.	0	1	2	3	4
4. I can deal with whatever comes my way.	0	1	2	3	4
5. Past successes give me confidence in dealing with new challenges and difficulties.	0	1	2	3	4
6. I try to see the humorous side of things when I am faced with problems.	0	1	2	3	4
7. Having to cope with stress can make me stronger.	0	1	2	3	4
8. I tend to bounce back after illness, injury, or other hardships.	0	1	2	3	4
9. Good or bad, I believe that most things happen for a reason.	0	1	2	3	4
10. I give my best effort no matter what the outcome may be.	0	1	2	3	4
11. I believe I can achieve my goals, even if there are obstacles.	0	1	2	3	4

12. Even when things look hopeless, I don't give up.	0	1	2	3	4
13. During times of stress/crisis, I know where to turn for help.	0	1	2	3	4
14.Under pressure, I stay focused and think clearly.	0	1	2	3	4
15. I prefer to take the lead in solving problems rather than letting others make all the decisions.	0	1	2	3	4
16. I am not easily discouraged by failure.	0	1	2	3	4
17. I think of myself as a strong person when dealing with life's challenges and difficulties.	0	1	2	3	4
18. I can make unpopular or difficult decisions that affect other people, if it is necessary.	0	1	2	3	4
19. I am able to handle unpleasant or painful feeling like sadness, fear, and anger.	0	1	2	3	4
20. In dealing with life's problems, sometimes you have to act on a hunch without knowing why.	0	1	2	3	4
21. I have a strong sense of purpose in life.	0	1	2	3	4
22. I feel in control of my life.	0	1	2	3	4
23. I like challenges.	0	1	2	3	4
24. I work to attain my goals no matter what roadblocks I encounter along the way.	0	1	2	3	4
25. I take pride in my achievements.	0	1	2	3	4

APPENDIX G

25-Item Wagnild and Young Resilience Scale (W-YRS)

For the purposes of this study, please pay close attention to the questions and your responses to them. Don't worry, there is not a test, this is just so we can later find out what the questions mean to you and your life.

Please read the following statements and circle the number which best indicates your feelings about that statement. Please answer every question.

1. When I make plans I follow through with them.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

2. I usually manage one way or another.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

3. I am able to depend on myself more than anyone else.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

4. Keeping interested in things is important to me.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

5. I can be on my own if I have to.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

6. I feel proud that I have accomplished things in my life.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

7. I usually take things in stride.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

8. I am friends with myself.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

9. I feel that I can handle many things at a time.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

10. I am determined.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

11. I seldom wonder what the point of it all is.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

12. I take things one day at a time.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

13. I can get through difficult times because I've experienced difficulty before.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

14. I have self-discipline.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

15. I keep interested in things.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

16. I can usually find something to laugh about.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

17. My belief in myself gets me through hard times.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

18. In an emergency, I'm someone people generally can rely on.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

19. I can usually look at a situation in a number of ways.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

20. Sometimes I make myself do things whether I want to or not.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

21. My life has meaning.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

22. I do not dwell on things that I can't do anything about.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

23. When I'm in a difficult situation, I can usually find my way out of it.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

24. I have enough energy to do what I have to do.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

25. It's okay if there are people who don't like me.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

APPENDIX H

Neutral Survey Designed Like the CMSAS

For the purposes of this study, please pay close attention to the questions and your responses to them. Don't worry, there is not a test, this is just so we can later find out what the questions mean to you and your life.

Please read the following statements and circle the number which best indicates your feelings about that statement. Please answer every question.

1. I like trees.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

2. I like ferns.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

3. Oak trees are the best kind of tree.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

4. I enjoy aloe plants.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

5. I dislike spider plants.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

6. I enjoy the look of roses.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

7. I do not enjoy the smell of tulips.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

8. Palm trees are great plants to have indoors.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

9. Birch trees look unattractive.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

10. I like lilac bushes.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

11. I like pine trees.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

12. I dislike daises.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

APPENDIX I

Neutral Survey Designed Like the CD-RISC

For the purposes of this study, please pay close attention to the questions and your responses to them. Don't worry, there is not a test, this is just so we can later find out what the questions mean to you and your life.

Please read the following statements and circle the number which best indicates your feelings about that statement. Please answer every question.

	not true at all	rarely true	sometimes true	often true	true nearly all the time
1. I like chairs.	0	1	2	3	4
2. I like tables.	0	1	2	3	4
3. I dislike coffee cups.	0	1	2	3	4
4. Knives are very useful.	0	1	2	3	4
5. I own many kinds of plates.	0	1	2	3	4
6. Bean bag chairs are the best kind of furniture.	0	1	2	3	4
7. Forks are very practical.	0	1	2	3	4
8. Fireplaces are fun if used properly.	0	1	2	3	4
9. Tea cups are cute.	0	1	2	3	4
10. I like to use fine china for dining.	0	1	2	3	4
11. I like to sit at a desk.	0	1	2	3	4
12. I to relax on a couch.	0	1	2	3	4
13. I dislike large lamps.	0	1	2	3	4
14. Rolling chairs are good to have.	0	1	2	3	4
15. I dislike table cloths.	0	1	2	3	4
16. I have many items of furniture.	0	1	2	3	4
17. Book shelves are nice for organization.	0	1	2	3	4
18. I like having cookbooks in the kitchen.	0	1	2	3	4

19. There are many types of file cabinets.	0	1	2	3	4
20. I enjoy using cups.	0	1	2	3	4
21. Chops sticks are fun to use.	0	1	2	3	4
22. I dislike stools.	0	1	2	3	4
23. I like bowls.	0	1	2	3	4
24. Tea pots are good to have.	0	1	2	3	4
25. I like ottomans.	0	1	2	3	4

APPENDIX J

Neutral Survey Designed Like the W-YRS

For the purposes of this study, please pay close attention to the questions and your responses to them. Don't worry, there is not a test, this is just so we can later find out what the questions mean to you and your life.

Please read the following statements and circle the number which best indicates your feelings about that statement. Please answer every question.

1. I like cats.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

2. I like dogs.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

3. I like horses.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

4. I like pigs.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

5. Cows are good pets.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

6. Birds are smart.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

7. I like fish.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

8. Penguins are nice to keep inside a house or apartment.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

9. I dislike sheep

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

10. Chickens make excellent pets.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

11. I dislike lizards.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

12. I dislike spiders.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

13. Snakes make bad pets.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

14. Fish make bad pets.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

15. My favorite animals are lions.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

16. Elephants are very good as an indoor pet.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

17. I like giraffes.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

18. I like turtles.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

19. I dislike sea monkeys.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

20. The best pet is a pet rock.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

21. Rats are bad pets.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

22. I like bumble bees.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

23. I dislike any animal with feathers.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

24. I like dolphins.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

25. I like sharks.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

APPENDIX K

Qualitative Question Document

This study focuses on resilience which can be defined as positive life adjustments in the face of adversity. Adversity can be material, social or personal.

We are interested in learning about resilience in your life. Please describe one or two situations where you were resilient. Please take a few moments to think about relevant situations before you start writing and write as much as you would like. Any information that is obtained with this study will remain completely confidential and will be recorded and kept in an anonymous manner.

If you have any questions, please feel free to ask the researcher.

APPENDIX L

Neutral Story

Unique to the Cambodian dwarf lotus is the one mother plant bringing up a long stem from the bottom of the pond. From each long stem originating from the mother plant, a small group of lotus leaves and several lotus flowers result in a small floating array. Once such a group of floating lotus leaves/flowers is completed, the dwarf lotus creates a runner some 50-100 cm long and then creates another floating array of leaves and lotus blossoms. If you can picture the strawberry plant-runners, the dwarf lotus looks very much the same. Most of these lotus leaves lack direct connection to the mother plant or to the soil at the bottom, but connect only through the runner with the previous lotus flower group floating at the top. Each such mini-arrangement has several leaves around the center and several blossoms. Typically a few blossoms are open at a time. Many tiny small lotus buds become ready to blossom around the same time.

APPENDIX M

Recruitment Flier

Hello!

You are invited to participate in a study conducted by a student at University of Wisconsin Oshkosh. We are studying responses to potentially challenging situations in life among young adults who might use services at LGBTQ resource centers or related LGBTQ events.

If you decide to participate, the study should take 45 minutes to 60 minutes and will involve answering survey questions about how you might respond in a potentially challenging situation. We will also be looking at brain wave patterns using an electroencephalogram (EEG). You were selected as a possible participant in this study because you met the guidelines required by this study.

Any information that is obtained with this study will remain confidential and will be recorded and kept to insure total confidentiality. At no time will your name or other identifying information be used in conjunction with your responses in this study. The information provided will also not be distributed and will remain in the sole custody of myself, the principal investigator. The information you provide will be used for the completion of the study only. Your information will help us to enhance the progress of our study.

If you feel uncomfortable or unable to complete the study for other reasons at any point, you are free to withdraw your consent and you may decline further involvement at any time. You may also request that your data not be used and/or be destroyed. We cannot guarantee that you will receive any direct benefits from this study. The Institutional Review Board (IRB) has reviewed and approved the present research to be conducted.

Once the study is complete, we will be happy to give you the results. In the meantime, if you have any questions or would like to find out more about signing up for the study please contact Heather Flick. Email: flickh18@uwosh.edu. Phone number: (920)784-4180.

Sincerely,

Heather Flick

APPENDIX N

Participant Instructions

Biomonitor Connection Instructions

Prior to starting the experiment, you will be connected to a biomoitor used to collect physiological signals: electroencephalograms (EEG) and electrooculograms (EOG). Once connection is complete, recording of EEG & EOG signals will start and continue until the end of the study. Please sit here and remain as still as possible while we set up the connection.

Baseline data collection instructions

Participants will be instructed the following: please sit down in the chair at the back of the room and make yourself comfortable while we complete the connection to the biomonitor. I will instruct you to have your eyes open for a total of 2 minutes. Then I will instruct you to have your eyes closed for a total of 2 minutes. During these times, you can just relax while I make sure the equipment is working properly. I will tell you when to start, stop, and whether to have your eyes open or closed.

Measurement Items

Experimental condition instructions for the Chinese Making Sense of Adversity, 25-item Connor-Davidson Resilience Scale, 25-item Wagnild and Young Resilience Scale-not counterbalanced.

Participants will be instructed to: please fill out these questionnaires. For the purposes of this study, please pay close attention to the questions and your responses to them. Don't worry, there is not a test, this is just so we can later find out what the questions mean to you and your life. Take your time.

Control condition instructions for 12-item survey on opinions about plants, 25-item survey on opinions about animals and 25-item survey on opinions on household items- not counter balanced.

Participants will be instructed to: please fill out these questionnaires. For the purposes of this study, please pay close attention to the questions and your responses to them. Don't worry, there is not a test, this is just so we can later find out what the questions mean to you and your life. Take your time.

Reflection Period/ EEG Recording 1

For a total of 2 minutes participants will be instructed to: Please think about and reflect on the content of the surveys you just filled out for 2 minutes with your eyes closed, I will tell you when to stop.

Measurement Items

Control condition only will fill out the Chinese Making Sense of Adversity, 25-item Connor-Davidson Resilience Scale, 25-item Wagnild and Young Resilience Scale-not counterbalanced.
Participants will be instructed to: Please fill out these questionnaires. For the purposes of this study, please pay close attention to the questions and your responses to them. Don't worry, there is not a test, this is just so we can later find out what the questions mean to you and your life. Take your time.

Qualitative Question

Participants will be given qualitative question document containing the written qualitative question and instructed: Please complete this last portion of the study. If you have any questions, please let me know.

Neutral Story

Participants will be given neutral story document and instructed to: Please read the following. Take your time and let me know when you are done.

Reflection Period/ EEG Recording 2

For a total of 2 minutes participants will be instructed to: Please think about and reflect on the content of the story you just read for 2 minutes with your eyes closed, I will tell you when to stop.

Debriefing

Participants will be given the debriefing statement, and asked if they have any additional questions regarding the study.

End

Participants will be asked if they have any additional questions or concerns before leaving.

APPENDIX O

Debriefing Study Information

In this study we are interested in examining resilience among LGBTQ college students. Resilience is a dynamic process involving positive adaptation within the context of significant adversity. We looked at resilience through surveys and EEG measurements. During EEG measurements, we had three conditions in order to measure varying levels of experienced adversity. How one experiences and makes sense of adversity is an important component of how we understand resilience. We asked some of the participants to think about a situation where they received a lower grade on a school assignment than they expected, and some were asked to think about a situation related to their sexual minority status. An additional group of students we asked to think about furniture, to serve as a neutral control situation.

Because we do not have a lot of information on resilience and LGBTQ college students, your participation in this study is very important. It would have been difficult for you to determine exactly what the study was about ahead of time. Because we would like everyone to have the same experience in the study, **we ask that you not tell other students** who might be participating in our research what the specific purposes of this study are.

If you wish to be kept informed on the progress of this study, or have any concerns or questions about the nature of the study, feel free to contact Heather Flick at flickh18@uwosh.edu.

Thank you again for your participation. It is appreciated.

APPENDIX P

Figures

Figure P-1

Response Frequency of Sexual Orientation Options

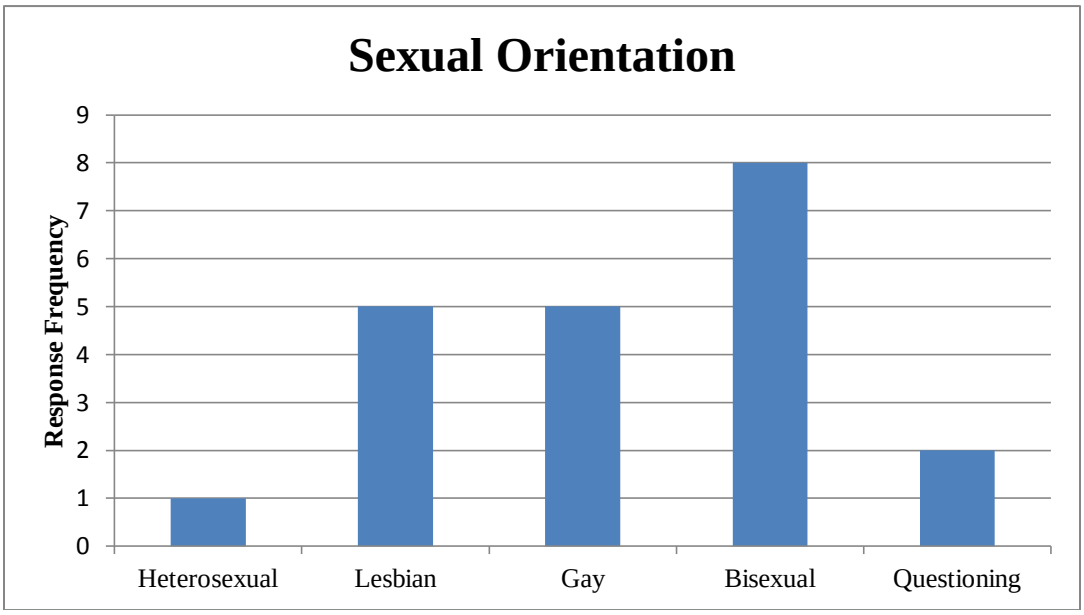

Figure P-2

Response Frequency of Gender Identity Options

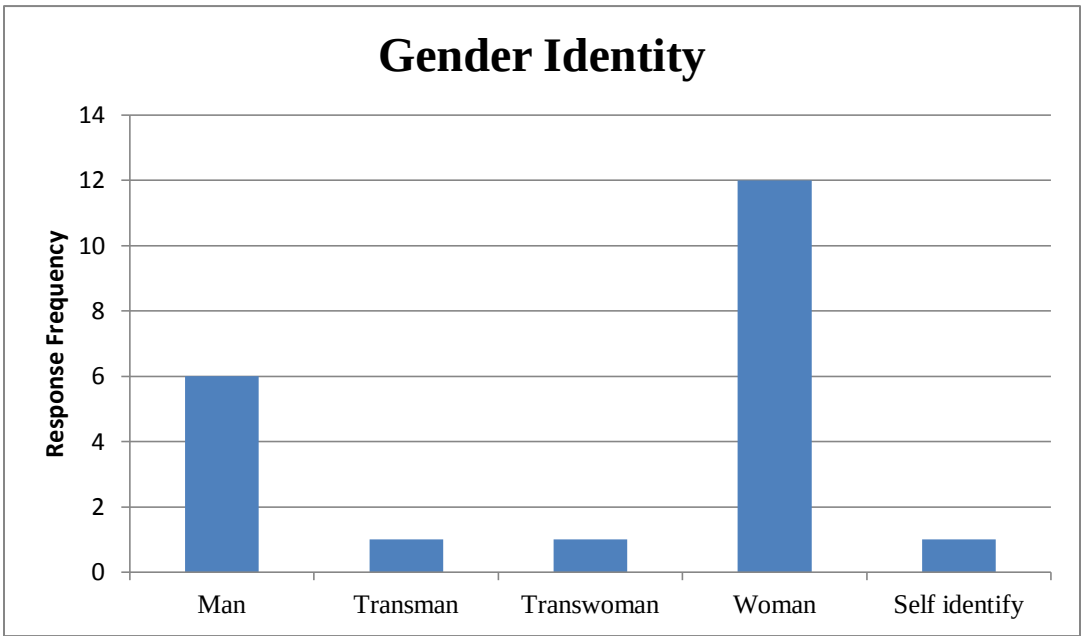

Figure P-3

Response Frequency of Biological Sex Options

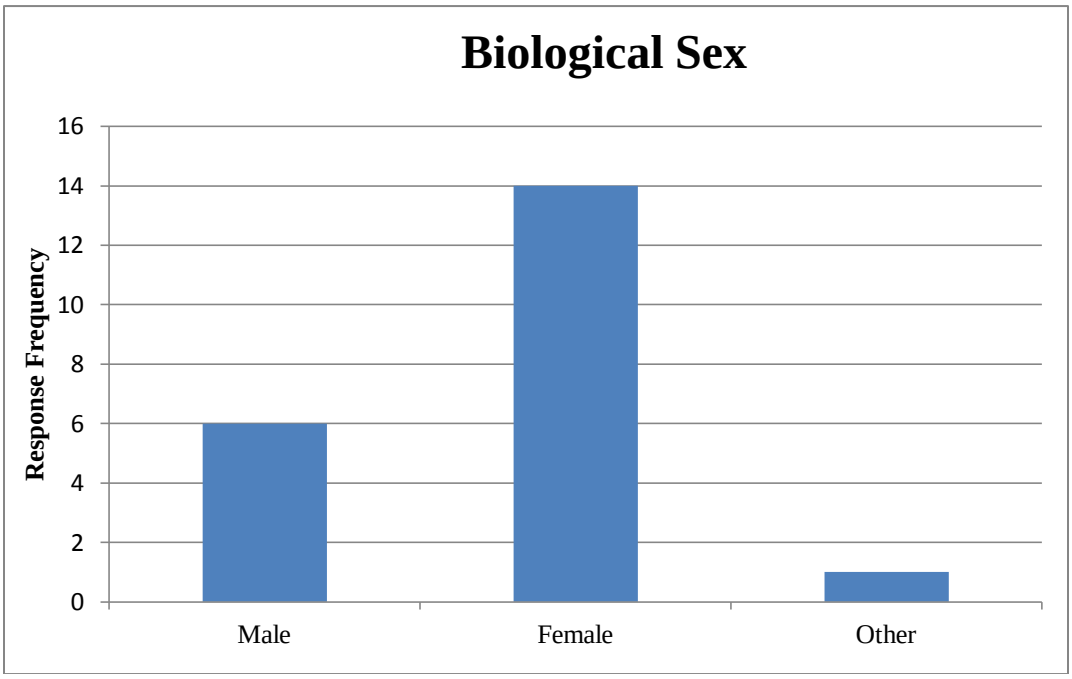

Figure P-4

Image of Electrode Cap

Figure P-5

Image of EEG Cap Fitting

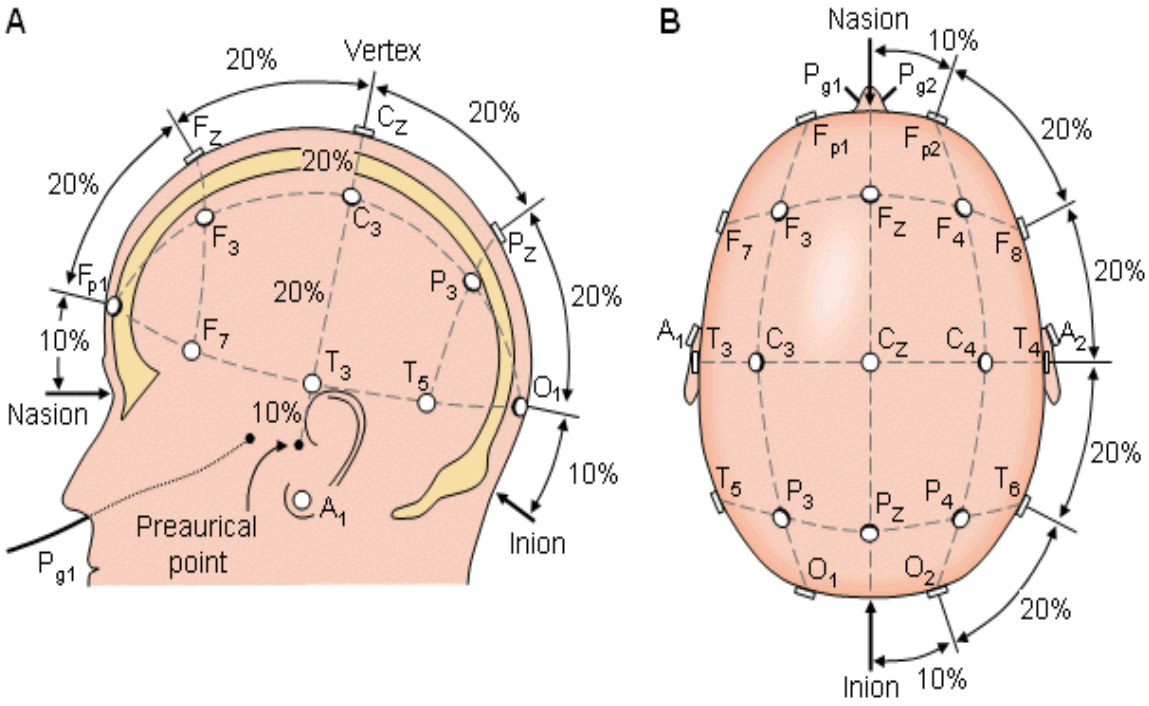

Figure P-6

Image of Electrode Configuration

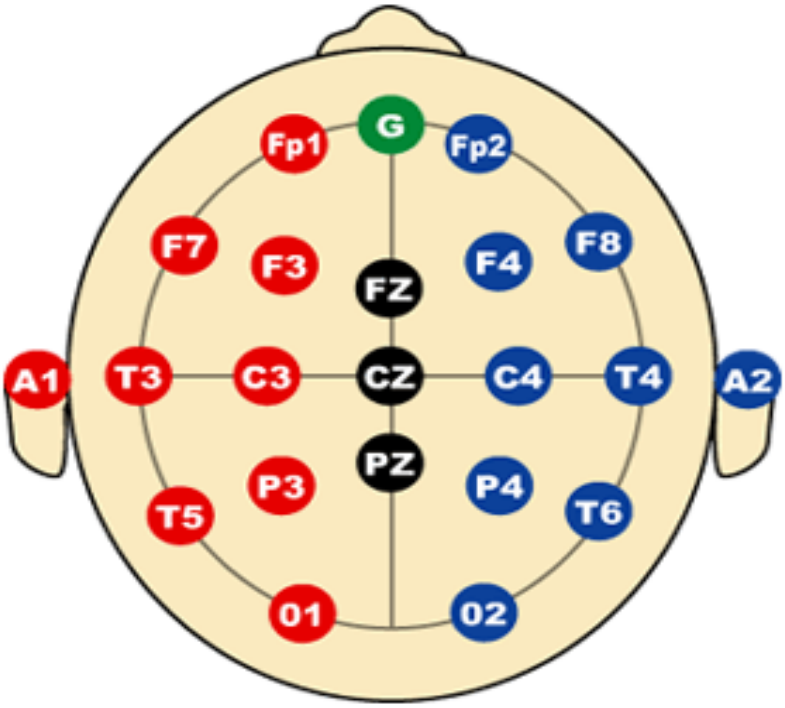

Figure P-7

Image of EOG Placement

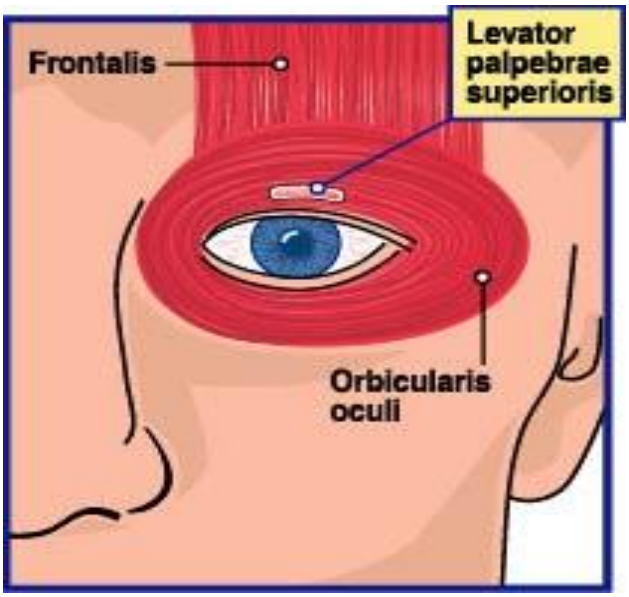

Figure P-8

Image of Checktrode

Appendix Q

Tables

Table Q-1

Mean and Standard Deviation of Hemispheric Asymmetry Scores

	Experimental (*n*=10)	Control (*n*=11)	*t*(df) *p*
FP2/FP1	-.037 ±.090	-.043 ± .044	.217(19) .354
F4/F3	.017 ± .015	.017 ± .036	.004(19) .191
F8/F7	.011 ± .047	.036 ±.045	-1.192(19) .741
C4/C3	-.013 ± .007	-.034 ± .086	.804(19) .079
P4/P3	.035 ± .040	.043 ± .039	-.453(19) .815
Composite	.014 ± .100	.017 ± .047	-.099(19) .319

Table Q-2

Pearson Bivariate Correlations of CD-RISC, W-YRS, and Hemispheric Asymmetry Scores For Experimental Condition Participants

	CDRISC	WYRS	FP2/FP1	F4/F3	F8/F7	C4/C3	P4/P3	Composite
CDRISC	1	.937**	-.148	-.192	.223	.139	-.402	-.209
WYRS		1	-.132	-.163	.282	-.066	-.381	-.168
FP2/FP1			1	.088	.343	-.369	-.253	.953**
F4/F3				1	-.802**	-.122	.725*	.139
F8/F7					1	-.331	-.717*	.347
C4/C3						1	.101	-.400
P4/P3							1	-.048
Composite								1

*p<.05
**p<.01

Table Q-3

Qualitative Coding Examples

Category	**Example**
Theme: Facing Adversity (broken down into three subthemes below)	Examples include adversity related to family environment, school life and academics, deaths of loved ones, religious adversity, homelessness, coming out, and adversity faced with the restriction of governmental laws
Subtheme: Adversity From Harassment/Homophobia	"In school I got picked on" "I have encountered people who seem relaxed with their homophobia to me, while knowing my sexuality"
Subtheme: Adversity From Isolation	"I am currently in a living situation away from my partner and family" "I was struggling in the city I lived in, so I ended up running away"
Subtheme: Adversity From Physical/Mental Health Problems	"I am plagued by medical aliments" "I had depression problems and was suicidal"
Theme: Using Resources	"I made sure to surround myself with people I trusted" "The LGBTQ resource center on campus helped me see there were others going through similar things as me"
Theme: Maintaining a Positive Attitude	"I can do this" "I am doing well" "I have embraced who I am"
Not Coded for Theme Inclusion	"My roommates are loud, messy, and annoying" "monetary means in the now growing poor population" (stated as a general adversity faced by people in general, not related to sexual minority status)

References

Adams, L. L. (2006). Resilience in lesbian, gay, and bisexual adult college students a retrospective study. (Doctoral dissertation, University of La Verne). Retrieved from http://web.ebscohost.com.www.remote.uwosh.edu/ehost/search/advanced?sid=0923ce38- 518c-40f9-bceb-b8e88cb6ae90%40sessionmgr4&vid=1&hid=11

Block, J. & Kremen, A. M. (1996). IQ and ego-resiliency: Conceptual and empirical connections and separateness. *Journal of Personality and Social Psychology, 70(2),* 349-361.

Bonanno, G. A. (2004). Loss, trauma, and human resilience: Have we understood the human capacity to thrive after extremely aversive events? *American Psychologist, 59(1),* 20-28. doi: 10.37/0003-066X.59.1.20.

Centers for Disease Control and Prevention (2010). *National vital statistics reporting system* (2009). Retrieved from http://www.cdc.gov/nchs/products/nvsr.htm

Cicchetti, D. & Curtis, W. J. (2006). The developing brain and neural plasticity: Implications for normality, psychopathology, and resilience. In Cicchetti, D. & Cohen, D. J. (Eds.), *Developmental Psychopathology* (pp.1-64). New Jersey: John Wiley & Sons, Inc.

Cole, E.R. (2009). Intersectionality and research in psychology. *American Psychologist, 64(3),* 170-180. doi:10.1037/a0014564.

Connor, K. M. (2006). Assessment of resilience in the aftermath of trauma. *Journal of Clinical Psychiatry, 2,* 46-49.

Connor, K. M. & Davidson, M. D. (2003). Development of a new resilience scale: The Connor-Davidson Resilience Scale (CD-RISC). *Depression and Anxiety, 18,*76-82.

Cronin, A. & King, A. (2010). Power, inequality and identification: Exploring diversity and intersectionality amongst older LGB adults. *Sociology, 44,* 876-891. doi: 10.1177/0038038510375738.

Curtis, W. J. & Cicchetti, D. (2007). Emotion and resilience: A multilevel investigation of hemispheric electroencephalogram asymmetry and emotion regulation in maltreated and nonmaltreated children. *Development and Psychopathology, 19,*811-840.

Dunn, K. (producer). (2012, October 24). *Kathleen Dunn program* [Audio podcast]. Retrieved from http://wpr.org/mobile/display_archives.cfm?Code=dun&Size=320

Elliot, A. J. (2006). The hierarchical model of approach-avoidance motivation. *Motivation and Emotion, 30,*111-116. doi; 10.1007/s11031-006-9028-7

Fassinger, R. E. & Arseneau, J. R. (2007). "I'd rather get wet than be under that umbrella": Differentiating the experiences and identities of lesbian, gay, bisexual, and transgender people. In Bieschke, K. J., Perez, R. M. & DeBord, K. A. (Eds.), *Handbook of Counseling and Psychotherapy With Lesbian, Gay, Bisexual, and Transgender Clients* (pp. 19-49). Nebraska: American Psychological Association.

Fetner, T. & Kush, K. (2008). Gay-straight alliances in high schools: Social predictors of early adoption. *Youth & Society, 40,* 114-130. doi: 10.1177/0044118X07308073

Frankl, V. E. (1959). *Man's search for meaning.* New York: Simon & Schuster.

Glantz, M. D. & Johnson, J. L. (Eds.) (1999). *Resilience and development: Positive life adaptations.* New York: Kluwer Academic/Plenum Publishers.

Green, R. J. (2012). Gay and lesbian family life: Risk, resilience, and rising expectations. In F. Walsh, (Eds.), *Normal family processes: Growing diversity and complexity* (pp. 172-195). New York: Guilford Press.

Grossman. A. H., D'Augelli, A. R. & Frank, J. A. (2011). Aspects of psychological resilience among transgender youth. *Journal of LGBT Youth, 8,* 103-115. doi: 10.1080/19361653.2001.541347.

Harding, S. & Norberg, K. (2005). New feminist approaches to social science methodologies: An introduction. *Journal of Women in Culture and Society, 30,* 2009-2015.

Harper, G. W., Brodsky, A. & Bruce, D. (2012). What's good about being gay? Perspectives from youth. *Journal of LGBT Youth, 9,*22-41. doi: 10.1080/19361653.2012.628230.

Henrickson, M. (2008). "You have to be strong to be gay:" Bullying and educational attainment in LGB New Zealanders. *Journal of Gay and Lesbian Social Services, 19(3),* 67-85.

Iwasaki, Y., Bartlett, J., MacKay, K., Mactavish, J. & Ristock, J. (2005). Social exclusion and resilience as frameworks of stress and coping among selected non-dominant groups. *International Journal of Mental Health Promotion, 7(3),* 4-17.

Karki, C., Gasiorowicz, M. & Hollander, G. (2010). Risk behaviors and health conditions of youth engaging in same-sexual behaviors: Analysis of the 2009 Wisconsin

youth risk behavior study (YRBS). Retrieved from www.cdc. gov/HealthyYouth/yrbs/index/htm

Keenan, E.K. (2010). Seeing the forest and the tress: Using dynamic systems theory to understand "stress and coping" and "trauma and resilience". *Journal of Human Behavior in the Social Environment, 20,*1038-1060.

Luthar, S. S., Cicchetti, D. & Becker, B. (2000). The construct of resilience: A critical evaluation and guidelines for future work. *Child Development, 7,* 543-562.

Masten, A. S. (2001). Ordinary magic: Resilience processes in development. *American Psychologist, 56,* 227-238.

McGregor, I., Nash, K. A. & Inzlicht, M. (2009). Threat, high self-esteem, and reactive approach-motivation: Electroencephalographic evidence. *Journal of Experimental Social Psychology, 45,* 1003-1007.

McLaughlin, K. A., Hatzenbuehler, M. L., Xuan, Z. & Conron, K. J. (2012). Disproportionate exposure to early-life adversity and sexual orientation disparities in psychiatric morbidity. *Child Abuse and Neglect, 36,* 645-655.

Mizock, L. & Lewis, T. K. (2008). Trauma in transgender populations: Risk, resilience, and clinical care. *Journal of Emotional Abuse, 8,* 335-354. doi: 10.1080/1092670802262523.

Mustanski, B., Newcomb, M. E., & Garogalo, R. (2011). Mental health of lesbian, gay, and bisexual youths: A developmental resiliency perspective. *Journal of Gay and Lesbian Social Services, 23,* 204-225. doi: 10.1080/10538720.2011.561474.

Nadal, K. L., Wong, Y., Issa, M. A., Meterko, V., Leon, J. & Wideman, M. (2011). Sexual orientation microagressions: Processes and coping mechanisms for lesbian, gay, and bisexual individuals. *Journal of LGBT Issues in Counseling, 5,* 21-46. doi: 10.1080/15538605.2011.554606.

Overland, G. (2011). Generating theory, biographical accounts and translations: A study of trauma and resilience. *International Journal of Social Research Methodology, 14(1),* 61-75.

Pan, J. Y., Wong, D. F. K., Chan, K. S. &Chan, C. L. W. (2008). Development and validation of the chinese making sense of adversity scale: Acculturative stressors as an example. *Research on Social Work Practice, 18(5),*479-486.

Riggle, E. D. B., Whitman, J. S., Olson, A., Rostosky, S.S. & Strong, S. (2008). The positive aspects of being a lesbian or gay man. *Professional Psychology: Research and Practice, 39(2),* 210-217. doi: 10.1037/0735-7028.39.2.210.

Rivers, I. & Cowie, H. (2006). Bullying and homophobia in UK schools: A perspective on factors affecting resilience and recovery. *Journal of Gay and Lesbian Issues in Education, 3,* 11-43. doi: 10.1300/j367v03n04_03.

Sanlo, R. (2004). Lesbian, gay, and bisexual college students: Risk, resiliency, and retention. *Journal of College Student Retention, 6(1),* 97-110.

Schoon, I. & Bynner, J. (2003). Risk and resilience in the life course: Implications for interventions and social policies. *Journal of Youth Studies, 6(1),*21-31.

Scourfield, J., Roen, K. & McDermott, L. (2008). Lesbian, gay, bisexual, and transgender young people's experiences of distress: Resilience, ambivalence and self-destructive behaviour. *Health and Social Care in the Community, 16,* 329-336.

Seery, M. D. (2011). Resilience: A silver lining to experiencing adverse life events. *Current Directions in Psychological Science, 20,* 390-394. doi: 101177/09 63721411424740.

Sheilds, S. A. (2008). Gender: An intersectionality perspective. *Sex Roles, 59,* 301-311.

Smith, A. J., Jarman, M. & Osborn, M. (1999). Doing interpretative phenomenological analysis. In M. Murray& K. Chamberlain (Eds.), *Qualitative health psychology* (pp. 218-240). London: SAGE Publications

Smith, M. S. (2006). The development and psychometric evaluation of a rapid assessment instrument measuring hardiness in lesbian, gay, bisexual, and transgender persons. (Doctoral dissertation, Barry University). Retrieved from http://web.ebscohost.com.www.remote.uwosh.edu/ehost/search/advanced

Solzhenitsyn, A. (1963). One day in the life of Ivan Denisovich. New York: E.P. Dutton & Co., Inc.

Stanley, K. E. (2009). Resilience, minority stress, and same-sex populations: Toward a fuller picture. (Doctoral dissertation Pepperdine University). Retrieved from http://web.ebscohost.com .www .remote.uwosh.edu/ehost/search/advanced

Teplan, M. (2002). Fundamentals of EEG measurement. *Measurement Science Review, 2(2),* 1-11.

Tiet, Q. Q., Huizinga, D. & Byrnes, H. F. (2010). Predictors of resilience among inner city youths. *Journal of Child and Family Studies, 19,* 360-378.

U.S. Department of Justice Federal Bureau of Investigation (2005). Hate crime statistics 2005. Retrieved from http://www.fbi.gov/about-us/cjis/ucr/hate-crime/2005

Wagnild, G. M. & Young, H. M.(1993). Development and psychometric evaluation of the resilience scale. *Journal of Nursing Measurement, 1(2),* 165-178.

Wagnild, G. M. & Young, H. M. (2009). The resilience scale. Retrieved from http://www.resiliencescale.com/en/rstest/rstest_25_en.html

Youth Pride Inc. (2010). LGBTQQ statistics. Retrieved from www.youthprideri.org.