EXPLORING THE EFFECTS OF COPING BEHAVIORS ON ADJUSTMENT DURING A
SEMESTER FOR LESBIAN, GAY AND BISEXUAL COLLEGE STUDENTS

BY

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DISSERTATION

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Abstract

The present study investigated predictors of coping and adjustment for lesbian, gay and bisexual college students. Data on all variables was collected across four time points in the semester. Stress, as measured by type of stress, whether the stress was related to being gay and the overall level of stress, did not change over this time period. Change over time was not observed for any of the coping variables or for adjustment. Significant predictors for both coping and adjustment, however, were observed. Anxiety was found to be a significant predictor for both planning coping and avoidant coping. At high levels, it served to predict greater use of planning coping at the end of the semester. Self-esteem was found to be predictive of avoidant coping. High self-esteem predicted less use of avoidant coping across the semester.

Many different variables served as predictors for adjustment. In social adjustment, self-esteem served to predict greater adjustment, but none of the forms of coping were observed to be significant predictors. For most forms of academic adjustment, coping had no impact on the level of adjustment throughout the semester. The one exception to this finding was for academic initiative. Students that used greater amounts of avoidant coping were found to have lower levels of academic initiative. Greater levels of anxiety were found to predict lower adjustment in both academic initiative but greater adjustment in academic achievement. For program satisfaction, the final academic adjustment variable, school year had an effect on adjustment. Those students who were in their later years of college had lower levels of program satisfaction.

To everyone who helped me get here. I would not have been able to do it without your love and support.

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"Because I knew you:

I have been changed for good."

Schwartz, S. (2003). *Wicked*.

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Chapter 1

Introduction

Considerable research has been devoted to better understanding the stresses associated with attending college. Elevated rates of depression (as high as 41%) and increasing rates of suicide have been demonstrated in studies of college student wellness (Benton, Robertson, Tseng, Newton, & Benton, 2003; Bouteyre, Maurel, & Bernaud, 2006). The stress of the first semester can cause as many as 20% of students not to return for their second semester (Porter, 1989). Indeed, a recent survey of college freshman found that only 52% of freshman rated themselves as having an above average level of emotional health (Pryor, Hurtado, DeAngelo, Palucki-Blake, & Tran, 2010). While it can be widely argued that college is a stressful transition, what may be of greater interest is how students handle their stress. Through this transition, and the college experience as a whole, may be stressful, there is variability in the ways students cope with their stress.

For lesbian, gay, bisexual and transgender (LGBT) students, college can be an especially difficult experience. These students often report that they suffer harassment from other students and staff. Students often feel that their schools are strongly homophobic (Herek, 1993; Rankin, 2003). In addition to living in a frequently homophobic environment, college is often a time when many LGBT students begin to explore and solidify their sexual identity which, in itself, can be a stressful experience (Lopez & Chism, 1993). Combined, these two stressors may make it extremely difficult for them to make a positive adjustment to college.

Research with LGBT youth has been criticized as focusing too narrowly on the negative correlates that often appear with sexuality, such as pathology and risky behaviors, and not

enough on resiliency factors (Savin-Williams, 2001). Due to the preponderance of studies

investigating the negative factors associated with LGBT status, this study will investigate the

more resiliency-based topic of coping behaviors.   Existent research focuses on the stress that

LGBT students encounter; little research has focused on the types of coping responses LGBT

students use and if these behaviors change over time.

The current study views coping behaviors as falling into one of three broad categories of

coping: planning coping, social-emotional coping and avoidant coping. Behaviors that fall into

the planning category involve doing something to alter the problem. Those behaviors that are

social-emotionally-oriented often include venting emotions to others, while avoidant coping

behaviors serve to keep an individual away from dealing with the physical or emotional effects

of what stresses them. This conceptualization of coping is in line with the current theoretical and

research literature. Whereas previous theories of coping have looked at coping as consisting of

two factors, a planning component and a social-emotional component (Carver, Scheier, &

Weintraub, 1989), more recent research has endorsed the three factor model (Lyne & Roger,

1999). Investigating LGBT students using these three coping factors will enhance our

understanding of how these students successfully deal with the stressors of college.

Important to understanding the nature of coping is how coping behaviors change during the

academic year. There is disagreement in the research literature as to whether coping is dynamic

or fixed. Research has demonstrated change in coping over larger time scales, such as a span of

years (Compas, Malcarne, & Fondacarao, 1988). It has also been demonstrated to change over

shorter time scales, such as the first semester of college (Pritchard & Wilson, 2006) or during the

final six-week period of a semester where undergraduates were finishing their dissertation

(Devonport & Lane, 2006a). This study predicts that coping strategies that may be more

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adaptive (e.g., planning coping and social-emotional coping) will be used more often at the end of the semester than at the beginning and *vice versa* for coping strategies that may be less adaptive (e.g., avoidant coping).

Many prior research studies that investigate the association between coping and positive outcomes have looked at a single fixed point in time (Devonport & Lane, 2006b; Leong & Bonz, 1997). Although they only examined one point in time, researchers have noted that coping behaviors appear to fluctuate in other ways. One example of this is that older college students use more planning coping responses and less avoidant responses than younger college students (Arthur & Hiebert, 1996; Toray & Cooley, 1998). Multiple data collection points in this study will allow for a longitudinal analysis, expanding knowledge of individual variability in the evolution of change during this time period. Consistent with previously mentioned studies examining all four years of college, it is expected that the use of planning coping will increase and the use of avoidant coping will decrease. No prediction is made for the potential changes in social-emotional coping due to the conflicting findings in the research literature.

In addition to the expected individual changes in coping, there should also be individual changes in levels of stress and adjustment during the course of the semester. The multi-time point design of the present study will also allow for investigations to determine how these factors change over the year on an individual level. Besides understanding how stress changes over time, it is informative to understand what sources of stress LGBT students face. It is expected that these students will face the sources of stress that most college students experience, such as familial stress, academic-related stress and financial pressures. LGBT students may also experience stressors unique to their sexuality that may affect their coping behaviors, such as coming out to others and facing harassment. The current study seeks to expand this knowledge

on the experience of LGBT college students experience by determining the types of stress they encounter and how these stresses change over time.

Determining the association between the types of coping behaviors that students use and the outcomes of that semester is important to understanding the stressful experiences of LGBT college students. The analyses in this study will provide an opportunity to examine the associations between the different types of coping and adjustment. More importantly, it will also determine if changes in coping are predictive of changes in adjustment. Various studies that investigate planning coping have found that it predicts positive adjustment in areas such as depression in adolescents (Hampel & Petermann, 2006; Li, DiGiuseppe, & Froh, 2006) and self-esteem (Lane, Jones, & Stevens, 2002), and confidence (Devonport & Lane, 2006b). As in these studies, it is hypothesized that planning coping will predict positive adjustment results. Along similar lines, avoidant coping has been linked to negative outcomes in adjustment measures of depression in first-year college students (Arthur, 1998) and self-esteem in high school and college athletes (Lane, et al., 2002). It is also hypothesized that avoidant coping will be a negative predictor of adjustment. No prediction is made for an association between social-emotional coping and adjustment as various studies investigating adolescents have found mixed results (Hampel & Petermann, 2006; Lane, et al., 2002).

In addition to knowing what variables predict both coping and adjustment it is also important to test the moderating effects of these other variables on the relationships between stress and coping and coping and adjustment (arrows A and B respectfully in Figure B.1). Moderators are variables that affect the strength and/or direction of the relation between an independent variable and a predictor variable. One example of a possible moderating effect in the current study is how out the students are could interact with the relationship between coping and adjustment. It

may be for those students who are more out that social-emotional coping has a positive effect whereas for those students who are not out, it has less of an effect, or even a negative effect. As the research literature is lacking on the effects of sexuality-related variables on coping and adjustment, it is important to determine at the same time whether these variables serve as moderators of the relationships between stress, coping and adjustment or if they serve only as predictors of the coping and adjustment variables themselves.

After the associations between coping and adjustment have been determined, it will become possible to see whether changes in coping have implications for changes in adjustment. While planning coping has been linked to positive adjustment outcomes and avoidant coping has been linked to negative adjustment outcomes, it is desirable to know if these associations remain constant. Research has shown that coping behaviors can change over spans of time as short as six week and as long as years. Other research studies show no changes over these time scales. Once it is known that coping is changing and how it is associated with adjustment during this particular time period, the changes in coping can be investigated to determine if they predict changes in adjustment.

Chapter 2

Review of Literature

College is a Time of Stress

Transitions during the lifespan can be times of great stress. For many people, the transition to college from high school is one of the most important milestones into adult life. As more young adults choose college, enrollment in universities has risen 34% to 29.3 million students between 1995 and 2005. Over the next ten years, it is predicted that this number will grow by another 15% (Department of Education, 2008). Transitioning to college is not simply moving to a new geographic location and a new social environment; it is also a time when many leave home and learn to live independently for the first time in their lives, adjusting both to new social and academic demands.

Combining all of these factors, it is unsurprising that the transition to college can be a particularly stressful time period (D'Zurilla & Sheedy, 1991). Studies have shown that first-year undergraduates are more stressed than more advanced undergraduate students. The stressors these first-year students often report are also related more to the transitional nature of the first year. These students are coping with stresses such as homesickness and missing friends in ways that the more advanced students have already experienced and had time to develop beneficial coping strategies (Towbes & Cohen, 1996).

Only one-quarter of students that begin college will complete their degree (Montgomery & Côté, 2003). Almost 20% of students do not return after the end of their first semester (Porter, 1989). Of these students that leave after their first semester, of these students that leave college, 36% never return (Horn & Carroll, 1998). Approximately half of college students report feeling overwhelmed by what they have to accomplish ("Mitchell Scholar Study Report 3," 2002).

These statistics also demonstrate that life after the first year of college is often difficult. In fact, college is a series of transitions. Each new year brings with it changes in courses and schedules as well as potential changes to living environments, jobs and the social milieu of the campus. For this reason, investigating students from all four years of college is important as it provides a broad picture to expand the research literature.

Though these statistics may paint a desperate picture of the college experience, most students proceed through their time in school successfully. There are a multitude of variables that can affect how students adjust to the stress that they experience. Many individuals go on to remember college as a positive experience of learning and personal growth. How a student copes with the stress that they experience is one variable that has been linked to adjustment outcomes such as depression and self-confidence (Devonport & Lane, 2006b; Dyson & Renk, 2006). Because of its links to adjustment outcomes, coping in this population is an important variable to study.

A better understanding of the interplay between coping and adjustment will do more than simply expand the research literature for this population. By understanding the effects of particular forms of coping on adjustment, universities can help raise the awareness of students on the effectiveness of the coping behaviors the students use. It will also allow for universities to work with students to improve their use of beneficial coping strategies. This is a valuable asset for use in a group such as LGBT students which often experiences additional stress due to its minority social status.

Stress and Coping

    Definitions of coping. As has been noted in other critiques and reviews of the literature on coping, it is difficult to define even the basic features of the theoretical model of coping (e.g., stress, coping and adjustment) (Compas, 1987b). Compas reported on many of the links between stressful life events and psychological and physical symptoms. In effect, stressful life events have the potential to cause a negative, positive, or a potentially neutral effect on an individual. What mediates these outcomes is how an individual copes or reacts to the stressful events.

    These relationships are illustrated in Figure B.1 adapted from the discussion of Compas' article. In this model, stress has a direct effect on adjustment as demonstrated by arrow C. An example of this effect might be that a student finds they are failing their classes this semester and it causes them to become depressed. Stress also has an effect on coping, arrow A. The student who is failing his classes may decide to find ways in which to study differently, i.e. use a form of coping. By making a plan to change the way in which he studies, the student's coping can reduce their depression, arrow B. This is an extremely simplified model as in real life some of these effects can be bidirectional or can loop back upon themselves in a cyclical manner, but this simplified model suits the current study.

    Throughout the research literature, coping has been viewed through several perspectives. At its most basic level, coping is a response to a psychologically stressful event that can alter how the stress affects an individual. It has been suggested that coping behaviors can be differentiated from other behaviors by determining (1) whether the response is effortful, (2) what function the response serves and (3) the styles or types of responses (Compas, 1987a). This delineation can lead to a hierarchy of responses, where some behaviors are judged inherently better than others.

In this research, coping will be differentiated using the styles/types of responses method. Viewing coping through this approach allows researchers to conceptualize it as a process that can change over time and context (R. S. Lazarus, 1993).

Types of coping. The construct of coping as a process contains many different activities that individuals can do to adapt to stress. Examples of these responses include managing their emotions, withdrawing from the stressor or altering their behaviors (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001). While many responses to stress would fall within the construct of coping, the three aforementioned examples are most prominent in the research literature.

To help define coping behaviors, these behaviors are frequently classified into two or three broad categories of responses. The two categories seen most often in the research literature are problem-focused and emotion-focused coping. Problem-focused coping involves an action to directly alter the stressor. Many studies refer only to problem-solving behaviors by themselves when defining this type of coping. This study will refer to planning coping, a broader view of problem-focused coping that includes related behaviors such as reinterpreting a stressor in a positive away and also accepting and its effects(R.S. Lazarus & Folkman, 1984). Social-emotional coping (often referred simply as emotion-focused) involves handling the psychological effects of the stressor. These types of responses include recruiting others in an individual's life in order to help them avoid the emotional effects of the problem. A third category, avoidant coping, is distinguished from emotion-focused coping. Avoidant coping includes activities designed to disengage from the stressor or the emotions associated with it.

Carver, Scheier and Weintraub (1989) have argued that the multitude of coping responses should not be investigated by simply using the problem-focused and emotion-focused dimensions. These researchers state that these two categories do not include enough variability of responses to be of use. In their development of the COPE scale, they used theory and empirical data to develop 13 distinct types of coping (Carver, et al., 1989). Upon further analysis however, these 13 categories were still found to group into a hierarchy with 3 clusters: planning coping, social-emotional coping, and avoidant coping (Lyne & Roger, 1999). As noted before, these three types of coping have context-dependent effects. Although avoidant coping may sound less desirable, there are certain situations in which ignoring a problem may be the most successful way in handling it. One study found that under low levels of stress, avoidant coping positively predicted greater levels of depression and poor grades, yet at high levels of stress it was associated with lower levels of depression and better grades (Gonzales, Tein, Sandler, & Friedman, 2001). Another example is that social-emotional coping may be more beneficial when the source of the stress is a relational concern and this form of coping might be less beneficial when the stressor is related to an academic problem.

Coping in the current study. Whereas many research studies only investigate coping using a two-factor model, this study uses three factors: planning coping, social-emotional coping and avoidant coping. In this study, three subscales from the COPE were used that are the most representative of planning, social-emotional and avoidant coping. This three factor revision of the COPE model, splitting avoidant from social-emotional coping, is a relatively recent one. Still, after an investigation of the research literature, many studies using the COPE still utilize the 2 factor model. If studies do not use the COPE, they frequently use the Ways of Coping Questionnaire (Folkman & Lazarus, 1988), a popular measure also based from the view of

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coping as composed of problem-focused or emotion-focused behaviors. These views of a two factor versus a three factor model may be the reason as to why conflicting results are observed for the influence of these types of coping. It is hoped that the investigation of coping using these three factors may clarify conflicting findings, especially those that find social-emotional coping to have either positive or negative effects on adjustment. This study will also serve as an update to the research literature as there is a dearth of recent articles using this conceptualization of coping.

Coping across time. The model of coping used in this study is not static. As an individual chooses a particular response to a stressor, this behavior modifies the stressor or its effects. This change can cause the person to re-evaluate his/her initial behavior and increase, decrease, or alter that behavior to a new behavior (R. S. Lazarus, 1993). Researchers have recognized the need to look at changes in coping across two different time frames, developmental changes and changes in response to specific events (Compas, et al., 2001).

Unfortunately, many studies do not look at coping in a longitudinal design. Some researchers have found ways to manipulate their methods to create a para-longitudinal design by sampling multiple age groups at the same point in time. An example of this technique was done with college students by Arthur and Hiebert (1996). In their study, they compared coping strategies used by college students who entered college directly after high school (18 and 19-year-olds) with those strategies used by college students that entered college later (20 to 24-year-olds, and students age 25 and older). They found that the direct entry (18 and 19-year-old) students used more avoidant and social-emotional strategies than the students who had entered college at an older age (Arthur & Hiebert, 1996). Students older than 20 years also exhibited greater use of coping strategies that would fall into the planning category.

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The research by Williams and McGillicuddy-DeLisi (2000) noted a similar trend. The researchers in the study had students fill out the Ways of Coping Checklist and used the planful problem-solving and escape-avoidance subscales from the questionnaire. The researchers surveyed groups of middle school, high school and college students with the questionnaire. After analyzing the results, they determined that older students used more problem-solving coping behaviors than younger students (Williams & McGillicuddy-De Lisi, 2000).

In a final study focusing on college students, Kariv and Heiman (2005) investigated 293 students at Israeli universities with a range in age from 20 to 61 years (average age was 30.15 years). Their results showed that older students used more planning coping responses compared to other types of responses. By contrast, the younger the age of a student, the more likely he or she was to use emotion-focused coping responses over other types of responses (Kariv & Heiman, 2005).

While the aforementioned studies are beneficial in showing that developmental trends exist for students to use more planning coping over time as they age, they do not speak to changes in coping in relation to brief time frames. Any changes in these periods may be more likely to reflect changes in response to feedback from the stressor and not reflect changes due to development. These types of experiments are beneficial in demonstrating how coping may change in a situation more reminiscent of a transition.

Some studies have examined coping on a relatively short time frame. Pritchard and Wilson (2006) reviewed the changes in coping over the first semester of college using a brief version of the COPE questionnaire. The researchers surveyed the students at the beginning and end of the first semester. In their study, they found no changes in the use of coping behaviors from the

problem-solving subscale or the avoidant subscale over this time period. Other studies have investigated changes in coping within a semester. One such study conducted by Devonport and Lane (2006a) looked at undergraduates coping with the stress of finishing their dissertation project. Using the COPE as well, and studying the students 4 times over 6 weeks of a semester, the researchers found no change in any of the types of coping they measured (Devonport & Lane, 2006a).

Although previous studies focusing on a single semester (or less) of time show no change in coping, the lack of an observed change may be due to methodological concerns in the studies. One example of these findings is that many studies look only at the beginning of the semester or year and do not focus on the end of it. It may be that the beginning of that time period is so chaotic a transition that it is difficult for any changes to be noticed. The present study will help clarify this possibility by not only focusing on multiple time points throughout the semester, but by also including the end of the semester as well.

Adjustment to College

As coping changes in response to a stressor it has an impact on how the individual effectively handles the concerns presented by the stressful circumstance or event. This effect can be conceptualized as an adjustment to the stress. Often, when researchers investigate adjustment, they focus solely on one part of adjustment, such as academic adjustment (Leong & Bonz, 1997) or psychological adjustment (Dyson & Renk, 2006; Felsten, 1998). The current study will contribute to the research literature by conceptualizing adjustment in multiple ways. In this manner, any differential effects of coping responses for the different types of adjustment will be observable.

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As the introduction to this study noted, the transitions present in each year of college can be stressful, and the adjustment to these stresses may take many forms. The first year of college might be interesting to study simply due to the large changes that occur during the year. However, each semester of college brings with it new classes, new living situations and a host of other changes. In this study, students from all four undergraduate years will be investigated to gain a broader understanding of stress over this period.

How is coping related to adjustment? By the definitions put forth in the theoretical model used in the proposed study, coping directly affects adjustment. Simply stating this relation, however, is not enough; it must be statistically demonstrated to exist. Previous authors have linked stress, coping and adjustment (R. S. Lazarus, 1993). Compass, et al. (2001) provides a thorough review of studies showing how different ways coping correlate with better adjustment outcomes. In this section, the links between each form of coping and adjustment will be explored separately.

Planning coping. Of the three major types of coping, planning coping receives the majority of focus in the research literature. Also, this type of coping often has the most consistent results across various studies. Problem-solving coping is often subsumed into the broader category of planning coping when discussing theory. In research, problem-solving coping is frequently used as the only measure of planning coping even though it does not encompass all of the behaviors associated with planning coping. Thus, it is more difficult to compare results from studies using coping at the narrow level, versus the broader level. In an attempt to avoid confusion in this section, problem-solving coping is used for studies explicitly using it at the narrow level of behaviors focused only on directly finding a solution to the problem. Planning coping is used when the researchers looked at the broader category of coping behaviors that include active

behaviors that are also designed to change or alter the stressor and not only to solve it. Research has demonstrated the ability of planning coping on improved academic adjustment (Leong & Bonz, 1997). As solving problems is similar to the type of work students may do in class, planning coping should be linked to positive academic outcomes.

Despite its behaviorally-focused nature, planning coping is consistently linked to improved psychological adjustment. Multiple studies have found that the problem-solving component of active coping is negatively correlated with other indices of psychological adjustment. Researchers investigating teenagers have found that greater use of problem-solving types of coping behaviors correlated with less depression and other negative psychological outcomes (Hampel & Petermann, 2006; Li, et al., 2006). Neither of these studies was longitudinal; the results cannot support that planning coping directly causes better outcomes.

In one of the few longitudinal studies of coping, Devonport and Lane (2006b) found that despite the lack of change of problem-solving coping between the start of the first and second semester of college, problem-solving coping was positively related to increased self-efficacy. The important distinction of this study was that problem-solving coping was associated with improved academic self-efficacy, but not greater social self-efficacy. With the ability to delineate types of adjustment, this study adds to the research literature through the investigation of the effects planning coping may have on these different types.

Social-emotional coping. The second coping factor is social-emotional coping. While social-emotional coping may sometimes be proactive in nature, it always includes a social or emotional component. Behaviors frequently included under this type of coping are venting

feelings to others or asking friends for advice. These behaviors bring another individual into the situation to handle the stress or the effects of the stress, hence the focus on its social aspect.

Partially due to its focus on emotions and not moving towards finding a solution to the stressor, social-emotional coping is often viewed in the research literature as a negative form of coping. In fact, many research studies illustrate the negative effect that social-emotional coping can have. For university students exposed to traumatic events, such as terrorist attacks, high levels of social-emotional coping were predictive of an increased risk for post-traumatic stress disorder (Gil, 2005). In a study of students simply exposed to the traditional stressors of college, participants were found to have poorer personal and emotional adjustment to college the more that they relied on social-emotional coping (Leong & Bonz, 1997). One of the few longitudinal studies involved measuring the adjustment and coping strategies of freshman occurred at Japanese universities (Sasaki & Yamasaki, 2007). The researchers found that greater use of social-emotional coping behaviors was linked to poorer health outcomes at the end of a three-month period. These trends also seem to hold across middle and high school students in other countries as well. Students were found to be more depressed and tense when they used more emotion-related coping behaviors (Wilson, Pritchard, & Revalee, 2005).

Although some researchers have negative found links between social-emotional coping and negative adjustment, others find neutral or positive associations. Other studies have found little or no connection between social-emotional coping and adjustment. Halstead (1996) studied high school freshmen at the beginning of their first year of high school and found social-emotional coping to be unrelated to academic or personal adjustment. Additional studies have found positive effects from the use of social-emotional coping. When studying fifth through seventh

graders, researchers found that greater use of both planning coping and social-emotional coping predicted less emotional and behavioral problems (Hampel & Petermann, 2006).

Differences in the effects of social-emotional coping on adjustment can even be seen cross-culturally, as seen by Essau and Trommsdorff's (1996) study involving North American, German and Malaysian college students. In this study it was found that emotional coping was related to greater negative physical symptoms in the Malaysian college students, but that its use was related to fewer negative symptoms in the North American and German student groups (Essau & Trommsdorff, 1996). The researchers discussed that balancing individual coping styles versus the cultural preference for coping style might explain this observed result. Recent studies and reviews (Murdock & Bloch, 2005; Zubernis & Snyder, 2007) have noted the large role socialization plays in healthy identity formation in LGBT individuals. This means that social-emotional coping for LGBT students in particular could have an effect on adjustment. The current study will further refine the understanding of the effects of social-emotional coping on adjustment.

Avoidant coping. Avoidant coping, behaviors designed to circumvent dealing with the problem or the problem's emotional side-effects, is often grouped into the category of social-emotional coping. Theorists and researchers using factor analysis have shown the need to differentiate the two types of coping (Endler & Parker, 1990; Lyne & Roger, 1999). This coping behavior is predominantly linked to negative outcomes in adjustment. One study investigating coping in first year college students found that avoidant coping predicted greater concurrent levels of depression (Dyson & Renk, 2006). This study is similar to many studies involving college freshmen however, in the fact that it is not longitudinal in nature and shows no predictive values over time. Other studies that are longitudinal in nature have found similar results. A

study by Arthur (1998) measured the depression levels of college students over the course of the first year and found that depression levels at the end of the year were correlated with high levels of avoidant coping. Studying high school freshman over the course of their first year also demonstrated a link between greater use of avoidant coping and lower GPA and academic self-efficacy (Halstead, 1996).

These findings are consistent in nature and have been observed with even younger children. In one investigation of 10 to 14 year-olds, it was found that avoidant-type coping behaviors were related to adjustment problems (Hampel & Petermann, 2006). A unique study involving young tennis players defeated after a tie-breaking competition found similar results. Those tennis players who used more avoidant coping were likely to have lower self-esteem at the end of a match than players who used less avoidant coping. In fact, the players high on avoidant coping (giving up on their goals) had lower self-esteem when they were measured before the match began (Lane, et al., 2002).

Despite findings that avoidant coping is associated with negative outcomes, there are times when avoiding stress may be beneficial in the short term, even if it is not beneficial when used as a long-term strategy. Different groups may sometimes be able to ignore the effects of avoidant coping. One study involving middle school-aged adolescents found that avoidant coping was linked to greater depression in females but not in males (Wilson, et al., 2005). In addition, when studying middle school students, it was found that avoidant coping was associated with greater depression and lower grades for students that reported low levels of stress (Gonzales, et al., 2001). Yet for those students experiencing a high level of stress, greater use of avoidant coping was associated with more positive outcomes. All of these results show that avoidant coping will generally predict negative adjustment, but that certain characteristics, such

as low stress, may affect this connection. This study expanded on previous literature by continuing to separate avoidant coping from social-emotional coping and looking at it in a longitudinal manner.

LGBT Students in College

With multiple forms of coping, it is important to investigate how different populations may handle similar stresses. In a college environment there are many subpopulations that exist; these subpopulations include racial minority students, first generation college students, and women in math, science and engineering, etc., one important population of first year students deserving of further research is sexual minority students.

Meyer (2003) reviewed the research literature of LGBT individual's experiences with stress. In this review, Meyer included many studies demonstrating that LGBT individuals are more frequently exposed to stressful situations involving bias than heterosexual individuals. LGBT students also are more likely to be exposed to biased events than their heterosexual peers (Meyer, 2003). If this finding is also true for college students, one must understand how LGBT college students are handling this stress.

Stressors of the population. An established literature exists on the specific pressures faced by LGBT individuals. They frequently experience specific stress due to the stigmatization of their minority status (Meyer, 1995, 2003). People who experience minority stress have a conflict between their needs and the values of society in their social environment. This conflict can be similar to a stressful life event, in that an individual needs to adapt to it through specific behaviors.

Iwasaki and Ristock (2007) used focus groups to understand the stressful life experiences of gay men and lesbian women spanning 21 to 48 years old. Common themes found in these focus groups were that stressors associated with minority stress often included coming out, family issues, stress related to determining one's sexual identity, and society's attitude to LGBT individuals (Iwasaki & Ristock, 2007). There are also gender differences to note in experiences of stress. One study investigating these differences found that gay men are more likely to report stressors of violence or harassment whereas lesbian women are more likely to report stressors associated with their family (Lewis, Derlega, Berndt, Morris, & Rose, 2001). The authors speculated that social tolerance and stereotypical notions for men violating gender norms compared to women violating gender norms might account for these differences.

Stressors for LGBT students. With the stressors that LGBT individuals face due to their minority status, researchers have consistently found these individuals to exhibit a higher prevalence of eating disorders (Feldman & Meyer, 2007; Meyer, 2003), depression, substance abuse and suicide (King et al., 2008). These stressors are experienced both by LGBT students and their peers regardless of whether or not they are in a college environment. Though the age of disclosure is decreasing, college is still a time when a large proportion of LGBT individuals first disclose their sexuality to others (Grov, Bimbi, Nanin, & Parsons, 2006; Savin-Williams & Diamond, 2001).

Almost all respondents (98%) reported hearing derogatory remarks about LGBT individuals (Herek, 1993). One of the frequently cited studies on sexuality and harassment on campus was published in 1986 and conducted at Yale University. Attitudes on campus have changed since the survey was conducted, yet it is still interesting to note what the analysis of the survey revealed. More than 60% of students said they had been verbally harassed. Many of the

students who had been harassed had also been physically attacked. Half of these incidents were from the students' peers.

In the decades following the Yale survey, these statistics have not vastly improved. Almost 40% of LGBT undergraduates reported being harassed in the past year and almost all of the verbal harassment came from fellow students (Rankin, 2003). Many students noted fearing to congregate with other LGBT students for fear of being labeled by others as LGBT. They noted that their campuses were not addressing the needs of LGBT students in either the campus climate or in the academic curriculum. Forty percent of respondents felt that the overall climate of their college campus was homophobic. Statistics have changed and more recent reports note that 23% of LGBT students reported harassment, significantly higher than 12% of their straight peers (Rankin, Weber, Blumenfeld, & Frazer, 2010). Yet these same students responded as being more likely to consider leaving their institution. Campus climate has become so important in recent years that college guide books and websites have been created to explicitly rank colleges the safety and acceptance of LGBT students at those institutions.

Much of the research that has been completed with LGBT college students consists of survey data on risk assessment (Rosario, Schrimshaw, & Hunter, 2006) or sexual identity development (Grov, et al., 2006). When research has been directed toward coping behaviors in the LGBT community, it has generally done so in two areas. The first area is the relationship between coping and risky sexual behaviors, which can be conceived of as an extreme form of avoidant coping (Martin, Pryce, & Leeper, 2005). The second area is what type of social support LGBT individuals seek out in times of stress, such as coming-out or when facing harassment due to their minority status (Murdock & Bloch, 2005; Szymanski, 2009; Utsey, Ponterotto, Reynolds, & Cancelli, 2000). Although it is helpful to have an understanding of these two areas, it would be

beneficial to have a broader understanding of how LGBT college students cope with stress beyond these limited examples of coping.

LGBT students face unique experiences in college, separate from their heterosexual classmates. These stresses may affect both their use of coping and their adjustment. It is fairly easy to see how a student experiencing stress related to their minority status might have poorer academic or social adjustment compared to their LGBT peers not experiencing these stresses. What isn't known is the possible impact that these types of stress may have on coping use. Where the high value the LGBT students place on social support has been examined in other studies, it is possible that students experiencing stress related to their LGBT identity might seek out social support from other LGBT individuals who can empathize with them.

This study expands the research literature by investigating how LGBT students experience the stress of college. In particular, it will allow for an investigation into the types of stresses LGBT college students experience. More importantly, it also provides a way to examine the relation between their stressful experiences, coping behaviors and adjustment outcomes.

Identity development and outness. When studying LGBT college students, identity development should be included in analyses, yet many studies do not include this variable if they are not specifically investigating identity development. College is often the time when students are determining their sexual identity and coming out to others (Evans & Broido, 1999). This is a process where an individual must constantly react, both to negative societal views and their own internalized homophobia. It is also a repetitive process because it must be dealt with each time that an individual is in a situation where others do not know of their sexuality (Fassinger, 1991).

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Another important reason to include this variable in the current study is that research on identity development does not include its impact on college experiences and adjustment (Sanlo, 2004).

Previous discussions of LGBT identity in college students make note of the many social components, such as finding supportive relationships and interacting with LGBT peers, that are critical parts to successfully integrating an LGBT identity (Zubernis & Snyder, 2007). This study included identity development as both a predictor of coping variability and variability in adjustment to college, which few studies have done. As this variable is intimately tied to one's social life, it may have an impact on the type of coping behaviors that an individual uses. It is also possible that the level of outness that a person reports is linked to both coping and adjustment. Due to both of these variables' social natures, a possible effect may be observed for social-emotional coping responses. The current study will not only expand the research literature with a greater understanding of the interaction between stress and coping for LGBT students, it will also expand it by investigating the effect that variables essential to LGBT status, identity development and level of outness, have on these processes.

Summary & Hypotheses

Coping with college is a stressful time for students. First year students have to deal with many concerns, such as living with a roommate, homesickness, difficult coursework, and making new groups of friends. This stressful transition influences many students to not return for a second academic year. Those students that stay in college have found multiple ways to cope with the stresses associated with this transition. Each of these different types of coping is affected by a multitude of variables and each type has a differential impact on the adjustment the student makes to the stressors of each year LGBT students have unique stressors that may affect

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the types of coping they use and how they adjust to stress. It is important to investigate the ways in individual students differ in their use of coping strategies and the effectiveness of these strategies over time in order to determine how to help students choose the most effective strategies for themselves.

Listed below is a brief summary of the hypotheses and predictions:

H_1: Stress will change over time

The first research question will address the evolution of stressors over part of the academic year. As previously stated, sources of stress may stem from academic issues, personal issues or the added stressors due to LGBT minority status. A great deal of intra-individual variation also exists among LGBT students. Because there are so many potential sources of stress, it is expected that amount and type of stress will change over time, but no predictions are made as to how it will change. It was also predicted that, as the type of stressed changed, whether or not it was related to a participant's sexuality should change as well.

H_2: Coping will change over time

Consistent with previous research examining all four years of college, planning coping use should increase (Kariv & Heiman, 2005; Williams & McGillicuddy-De Lisi, 2000). Avoidant coping use was predicted to decrease following previous research findings (Arthur & Hiebert, 1996). It is possible that the greater use of social supports in college, where LGBT students are often starting to identify themselves as different, may cause an increase in social-emotional coping during the semester.

H₃: Adjustment will increase over the semester

As stress and coping are directly related to adjustment, it is expected that if they are changing, adjustment must be changing. As it was postulated that students will learn how to better cope with the stressors they will experience in college, adjustment should increase over the course of the semester.

H₄: Are changes in stress predictive of changes in coping? What other variables serve as predictors of coping as well?

No predictions were made for how stress will affect the different types of coping. LGBT-related stress, gender and masculinity are all believed to serve as predictors for different forms of coping. Multiple variables, such as masculinity/femininity (Dyson & Renk, 2006) have been shown to be predictors of coping behaviors. It is expected that they will also be significant in this study.

H₅: Are changes in coping predictive of changes in adjustment? What other variables serve as predictors of adjustment as well?

Previous research (Leong & Bonz, 1997) has indicated that there will be a positive association between planning coping and adjustment across the semester. Due to earlier studies, it is expected that there will be a negative association between avoidant coping and adjustment over time (Arthur, 1998) and there will be a negative association between social-emotional coping and adjustment as well (Sasaki & Yamasaki, 2007; Wilson, et al., 2005).

This study will extend beyond previous studies (Hampel & Petermann, 2006; Li, et al., 2006) to reveal that there are not simply direct links between coping and adjustment at one point in time, but that earlier coping behaviors are truly predictive of adjustment at a later point in time. It will include LGBT status in the analyses predicting adjustment from coping. Including LGBT status as a variable will allow for an important investigation to determine whether or not group differences exist between how individuals of different sexualities in the effects of particular coping behaviors are in adjustment. Determining if LGBT status has an effect on coping behaviors will be a new addition to the knowledge of how coping works in different populations.

Chapter 3

Methodology

Subjects

LGBT students were recruited from multiple locations, including one set of students actively recruited from campus groups at the University of Illinois at Urbana-Champaign (UIUC) and passively from flyers left in the campus LGBT office. A second set of students was recruited from contacting LGBT offices at other university campuses and requesting the placement of flyers in their offices and information in their LGBT campus newsletters. For a student to be eligible for the study they had to be at least 18 years old and self-identify as at least somewhat gay, lesbian or bisexual. Those that referred themselves as mostly heterosexual on the sexuality demographic item (see below) were allowed to complete the study but were removed from the data set.

Sixty-five percent of participants considered themselves mostly homosexual, 19% considered themselves somewhat homosexual, 15% thought of themselves as bisexual, and 1% referred to themselves as somewhat heterosexual. Those rating themselves as heterosexual (1%) were dropped from the final participant pool. One percent of the initial sample identified as transgendered. Having only three individuals in a group can lead to misleading results due to the possibility of outliers influencing group means. The stressors experienced by individuals that identify as transgender can also differ greatly from their lesbian, gay and bisexual peers due to the different minority stresses they experience by crossing societal gender norms. In order to compare sexualities across the sample in a meaningful way, these three individuals were dropped from the final data set.

Seventy-nine students comprised the final sample. Fifty-three percent self-identified as female and 47% self-identified as male. The ethnic composition of the participants in the study was 72% white, 9% Hispanic, 9% African American, 8% Asian American, 1% Native American and 1% labeled themselves bi-racial. Participant age ranged from 18 to 31 with a mean age of 21. Fifteen percent of the students were freshman, 16% were sophomores, 25% were juniors, and 43% were seniors.

Procedures

Recruitment. Students were recruited at the beginning of the spring 2010 semester in two different ways: through student group meetings at UIUC and by online recruitment from other universities. In order to obtain a wide sampling of students, a representative from the study staff approached the various LGBT groups on campus and attended one of their initial meetings of the semester to explain the study, pass out the questionnaires and collect them upon completion at the end of meetings. Incentives (gift cards) were offered for students to stay and complete the questionnaires; students that could not stay were provided with a link to the online survey. In order to supplement these numbers, LGBT offices/groups of other universities were approached through explanatory emails and letters. These emails and letters contained a copy of the IRB approval, explanation of the study, as well as the web address where students could fill out the surveys.

Data collection. Data collection occurred at four time points during the spring semester. The data for the first wave was collected in mid-January. Each of the remaining data collections occurred four weeks after the one previous. At each data collection point, the participants

completed the entire study questionnaire. Questionnaires were provided in the order outlined in Figure B.2.

The procedures for the first data collection differed slightly from those for the other data collections. During the first data collection, students who were recruited from UIUC were asked to fill out their surveys preferentially on hard copy in order to make certain that as many individuals complete them as possible. Those students recruited outside of UIUC or through flyers at the LGBT office at UIUC completed their questionnaires online. For the second, third and fourth data collection points, students were contacted via email and reminded to complete the final set of questionnaires online (see Figure B.3).

After of the 79 students in the final data pool completed the initial data collection. Forty-eight of those participants completed the second data collection point, 48 participants filled out the third survey and 48 subjects completed the final survey at the end of the semester. Thirty-nine of the 79 participants (49%) completed all four waves. This number rose to 48 out of 79 subjects (61%) completed three waves and 58 participants (73%) completed at least two waves of data collection.

Although HLM can is designed to handle missing data, it cannot handle large amounts of individuals with only one data point. In addition, in order to complete fit comparisons across the dataset, models must contain the exact same individuals. If one nested model does not include particular individuals because they failed to complete a survey, then it cannot be compared to another model unless those same individuals are also absent from the second model. In order to decrease the amount individuals with only one data point and allow for fit comparisons, individuals with missing data had their missing values computed. These values were computed

from averaging the available values for each variable across time. If no other values were available, then the initial value was carried forward. This procedure does decrease variability due to averaging and so comparisons were made between models using this procedure and models without any averaging. Approximately six individuals had this procedure done to their data out of the entire data set. Few differences were observed in the variables identified as significant in the preliminary HLM models between the two procedures and so the averaged dataset was retained for this study.

In order to complete comparisons of fit statistics for the HLM models, students needed to have a complete data set for each wave in which they participated. If an individual participant's data for a particular wave was not complete, his or her numbers were averaged across the waves of data that they did complete. If their only record was their initial record and it was incomplete, they were deleted. This form of deletion occurred in two cases.

To determine that no significant differences existed between participants that completed only the initial data collection at the start of the semester and those that went on to complete more than one data collection, an ANOVA was conducted to compare means across these two groups. Out of all of the variables entered into the analysis, group difference appeared only in the variable representing sexuality ($F = 4.02$, $p < .05$). The ANOVA demonstrated that participants that completed more than one data collection point rated themselves as more strongly to identify as gay or lesbian than participants that completed only the first data collection. This finding indicates the possibility that completion of the survey was associated with ambivalence about one's sexuality.

Students were entered into a drawing after each data collection had ended. Those participants who completed data for that round of surveys were eligible to win a $100 gift certificate. For each round of surveys that they completed students were entered into a drawing to win a $20 gift certificate for that round. As an incentive to those students recruited at LGBT meetings, there was an on-spot drawing for a $15 gift card for those students that stayed after the meeting to complete the surveys.

Measures

Coping. To measure coping behaviors, a modified version of Carver, Scheier and Weintraub's COPE instrument (1989) was used (Appendix C). The original instrument consisted of 13 subscales containing four items each for a total of 52 items. Three subscales were selected from the larger instrument. They were selected to be representative of planning coping, social-emotional coping and avoidant coping.

This study used a modified version of the original COPE instrument. In this version, items are scored on a 5-point scale instead of the 4-point scale used in the original COPE. Scores ranged from 1 (*not at all*) to 5 (*a lot*) in order to provide students with a middle value, 3 (*medium*), and to resemble the format of the other questionnaires in the research battery. Sample items from the subscales are "I try to come up with a strategy about what to do" (planning) and "I just give up trying to reach my goal" (behavioral disengagement). A factor analysis of the scale using data from the participants in the current study demonstrated three factors. The items loaded onto the appropriate factors from the COPE subscales. All three factors together explained 73.3% of the variance. The planning factor explained 15.6% of the variance, the

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social-emotional factor explained 25.3% of the variance and the avoidant coping factor explained 32.4% of the variance.

Cronbach alpha values for the original subscales ranged from .63 to .85. Test-retest values at 8 weeks ranged from .63 to .77. These values were originally obtained with a sample of undergraduates at a large southeastern university (Carver, et al., 1989). When compared to personality measures such as optimism, control and self-esteem, the subscales displayed a great deal of discriminant validity. Only small to medium correlations appeared with the instruments measuring other constructs. In this study, alpha values for the initial use of planning coping, social-emotional coping and avoidant coping were .72, .91, and .91 respectively (Table A.1).

Adjustment to college. Adjustment to college was measured using a modified version of the Student Adjustment to College Questionnaire (SACQ) developed by Baker and Syrik (1984). The scale consists of 52 Likert items combined into 4 subscales that can be combined to obtain an overall total score. The subscales are classified as academic, social, personal-emotional, and a general subscale (later renamed "attachment"). The original scale was constructed on a 9 point distribution with one anchor being "applies very closely to me" and the other anchor being "doesn't apply to me at all" (Baker & Siryk, 1984). Cronbach alpha reliabilities have been found to be consistent across diverse ethnic samples, with reliabilities ranging from .82 for social adjustment subscale to .94 on the total adjustment scale (Kalsner & Pistole, 2003).

The scale has demonstrated concurrent validity with measures designed to address loneliness, depression, academic motivation and general adjustment. Correlations with these measures ranged from .12 to .86 (Beyers & Goossens, 2002). It demonstrated predictive validity with measures of attrition, ranging from correlations of -.07 to -.20 (Beyers & Goossens, 2002).

Recent studies have questioned the factor structure of the scale, yet have not been able to produce a more parsimonious factor structure than the current four factors (Taylor & Pastor, 2007). While other studies use more psychological measures of adjustment (i.e., depression or self-esteem), this study used the SACQ due to its ability to capture more than simple psychological adjustment to college.

Research staff determined approximately 10 questions for each of the two subscales to retain that were deemed most relevant to academic or social adjustment. Factor analyses were completed on the scales to make certain that the items used still grouped into one factor for each of the subscales. Out of the initial 12 items selected for the academic adjustment scale, one item was deleted for loading onto a factor that did not thematically fit the nature of the item. Another item was deleted for poor factor loading. During attempts to finalize the factors into one scale, three separate factors consistently emerged and the academic adjustment scale was broken into three separate scales measuring aspects of academic adjustment. The factors thematically organized around (1) how well a participant was doing in school, (2) how easy it was for them to start all of their work and (3) how satisfied they were with their expectations for their program of study. Cronbach alphas for the three scales were .78, .71 and .53. The first factor explained 28.1% of the variance, the second factor explained 19.8% of the variance and the third factor explained 13.5% of the variance. The final social adjustment scale totaled 8 items and explained 54.6% of the variance in responses.

Stress. Three measures were used to measure stress. The main interpretation of stress was how bothered participants had been during the past month by feelings of anxiety. Anxiety in this study was measured using the Brief Symptom Inventory (Derogatis & Spencer, 1982). The scale consists of seven items on a 5 point scale asking the participant how much a particular problem

has bothered them in the past month. Anchors for the items are bothered "not at all" and "extremely." High scores indicate greater levels of anxiety. The Brief Symptom Inventory in this study has a Cronbach's alpha of .86 and a test/re-test value of .66.

The other two ways of measuring stress was accomplished with two repeated items. The first question asked the student to describe the biggest stressor that they experienced in the past month. Following their answer students were asked to state with a yes or a no whether they considered the stress to be due to their sexual identity status and this dichotomous variable was called gay-attributed stress. After the first round of questionnaires was collected the answers were analyzed by research staff to find common themes.

Ten themes were identified and participant responses were coded to reflect the themes. These topics included stresses related to social relationships, family relationships, money/job, relationships with significant others, concerns about school, the future, coming out to others, coming out to family members, health-related concerns and miscellaneous concerns. Both of the coming out categories were reduced into one "coming out" category and the health-related items were included into the "miscellaneous" category. This procedure led to a final total of six categories for gay-attributed. The categories were: balancing commitments with others, relationships with others, school-related, coming out, money/job-related and other.

During later analyses, these themes were not useful variables in the models as the number of incidents related to sexual identity was small. In investigating the ratings of their perceived stress it was noted that some students did not rate their experienced stress as related to their sexuality even when it might fall into that category. Examples of this included problems in their relationships with boyfriends/girlfriends that participants rated as not related to their sexuality.

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Although LGB individuals have similar relationship concerns to their straight peers, they have

the added layer of minority stress to these relationships that can affect the individual whether or

not they take not of this overlying layer. In order to examine this effect, the type of stress

experienced was combined with whether or not the participant perceived the stress as related to

their sexuality to form a new variable, called gay-identified stress. In order to create this

dichotomous variable, the main investigator explored the descriptions provided by participants.

Any descriptions that appeared to be related to sexuality, such as being out to family or problems

with a boyfriend/girlfriend, were coded as a 1. Additionally, whenever a participant stated that

their stress was related to their sexual identity this was also coded as a 1. Both of the stress

variables were used in the following analyses. For time points one through four, the percentage

of students exhibiting gay-identified stresses was 65%, 47%, 56% and 46%, respectively.

Independent samples t tests were run on initial values for all variables using the new

variable for whether or not the stress was related to sexuality. Three differences were noted and

on the sexual confidence, anxiety and avoidant coping variables. When p values were left

uncorrected for the number of tests examined, three differences were noted between individuals

reporting gay-identified stress and those not reporting any stress of this type. Those participants

that stated their stress was related to their sexuality were more likely to say they were more

confident in their sexuality (t= -2.07, df=77, p < .05). Participants at the beginning of the study

who perceived their stress as being related to their sexuality rated themselves as more anxious

than those participants who did not consider their stress as being related to their sexuality (t= -

2.26, df=77, p < .05). Finally, a significant difference existed for avoidant coping, with

participants who regarded their stress as being linked to their sexuality using more avoidant

coping than those who did not (t = -2.40, df = 77, p < .05). It is possible, that the more confident

in their sexual identity were more aware of these stresses and were more accurate with labeling them correctly. Yet, when corrected for the number of tests being completed, none of these differences approached the appropriate *p* value.

Outness. Outness to others was measured using the Outness Inventory (Mohr & Fassinger, 2000). The inventory includes 10 items measured using a 7 point scale asking participants how likely it is particular people in the participant's life know about their sexuality. The scale has three subscales focusing on how out the participant is to their family, the world outside their family, and how out they are to their religious community. The out to family and out to world scales were used in this study. Mohr and Fassinger developed the scale using a sample of 179 gay men and 232 lesbian women from a variety of educational backgrounds and regions from across the United States. In the original sample Cronbach alphas for the subscales were .74 (family), .79 (world), and .97 (religion). The scale was compared to other measures of outness and identity development. Being more out, as measured by the Outness Inventory, was associated with being more out on similar measures. Alpha values for the subscales in this study were .76 and .88. Test-retest reliability for the scales was .89 and .82 respectively.

Sexual identity confusion. One item developed for this survey assessed sexual identity confusion. It asked respondents to state how often they felt confused about their sexuality. Answers were on a 5-point scale with the anchors (a) never confused because I consider myself to be straight, lesbian, gay, bisexual or transgender and (e) always confused. There was a correlation of .85 between the first administration of the questionnaire and the last one.

Sexuality. Sexuality was assessed with one item. Participants answered with the choice that they thought best represented their sexuality. The scale had 6 points, with respondents being

able to choose a single answer of heterosexual, mostly heterosexual, bisexual, mostly homosexual, and homosexual. Correlations between the first administration and the last administration were .73. As noted previously, transgender participants and those participants that rated themselves as mostly heterosexual were dropped from the final data set. In the rest of this document participants will be referred to as LGB to represent the fact that transgender students were no longer part of the final analysis.

Masculinity/femininity. The use of established measures of masculinity and femininity is problematic in some aspects. The widely used measure, the Bem Sex Role Inventory, defines masculinity and femininity as orthogonal constructs with no overlapping traits, yet research often points to their overlapping features (Wong, McCreary, & Duffy, 1990) that these two constructs may be converging (Hoffman, 2001). Even with these concerns, masculinity and femininity ratings, as measured by the BSRI, have been found to be predictive of differences in coping styles whereas gender was not (Dyson & Renk, 2006). Although there is also some controversy on whether or not the BSRI and other measures are valid with current cultural definitions of masculinity and femininity; one study has shown that the long version of the BSRI is still valid with the exception of two items (Holt & Ellis, 1998). Especially relevant to the current study is the fact that the masculinity/femininity measures have been shown to be equally valid with heterosexual and homosexual gay men (Chung, 1995).

In order to avoid some of the problems with these measures, the questionnaire in the current study simply asked participants to rate themselves on a 6-point scale how masculine/feminine they see themselves as. Anchors for the scale were 1 "very feminine" and 6 "very masculine." Test-retest values for this scale were .78 for masculinity and .78 for women.

Self-esteem. Rosenberg's (1965) Self-Esteem Scale (RSE) is a widely employed 10 item instrument that was used to measure self-esteem. While the original instrument used a 7-point scale, this study used a modified version with a 5-point scale and responses ranging from 1 (*not at all true*) to 5 (*very true*). The choice was made to use a 5-point instead of a 7-point scale in order to be consistent with the other measures to simplify the options for the participants.

High scores indicate the degree to which the participant thinks the description is true of themselves. Sample items include "I feel I have a number of good qualities" and "At times I think I am no good at all." The original participants used in constructing this scale were juniors and seniors in eastern high schools across the eastern U.S.

In Rosenberg's original findings, fifty students completed the questionnaire again nine months after the first interview and 80% of the participants scored within one scale value of their original scores (Rosenberg, 1962). Bachman and O'Malley (1977) found similar scores in a population of male tenth grade students tested over the course of their three remaining years in high school. RSE coefficient alphas ranged from .75 to .79 for each of the years and the overall test-retest reliability was .75 (Bachman & O'Malley, 1977). This measure has established levels of construct validity from comparisons with other measures (Hagborg, 1993; Lorr & Wunderlich, 1986). Among diverse populations of college students and community members, alpha reliabilities ranging from .88 to .90 have been found (Robins, Hendin, & Trzesniewski, 2001). The self-esteem scale had a Cronbach's alpha of .90 and a test, re-test value of .90.

Data Analyses

Hierarchical linear models. The main analyses of this study were a series of hierarchical linear models (HLMs) that allowed the researchers to examine the change in coping and

adjustment over time. All models were tested for linear and quadratic effects of time. None of

the quadratic models demonstrated better fit than the linear models, so the quadratic models are

not presented in this paper. One of the first research questions addressed in this manner was

whether or not the use of different types of coping changes across the semester. Three models

were created, with the outcome variable for each model being one of the particular types of

coping. Investigating the significance of the slope for the fixed effects and the direction of its

sign demonstrated how coping is changing over the semester. This model was repeated for

adjustment and stress to determine if these changed across this time period.

To determine how individual changes in stress may affect individual changes in coping, three

HLM models were created with stress as the independent variable and each type of coping as the

dependent variable. Coefficients for stress were investigated to determine whether stress is

predictive of coping. HLM models allowed for an investigation of whether any group

differences in gender, masculinity/femininity, and LGB status affect coping and adjustment

across the four time points. This would be indicated by a significant association between these

terms and the model intercepts.

In order to answer the next research question, whether coping is serving as a predictor for

adjustment, a new HLM model was created. In this model, adjustment to college served as the

primary outcome variable. Type of stress, gender, anxiety, self-esteem, masculinity/femininity,

and the three coping variables served as the predictor variables in the equations. It was expected

that the active coping variable would have a positive value in predicting adjustment. Avoidant

coping and social-emotional coping were predicted to have negative values in the model.

If each of the three types of coping change over time and this pattern is different for individual students, then the researchers could investigate whether these changes are predictive of changes in adjustment. LGB status was also included in order to examine if group differences exist and there is a need for different models across sexual identities, looking for changes in coping responses to be associated with changes in adjustment. In the model using planning coping, it was predicted that, as planning coping increases, adjustment increases. To contrast this prediction, it was expected that, as avoidant coping decreases adjustment would increase.

As noted in the introduction, it was of interest to expand the research literature through this study by investigating the moderating effects of variables on the relationships between stress, coping and adjustment. Of particular interest in this study were the sexuality-related variables such as outness, sexual orientation and the gay stress variables. In each series of HLM models, interaction terms were created to model these moderator variables. For example, interaction terms for sexuality and each form of coping (three new variables total) were created for each HLM model of adjustment. These interaction terms were entered after the final model had been reached. If the interaction terms significantly improved fit, they were retained for the final model, otherwise they were not retained. When variables increased fit caused the final model to lack a positive definite G matrix, they were not retained.

Regressions. If the final HLM models were determined to lack a positive definite G matrix (meaning that an estimate of variability was statistically found to be zero or negative) which would mean they are un-interpretable, they were recreated as regression models. These regression models were assessed in a step-wise fashion. The first block contained the initial value of the variable in question at the beginning of the study, for example the initial use of planning coping. For any models developed to predict coping, the second block contained any

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predictor variables and the third block contained the interaction variables. In any models created to predict adjustment, the second block contained the stress variables, the third block contained the coping variables and the fourth block contained the interaction terms. The blocks were created in this order to represent the model proposed in Figure B.1. Interaction terms created for the model were created according to suggestions by other authors (Aiken & West, 1991), meaning they were centered before use. The interaction terms included interactions between the gay-identified stress variable and the following variables: anxiety, sexuality, planning coping, social-emotional coping and avoidant coping. The coping interactions were included only for regression models predicting adjustment as placing them in models predicting coping did not fit with the theoretical model in Figure B.1. If the interaction block did not significantly increase the value of R^2, it was not retained as the final regression model.

Chapter 4

Results

Is Stress Changing Over Time?

An examination of the means for the main measure of stress, i.e. anxiety, showed minor variability (Table A.2) with means across the waves ranging from 2.73 to 2.66. In order to investigate this research question an unconditional growth model was created for anxiety. In this model, the fixed effect of time was not statistically significant ($t = .82$, $p = .42$); anxiety did not change over the semester. It is notable that the model did not reach a positive definite G matrix. The inability of the model to reach this goal demonstrates a problem that occurred throughout the models analyzed in this dataset. A model can fail to reach a positive definite G matrix if the within-person residual variation is small, due to participants having too few data across multiple time points (Singer & Willett, 2003). A model that does not achieve a positive definite G matrix has a variance component or components that are negative or zero. From this finding we can identify that stress was not changing over time.

Table A.3 shows the percentages of students reporting stress in a particular time category across each data collection point. The table demonstrates that type of stress appeared to remain constant across all time periods. Some variation was noted across time in the balancing commitments with others and relationships with others categories.

The procedure for investigating anxiety was also used to compare the type of stress and whether or not the stress was related to being gay. The type of stress did not change over time ($t = .14$, $p = .89$). School and relationship-oriented stressors appeared to be the predominant type of stress participants reported experiencing during the semester. Whether the stress was related

to being gay had a significant effect for time ($t = -1.99$, $p = .05$). Its negative coefficient indicates that, as time progressed, students perceived their stress to be less related to their sexuality compared to their experience of their stress at the start of the semester.

Is Coping Changing Over Time?

The prediction for this study was that planning coping would increase over the semester whereas social-emotional and avoidant coping would decrease. Initial investigations of the means between waves (Table A.1) show slight variation. In order to determine these predictions, unconditional growth models were estimated across the four time points. These results are detailed in Table A.4.

For planning coping, neither the fixed effects for the slope ($t(144) = -.35$, $p = .73$) or the random effect ($z = 0$, p $= .40$) for the slope are significant. These findings indicate there was no average rate of change across the time range or individual variability in the slope respectively. The random effect for the intercept does indicate that there is variability in the intercepts for these equations ($z = .26$, $p < .001$).

Social-emotional coping repeats some of the same findings as planning coping. There is no significant finding for the fixed effect ($t(144) = .98$, $p = .33$). This model did not reach a positive definite G matrix, and the random effects portion of the slope were not significant ($z = 0$, $p = 0.$). As in planning coping, a significant finding for the random effect for intercept was found, thus indicating that there is variability within the intercepts ($z = 1.01$, $p < .001$).

Avoidant coping also demonstrated no fixed ($t(144) = -.77$, $p = .44$) or random effects ($z = .82$, $p = .22$) for slope. These results indicate that there was no change over time. Like planning and social-emotional coping, avoidant coping does have a significant random effect for

the intercept ($z = .59$, $p < .001$). The lack of a significant fixed effect for the slope of each of these models does not support the hypothesis that changes in coping would be noticed over the semester.

Is Adjustment Changing Over Time?

It was predicted that academic and social adjustment would increase over the course of the semester. Table A.5 failed to support this prediction as social-emotional adjustment actually decreased over the semester. Table A.6 explores differences among the three subscales of academic adjustment. This table illustrates a general trend towards a decrease in adjustment. Unconditional growth models were estimated for these adjustment variables and the results are presented in Table A.7.

Social adjustment demonstrated no significant fixed ($t(144) = 1.22$, $p = .18$) or random effects ($z = .90$, $p = .18$) for slope. There was no average slope (i.e., a slope different from 0) and no significant variability across individuals in their slopes. These findings were the same for the model for the overall adjustment variable with no significant fixed or random effects for slope. Each of these three models, however, does demonstrate variability in its intercept.

In the three academic adjustment subscales a different pattern is noted. In the first subscale, academic achievement, there were no fixed effects ($t(144) = -1.10$, $p = .27$) or random effects ($z = .11$, $p = .46$) for the slope. For this variable there was no change in adjustment over time. There were significant effects for the initial intercept ($t(78) = 27.21$, $p < .001$) and for variability in that intercept ($z = 4.80$, $p < .001$). There was a significant random effect for slope ($z = 1.80$, $p < .05$) for the second academic adjustment variable, academic initiative. This means that there is variability among individuals for their slopes even though, on average, there was no

slope. Satisfaction with the program, the last form of academic adjustment, showed a slight slope ($t(144) = -2.12$, $p < .05$) with variability within that slope ($z = 2.65$, $p < .01$). In this model there is a slight negative slope.

In summary, there is some variation in slope for the academic adjustment subscales. Social adjustment and does not appear to change over time. Only one of the three forms of academic adjustment, satisfaction with program, appears to change, but it changes in the opposite direction than predicted. The hypothesis that adjustment improves over the semester is not supported by these findings.

What Predicts Coping?

The second hypothesis was that different forms of coping would change over time; this was not supported by the analyses. Since there are no changes over time, the fourth hypothesis, which sought to clarify those variables that might predict changes in coping over the semester, cannot be investigated. What can be investigated is which variables do predict coping over the semester. Understanding this information is especially helpful in light of the significant findings exhibited in Table A.4, which demonstrate significant variability between intercepts among individuals that was not simply accounted for by changes in time.

Correlations were run among the initial variables (as measured at Time 1) in the study and are presented in Table A.8. An assessment of this table shows that there are certain variables that may serve as useful predictors for the different forms of coping. For example, self-esteem is helpful in predicting planning and avoidant coping, but has less predictive value for social-emotional coping.

While correlations between values are helpful in understanding relationships at time 1, when discussing prediction it is more informative to know correlations between predictor values at time 1 and the final values of coping or adjustment at time 4 (the final data collection point). Table A.9 provides the correlations between time 1 variables and coping at time 4. Again, certain variables stand out as potentially useful predictors for coping. Anxiety is a useful predictor for multiple types of coping while masculinity is more helpful for social-emotional coping. There were also differences in the correlational patterns between initial and final variables and the averaged variables across all time points. As an example, year in school correlated with no forms of coping at time 1, but it correlated with avoidant coping when scores were averaged across all time points.

In consideration of these findings, a series of models using these variables as predictors for the different types of coping were created. Each of these series began with the unconditional growth model and then presented each predictor variable entered into the model by itself. The three measures of stress (anxiety, type of stress and whether or not the stress was related to being gay) were introduced first. Following the three stress variables, the other predictors were tested against the unconditional growth model. Predictors such as year in school, ethnicity and sexuality were treated as time-invariant variables (variables that do not change their values over time). All other variables are time-variant (variables that change their values over time). Because including time-varying predictors into a model changes the meaning of the growth parameters, the level-2 variances cannot be compared across models (Singer & Willett, 2003). This effect means that, to compare models, their fixed effects must be compared. In order to compare fixed effects the models must be estimated with full maximum likelihood (FML) instead of restricted maximum likelihood (RML). Although RML is preferred, it only allows for

comparisons across random effects and not both fixed and random effects (Singer & Willett, 2003). As such, FML was utilized in the present study.

Table A.10 presents the first series of models for planning coping, including the fit statistics for each model (-2 log likelihood, AIC and BIC). These models were tested using a deviance-based hypothesis to determine if the predictor variable significantly increased the fit above the unconditional growth model. The degrees of freedom for each model, the chi-square value used to test the difference between the unconditional model, and the model with a predictor variable are included in Table A.10.

As a general rule, all variables with a significant test statistic were tested in the final equation. Variables with the smallest significant test statistics were added first to a model that already included the theoretically relevant variables. These were followed by the significant variables with the next smallest fit statistic being added to the model. An example of this would be testing sexual identity confusion in predicting coping after adding in anxiety, where anxiety is the predictor required to be in the final model by the theoretical model of coping. If the added variable created a significant increase in fit, then it was retained. If the variable did not significantly increase the fit, it was not retained and the variable with the next smallest increase in fit was tested. Interaction terms were also included for particular models. These terms were included to expand upon the interaction of sexuality-based variables and the stress-related variables in the study (e.g. testing an interaction between sexuality and the type of stress). If the interaction terms significantly improved fit they were kept for consideration in the final model. When variables increased fit but their model did not have a positive definite G matrix they were only retained if the final model had a positive definite G matrix. There were instances when no final model had a positive definite G matrix.

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Some variables were included in the final models, even though their original model was not significant; for example, if theory stated that the variables should be included in the final model. Anxiety was one such variable. Coping theory states that coping is a response to stress, but in some models anxiety did not significantly fit better than the unconditional growth model. As the type of stress and if the stress was related to being gay were not theoretically required variables, they were not included in the final models unless they were models that were significantly better in fit.

Planning coping. As Table A.10 illustrates, self-esteem served as a better fit in the model when compared to the unconditional growth model. This means that the final model included only self-esteem and anxiety as the predictors for use of active coping over the semester. The results for this model are displayed in Table A.11. In this final model, no change over time was observed although the mean growth rate approached a significant fixed effect ($t = 1.92$, $p = .06$). Although this model did not have a positive definite G matrix; it is interesting to note that the significance for the effect time approached significance ($p = .06$), the fixed effects of self-esteem and anxiety also approached significance ($p = .06$ and $p = .07$ respectively). The significant effect of the interaction between self-esteem and time indicates that self-esteem has an effect on time; the positive coefficient indicates that, over time, as self-esteem increases, planning coping increases.

As the final model lacked a positive definite G matrix, a regression model was created according to the procedure outlined in the Methods section. In this series of models, see Table A.12, none of the interaction terms created significantly improved the value for R^2, so the final model used is Model 2. In this model, the initial value of planning coping serves as a positive predictor for its value at the end of the semester. While neither anxiety nor self-esteem served as

significant predictors in the final HLM model, initial self-esteem was a significant predictor. High self-esteem at the beginning of the semester was associated with greater planning coping use at the end of the semester.

Social-emotional coping. Table A.13 shows the fit of the predictor variable models for social-emotional coping. The results demonstrate that no models served to increase fit above the unconditional growth model. A final model was chosen that included only anxiety since this measure of stress was theoretically required by the coping model used for the study. The final model is presented in Table A.14. As in the final model created for planning coping, the final social-emotional model also failed to achieve a positive definite G matrix. However, it is still of interest to continue to investigate this model. Unlike the previous model, this model has many significant parameters. A significant effect of time was noted in this model ($t = 2.35, p < .05$). This suggests that, over the course of the semester, the use of social-emotional coping slowly increased. A significant fixed effect was noted for anxiety as well ($t = .20, p < .05$); high initial levels of anxiety were predictive of high initial levels of social-emotional copings. There is also a significant effect between time and anxiety ($t = -2.16, p < .05$). A significant interaction term indicated that the effect of anxiety changed over time.

Similar to the HLM model for planning coping, the model for social-emotional coping also lacked a positive definite G matrix and so a series of regression models were created to further investigate and interpret the results. Table A.15 shows that, again, Model 3 containing the interaction terms did not significantly increase the value of R^2 and was not retained as the final model. Model 2 was kept as the final model, even though its *F* change was not significant, because it included anxiety, which was a significant improvement in fit in the HLM models and a significant correlation in Tables A8 and A9.

Avoidant coping. The results for the predictor variable models for avoidant coping are presented in Table A.16. As with planning coping, self-esteem demonstrated a significant improvement in fit ($\chi^2 = -41.3$, $p < .001$). Once again, coping theory dictates that a measure of stress should be in the final model and so self-esteem was left in the final model with anxiety. The final model is presented in Table A.17. Here, it can be concluded that self-esteem has a fixed effect ($t = -5.61$, $df = 140$, $p < .001$). Those participants with high self-esteem also had lower levels of avoidant coping at the start of the study. Avoidant coping was the only form of coping that achieved a positive definite G matrix in each of its models.

What Predicts Adjustment?

Correlations were significant between anxiety and self-esteem and most types of adjustment as measured at the end of the study. Planning and avoidant coping generally correlated with the overall values of adjustment, but not with the final values. Table A.18 demonstrates correlations between the time 1 predictor variables for each type of adjustment and the time 4 adjustment outcomes. Table A.19 shows the correlations between the values for the predictor variables and the values for adjustment averaged across all time points.

A similar process was used to create predictive models for adjustment. First, an unconditional growth model was created for each form of adjustment. Next, this model was followed by the creation of additional models adding a single predictor variable to the unconditional growth model. The difference in fit between each model and the unconditional model was investigated. Where significant differences were observed, the variables from these models were retained for each final adjustment model. Variables that were treated as time-variant or time-invariant remained in the same category for these models. In addition to the

initial set of time-variant variables, all three forms of coping were added as time-variant. All forms of coping were included in each of the final models for adjustment as they were all required by the theoretical model of coping to be included.

As in the previous section, some interaction terms were created for these models. This research study also examined whether an interaction might exist between sexuality and particular forms of coping or between if the stress experienced was related to coping. If these interactions were significant and found to have better fit, than they were retained in the final model.

Social adjustment. Self-esteem and avoidant coping are the predictor variables that significantly improved fit above and beyond the unconditional growth model. For the final model, planning coping and avoidant coping were included as well due to the theoretical predictions for the relevant research question. Table A.20 shows the different fit indices and test statistics for the models predicting social adjustment. The final model is presented in Table A.21. In the final model self-esteem is a significant predictor ($t(136) = 4.37$, $p < .001$). When all other variables are controlled for, increased self-esteem predicted increased social adjustment. None of the coping variables had significant fixed effects for the social adjustment model.

Academic adjustment.

Academic achievement. The predictor models for the first academic adjustment subscale, academic achievement, are presented in Table A.22. In these models, anxiety and types of stress were predictors that significantly increased the fit of the model. Table A.23 presents this final model. In this model, anxiety ($t(126) = -4.92$, $p < .001$) and social-emotional coping ($t(126) = 2.24$, $p < .02$) both have significant fixed effects. Those students with higher initial levels of anxiety also had lower levels of academic adjustment. By contrast, those

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students who had a high initial use of social-emotional coping also had a higher initial level of academic effort and achievement. In addition, the types of stress experienced had a significant main effect. Those students that experienced stress from the "other" category had a lower initial level of adjustment compared to students experiencing the other types of stress. This final model failed to achieve a positive definite G matrix.

A series of regression models was created for academic achievement since it failed to reach a positive definite G matrix (Table A.24). In this series of models, it was also found that the addition of the interaction terms did not significantly improve the value for R^2 and so it was not retained as the final model. Neither the addition of anxiety and type of stress (two variables found to add significantly to increasing fit in the HLM models) or the three forms of coping improved R^2. Model 3 was retained as the final model as it included both the variables indicated as predictors in the HLM model and the coping variables which Figure B.1 requires for the final model. In this final model higher levels of initial anxiety predict greater academic achievement.

Academic initiative. Each of the single variable predictor models for the second form of academic adjustment are shown in Table A.25. Out of all of these predictors, the model for anxiety provided a significantly better fit than the unconditional growth model. When anxiety was added to the three forms of coping, a final model was created and presented in Table A.26. In this final model, both anxiety ($t(136) = -2.84$, $p < .01$) and avoidant coping ($t(136) = -2.01$, $p < .05$) had significant fixed effects and the estimate for each variable was negative. As initial anxiety increased, students appeared to experience greater difficulty starting on their assignments. Students that had a higher initial use of avoidant coping also had a more difficult time starting work on their assignments.

Program satisfaction. The predictor models for the final form of academic adjustment, program satisfaction, are listed in Table A.27. Table A.28 presents the final model estimates that were observed when academic year and all three types of coping were placed in one model. The final model illustrates that academic year had a significant fixed effect ($t(136) = -2.90, p < .01$). The more advanced standing of a student, the lower his/her initial use of avoidant coping.

Chapter 5

Discussion

Are stress, coping and adjustment changing over time?

Although these students experienced many different stressors throughout the duration of the study, their overall level of stress did not change. Not only did the level of stress not change, the type of stress remained constant over the semester as well. While it would be promising to observe students becoming less stressed over the course of the semester, it is positive to note that these students did not experience an increase in stress. It is also interesting to note that, while there was not a significant change in the type of stress over the semester, students' perceptions of the stress as being related to their sexuality changed. This change in perception may be due to the change in the frequency of school-related stress to social concerns (Table A.25). Social concerns noted by participants were often related to being gay, so it is expected that the participants' ratings of the relation of the stress to their sexuality would change as well. At the very least, it is positive that students appear to perceive stress as being less related to their minority status at the end of the semester, regardless of whether or not the stress changes.

While some change in coping was observed over the course of the semester, it failed to rise to the level of significance in the unconditional growth models. A lack of change over time in coping use is similar to findings of other research studies that investigated coping use over the first semester (Pritchard & Wilson, 2006) or part of the spring semester (Devonport & Lane, 2006a). The meaningful contribution of the present study however, is its focus on LGB individuals and how this subpopulation of college students copes with stress. In addition, similar to the findings with stress, while the students did not decrease their use of coping behaviors often

perceived in the research literature to be behaviors with negative effects, neither did they increase their use of these behaviors.

Although, in the unconditional growth model social-emotional coping did not demonstrate an effect of time, it had a significant change over time once other variables were added to the model. This is an important finding as the research literature often presents social-emotional coping as a form of maladaptive coping, yet the increase in its use did not result in a decrease in adjustment. In fact, this coping behavior was a predictor of better initial academic achievement for academic effort. This means that when social-emotional coping is examined separately from avoidant coping, it can have a positive effect on adjustment. It may also be a form of coping that universities can assist students in finding ways to utilize it more.

Some forms of adjustment resulted in significant findings. There was some variability in slope for academic initiative despite a lack of fixed effects for the slope. The program satisfaction factor demonstrated an average change over time in the negative direction, such that students were less satisfied with their program as the semester progressed. The significance of both of these effects disappeared in the final models after school year and all three types of coping were added. Similar to coping, social adjustment also demonstrated no change over time as evidenced by the non-significant fixed effect for slope. These findings demonstrate that, once other variables are accounted for, the LGB students in this study appear to rate themselves as highly adjusted throughout the semester. This is in contrast to how the research literature often describes them as at risk students for a variety of psychological and other concerns.

Two potential reasons for the lack of change may be associated with both the number and timing of samplings. The stresses associated with the spring semester seemed to be more related

to coursework or planning for the summer. Sampling these same students in the fall semester (where they are generally living in new locations, adjusting to new friends, or to college in general, in addition to the stress of classes) may have produced significant trends over time, trends in different directions or even different sources of stress.

What other variables serve as predictors of coping?

The simplified model proposed by the research literature is demonstrated in Figure B.1. In this model, researchers expect to find links between stress and coping, arrow A. Links are also expected to exist between coping and adjustment, arrow B. The first part of the discussion examines the testing of the links between stress and coping. Later in the discussion, the findings of the link between coping and adjustment are examined. In both of these areas the other variables that may predict coping and adjustment will be discussed.

As stress was not observed to change in the present study, changes in stress could not be used to predict changes in coping. However, self-esteem demonstrated it was a significant predictor in some forms of coping. In planning coping, for example, self-esteem had a significant positive effect. Participants with higher self-esteem demonstrated greater use of planning coping at the end of the semester after controlling for the initial use of planning coping.

The effect of anxiety was not a significant predictor for the initial use of avoidant coping or social-emotional. Self-esteem, however, did significantly predict the initial use of avoidant coping. In this model, greater self-esteem led to lower use of avoidant coping. This finding reinforces research that avoidant coping can sometimes be viewed as a maladaptive behavior that leads to poorer consequences (Gurnakova, 2000). Those with higher self-esteem may be

assumed to be better adjusted, therefore relying less upon coping behaviors that are less effective in handling stress.

In summary, these models demonstrated some evidence that coping is changing over time. The fact that stress also served as a predictor for some forms of coping follows with what Figure B.1 would predict. What is interesting about the models is the lack of the importance of stress compared to other variables as serving as predictors of copings. Having a measure of a student's anxiety does not appear to be a useful determinant for predicting coping at the end of the semester. This is contrary to what is expected from the model proposed in Figure B.1. It indicates that anxiety, while it may have some effects by itself, is not helpful after prior coping use has been controlled for. This informs colleges as they can take this information and work on focus on finding ways increase LGB student's coping directly as opposed to assisting them with their confidence in their sexuality or other variables. It also means that universities and work on increasing self-esteem to directly affect coping. This study expanded upon the research literature by investigating variables related to sexuality and, in the end, excluded those variables as being important predictors for this population. The large amount of variability that still exists in these models beyond the measure of stress and sexuality demonstrate a need for further research in this population.

What other variables serve as predictors of adjustment?

Similar to the analysis for planning and social-emotional coping, one of the strongest variables used to increase the fit of the final social adjustment model was self-esteem. Although avoidant coping served as an initial variable that significantly improved fit, it was not a significant predictor in the final model. In fact, when all forms of coping were added into the

final model, none of them were significant. This finding does support some previous research that demonstrated that forms of planning coping were not predictive of social adjustment (Leong & Bonz, 1997). However, it directly contradicts many studies that found greater use of avoidant coping to be linked to poorer social adjustment (Chan, 1995; Felsten, 1998) and planning coping to be linked with better adjustment (Hampel & Petermann, 2006; Li, et al., 2006). The lack of coping serving as a significant predictor for adjustment not only fails to follow the hypothesized results but it also does not replicate the results expected for arrow B in Figure B.1.

It is possible that, the forms of adjustment measured in this study are simply not affected by these types of coping. Findings of the effects of coping in the research literature generally were obtained from the use of the full scale SACQ or measure of specific psychological constructs, such as depression. Hence it is difficult to compare findings in the present study to previous research. The fact that many of the models did not have positive definite G matrices means that they do not directly refute the model proposed for this study. If these models achieved positive definite G matrices and still demonstrated no connections between coping and adjustment then other explanations such as the one provided a few sentences previous would be required to explain the observed results.

The first academic adjustment factor, academic achievement by student effort, did have variables that increased the fit, such as anxiety and the type of stress, in the HLM model. As regression models were required due to a failure to achieve a positive definite G matrix, these results are not interpretable. In the final regression model however, anxiety was a significant predictor. Initial anxiety predicted greater academic achievement at the end of the semester. If students are more anxious they may have difficulty concentrating and completing their work and

might need to invest more time and energy into their work to receive the same grade as a less anxious student.

The second academic model investigated the ease with which participants were able to start their assignments. In this final model participants with high levels of anxiety had lower values for adjustment. This result reflects that students who are anxious about their assignments have a great difficulty starting on them. Avoidant coping also had a significant fixed effect. Its negative effect indicates that those participants who had a greater use of avoidant coping also had a lower level of academic initiative. This result mirrors research findings that demonstrate that avoidant coping leads to poor adjustment (Cohen, Ben-Zur, & Rosenfeld, 2008; Gonzales, et al., 2001). Universities can use this information to target avoidant coping. By helping LGB students to find other forms of coping and to decrease their use of avoidant coping, these students should have an easier time starting on their assignments.

The third academic adjustment model included variables predicting a participant's program satisfaction. Participants with more advanced standing in school when the study began demonstrated lower levels of satisfaction with their program. As adjustment did not change over the semester, these individuals remained lower than their peers throughout the semester. This form of academic adjustment is different from the other forms as it is more satisfaction-related than ability-related. It is possible this difference is the reason why coping behaviors were not linked to overall satisfaction with the program.

It is noteworthy that, over all of the forms of adjustment, sexuality-related variables did not appear to serve as useful predictors in the final models. It was posited in the research questions that both confidence in sexual identity and level of outness to others might have an

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impact on adjustment and coping behaviors. In fact, not only did these variables not serve as useful predictors, they never offered a significant improvement over the unconditional growth models. Noting no group differences due to sexuality indicates that, despite the vast difference in experiences that can separate gay men from lesbian women, they demonstrated similarities in how their sexuality impacts their coping and adjustment. Any program targeted to effect change in coping in LGB students should be able to focus on the broad level of sexual identity and outness without the need to focus on particular subgroups of this population.

Limitations

One of the main limitations of the study is the proportion of students who completed only the first wave of data collection. Although HLM is designed to account for missing data, small degrees of variation may be observed when a substantial number of participants fail to complete the full number of waves. The most common solution to this problem is to simplify the model by reducing the number of variables included in the model. An example of why this solution is not viable in the current study can be seen in the social-emotional coping models, where even the unconditional growth model was found to lack a positive definite G matrix. By definition, the unconditional growth model has no other variables in it that could be removed to simply the model and, therefore, is not one that could be used in this study.

Another concern related to the dearth of models with non-positive definite G matrices was the use of FML. Use of FML is more likely than RML to lead to models that are not positive definite. Although the use of restricted maximum likelihood would have reduced the number of models that reached the boundary constraints, some of the models would still have not been able to achieve positive definite G matrices. In fact, all of the models in this manuscript

were also estimated under RML for exploratory purposes (although they are not provided in this manuscript). The models estimated using RML still reached the boundary constraints in the same pattern as their FML counterparts.

A final concern about the study is the sample under consideration. The sample was not evenly distributed across multiple variables. Forty-three percent of the participants were seniors compared to only 15%, 16% and 25% that were freshmen, sophomores and juniors, respectively. Although no measure in the present study was able to capture this, the fact that students were recruited through LGBT offices and clubs altered the sample as well. Only students that were already connected to their institutions would have received information about this study. This may be seen slightly in the fact that most of the participants in this study labeled themselves as mostly homosexual, (65%) versus 19% mostly homosexual (19%) and bisexual (15%). Also, 49.5% of respondents rated themselves as being "definitely out" to their family members versus 5.1% said they were not out to family. Approximately 47% of students reported being "definitely out" to their friends versus 20% stating they were not out. Students that are more open about their sexuality are more likely to identify as gay and make connections with their LGB office. Since this study was not able to sample those students who were less likely to be out or to label themselves strictly as gay. It is possible that these other students might behave differently in response to stress, especially stress associated to their sexuality than the students that were recruited in this study.

Each of these differences in the population may have altered the findings of the study. It may have been difficult to notice any changes over time for coping behaviors, even though the research demonstrates that older students use behaviors at different rates than younger students, because the students were mostly from one year in school. Students that are mostly out or label

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themselves as mostly homosexual may relate to things differently than their peers. Considering that LGB individuals already comprise a smaller population of college students than their straight peers, it might be difficult to increase these numbers, but effort in future studies should be placed in attempting to achieve more balanced samples.

One final note about this study is the ability to detect significant differences. Longitudinal HLM is able to handle smaller data sets than non-longitudinal HLM by the nature of its design. There is disagreement in the research literature as to what constitutes an adequate sample size for power. One rule of thumb is that sample size needs to be a minimum of 100 participants with 500 being "adequate" (Long, 1997). Other authors have stated that sample sizes of 30 or more are adequate (Snidjers & Bosker, 1999). Using calculations from previous work, with a sample size of 100 and two degrees of freedom, similar to the number used in comparisons of nested HLM models in this study as well as the sample size for this study, power reaches only .35. To achieve a power of .80 with two degrees of freedom and four observations, approximately 350 participants would have been needed for this study (Raudenbush & Liu, 2001). As this study has less than 100 participants, the power is low. Low power can lead to an inability to distinguish significant differences. It is possible that the difficulty in this study with finding any significant differences in the models is due the low power achieved in this study. This is another reason why increasing the sample size would have a positive effect on this study.

Future Directions

Even after placing a large number of variables into the models, a significant amount of variability in the within-person and intercept components argues that there are still variables that would account for this variability beyond those included in the study. Future studies should

expand the variables tested with this population to determine what else might account for the variability observed in the present study. Similar to the idea of sampling more variables, it is possible that coping subscales chosen from the COPE for this study may demonstrate different patterns of interaction than the other subscales in the instrument. Future work should considering sampling as many of the subscales as possible, while retaining the brevity of the questionnaire over multiple samplings. This would continue to further expand the understanding of how LGB college students cope with stress.

Although the initial goal of the study was to sample transgender students in addition to gay, lesbian and bisexual students, such a limited number of transgender participants entered the study that no comparative analyses could be completed. As the experience of people of all different sexual orientations are varied, it is important not to exclude a category with such a rich experience of coping behaviors. A larger sample would not only increase the richness of the responses, but it would also reduce the numbers lost to attrition.

This study demonstrated no changes in time for coping. It did demonstrate changes in adjustment over the course of the semester. Although it is possible changes exist for coping during a short span, it would be helpful to survey students over all four years of their experience in college. This sampling might align findings more with the current research literature, which demonstrates age-related change for college students (Arthur & Hiebert, 1996; Kariv & Heiman, 2005). Sampling students over the four academic years would have two added benefits. First, it would allow for a more thorough understanding of change. Second, including multiple years might capture more of the changes in adjustment from the first year, where students are dealing with moving in and beginning college, to their final year where students might be more focused on graduation-related concerns.

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Appendix A

Tables

Table A.1

Means, Standard Errors and Reliabilities of Coping Behaviors

Time	Planning coping			Social-emotional coping			Avoidant coping		
	M	*SE*	α	*M*	*SE*	α	*M*	*SE*	α
1	3.41	.08	.72	3.41	.13	.91	2.06	.10	.91
2	3.57	.10	.71	3.38	.19	.97	1.83	.10	.83
3	3.46	.13	.88	3.42	.18	.94	2.02	.13	.93
4	3.48	.12	.86	3.41	.18	.96	1.92	.11	.87

Table A.2

Means and Standard Errors of Anxiety

Time	*M*	*SE*
1	2.73	.10
2	2.66	.12
3	2.73	.13
4	2.73	.13

Table A.3

Changes in Types of Stress During the Semester

Form of stress	Time 1	Time 2	Time 3	Time 4
	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
Balancing commitments with others	15 (19)	10 (20)	2 (4)	8 (17)
Relationships with others	22 (28)	11(22)	8 (17)	11 (23)
School-related	20 (25)	16 (33)	26 (54)	19 (40)
Coming out	6 (8)	3 (6)	2 (4)	1 (2)
Job/money-related	8 (10)	6 (12)	7 (15)	6 (13)
Other	8 (10)	3 (6)	3 (6)	3 (6)

Table A.4

General Trend of Change of Planning Coping, Social-emotional Coping and Avoidant Coping

Parameter	Fixed effect			Random effect	
	Coefficient (*SE*)	t (*df*)		Variance parameter estimate (*SE*)	z
Planning coping					
Average initial (intercept)	3.44 (.08)	44.41 (78)***		.25 (.08)	3.16***
Mean growth rate (slope)	-.01 (.03)	-.35 (144)		.00 (.01)	.26
Social-emotional coping					
Average initial (intercept)	3.41 (.13)	26.74 (78)***		1.01 (.21)	4.91***
Mean growth rate (slope)	.04 (.04)	.98 (144)		0	0
Avoidant coping					
Average initial (intercept)	2.02 (.10)	20.80 (78)***		.59 (.12)	4.79***
Mean growth rate (slope)	-.02 (.03)	-.77 (144)		.01 (.01)	.82

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table A.5

Means, Standard Errors and Reliabilities of Social Adjustment Outcomes

	Social adjustment		
Time	*M*	*SE*	α
1	5.00	.19	.86
2	4.95	.25	.88
3	4.70	.25	.88
4	5.31	.25	.90

Table A.6

Means, Standard Errors and Reliabilities of Academic Adjustment Subscale Outcomes

	Academic achievement			Academic initiative			Program satisfaction		
Time	*M*	*SE*	α	*M*	*SE*	α	*M*	*SE*	α
1	5.01	.18	.78	2.88	.19	.71	5.26	.18	.53
2	4.88	.25	.82	2.93	.25	.74	5.18	.25	.65
3	4.90	.26	.79	2.63	.27	.84	4.74	.26	.67
4	4.76	.27	.83	2.74	.27	.88	4.86	.25	.69

Table A.7

General Trend of Change of Adjustment Outcome

Parameter	Fixed effect			Random effect	
	Coefficient (*SE*)	t (*df*)		Variance parameter estimate (*SE*)	z
Social adjustment					
Average initial (intercept)	4.94 (.19)	25.45 (78)***		2.39 (.48)	4.93***
Mean growth rate (slope)	.07 (.06)	1.22 (144)		.04 (.05)	.90
Academic achievement					
Average initial (intercept)	5.01 (.18)	27.21 (78)***		2.09 (.44)	4.80***
Mean growth rate (slope)	-.06 (.05)	-1.10 (144)		.00 (.04)	.11
Academic initiative					
Average initial (intercept)	2.90 (.19)	15.15 (78)***		2.22 (.48)	4.63***
Mean growth rate (slope)	-.10 (.07)	-1.35 (144)		.12 (.07)	1.80*
Program satisfaction					
Average initial (intercept)	5.24 (.19)	27.75 (78)***		2.28 (.46)	4.96***
Mean growth rate (slope)	-.16 (.07)	-2.12 (144)*		.17 (.06)	2.65**

* p < .05. ** p < .01. *** p < .001.

Table A.8

Correlations Between Predictor Variables and Initial Coping Behaviors

	Planning coping	Social-emotional coping	Avoidant coping
Anxiety	-.21	.33**	.32**
School year	.02	-.01	.21
Age	-.01	-.12	.28*
Sexuality	-.05	.27*	.12
Sexual identity confusion	-.06	.15	.37**
Out to family	.28*	.29*	.09
Out to world	.03	.03	-.00
Self-esteem	.32**	.09	-.58***
Masculinity	.12	-.34**	.01
Femininity	-.02	.41***	-.06

* p < .05. ** p < .01. *** p < .001.

Table A.9

Correlations Between Predictor Variables and Coping Behaviors (Overall)

	Planning coping	Social-emotional coping	Avoidant coping
Anxiety	-.27***	.24***	.34***
School year	.05	.07	.14*
Age	.03	-.08	.24***
Sexuality	-.04	.25***	.10
Sexual identity confusion	-.16*	.10	.35***
Out to family	.24***	.31***	.05
Out to world	.05	.03	.02
Self-esteem	.43***	-.03	-.53***
Masculinity	.04	-.20**	-.02
Femininity	.00	.34***	.02

* p < .05. ** p < .01. *** p < .001.

Table A.10

Models for Determining the Usefulness of Predictors for Planning Coping Behaviors

Model	Variable	-2loglik	AIC	BIC	Chi-sqr statistic	df
1	Unconditional growth[a]	455.7	467.7	482.0		6
2	Anxiety	443.2	459.2	478.2	-12.5	8
3	Type of stress[a]	445.9	479.9	520.2	-9.8	8
4	Gay-attributed stress[a]	453.7	471.7	493.0	-2.0	8
5	Gay-identified stress	453.1	473.1	496.8	-2.6	8
6	Age[a]	455.7	469.7	486.3	0.0	8
7	Academic year[a]	447.7	469.7	495.8	-8.0	8
8	Sexuality[a]	452.6	474.6	500.7	-3.1	8
9	Sexual identity confusion[a]	453.4	469.4	488.4	-2.3	8
10	Self-esteem[a]	429.1	443.1	459.7	-26.6*	8
11	Masculinity[a]	455.0	471.0	489.9	-0.7	8
12	Femininity[a]	454.9	470.9	489.9	-0.8	8
13	Out to family[a]	449.0	465.0	483.9	-6.7	8
14	Out to world[a]	455.0	471.0	490.0	-0.7	8
15	Ethnicity[a]	452.5	468.5	487.4	-3.2	8

* $p < .001$.

[a] model did not have a positive definite G matrix

Table A.11

Final Predictors for Changes in Planning Coping Across the Semester

		Parameter	Estimate (*SE*)
Fixed Effects[a]	Intercept (initial status)	γ_{00}	3.21 (.47)***
Initial status, π_{0i}	Time (rate of change)	γ_{10}	-.42 (.22)
	Self-esteem	γ_{01}	.17 (.09)
	Anxiety	γ_{02}	-.15 (.08)
Rate of change, π_{1i}	Self-esteem by Time	γ_{11}	.11 (.04)**
	Anxiety by Time	γ_{12}	.01 (.04)
Variance Components			
Level-1	Within-person	σ^2_e	.25 (.03)***
Level-2	In intercept	σ^2_0	.22 (.07)***
	In rate of change	σ^2_1	0

* $p < .05$. ** $p < .01$. *** $p < .001$.

[a]model did not have a positive definite G matrix

Table A.12

Regression Model for Stress Predicting Planning Coping

	Model 1		Model 2		Model 3	
	B	t	β	t	β	T
Initial values						
Planning coping	.51	3.96***	.34	2.78**	.36	2.79**
Initial predictors						
Anxiety			.15	1.19	.14	1.10
Self-esteem			.14	4.30***	.54	4.09***
Interactions						
Stress x Sexuality					-.04	-.37
Stress x anxiety					.06	.52
Model results						
R^2	.26		.48		.49	
Model F	15.68***		13.29***		7.82***	
R^2 change	.26		.23		.01	
F change	15.68***		9.35***		.21	

*$p < .05$. **$p < .01$. ***$p < .001$.

Table A.13

Models for Determining the Usefulness of Predictors for Social-emotional Coping Behaviors

Model	Variable	-2loglik	AIC	BIC	Chi-square statistic	Df
1	Unconditional growth[a]	563.2	573.2	585.1		6
2	Anxiety[a]	558.0	572.0	588.6	-5.2	8
3	Type of stress[a]	551.8	583.8	621.8	-11.4	8
4	Gay-attributed stress[a]	557.2	573.2	592.1	-6.0	8
5	Gay-identified stress[a]	560.5	578.5	599.8	-2.7	8
6	Age[a]	561.9	573.9	588.1	-1.3	8
7	Academic year[a]	556.0	578.0	604.1	-7.2	8
8	Sexuality[a]	554.6	576.6	602.6	-8.6	8
9	Sexual identity confusion[a]	560.4	574.4	591.0	-2.8	8
10	Self-esteem[a]	558.5	572.5	589.1	-4.7	8
11	Masculinity[a]	558.8	572.8	589.4	-4.4	8
12	Femininity[a]	557.5	571.5	588.1	-5.7	8
13	Out to family[a]	561.9	575.9	592.5	-1.3	8
14	Out to world[a]	563.1	577.1	593.7	-0.1	8
15	Ethnicity[a]	561.2	575.2	591.8	-2.0	8

* $p < .001$.

[a]model did not have a positive definite G matrix

Table A.14

Final Predictors for Changes in Social-emotional Coping Across the Semester

		Parameter	Estimate (*SE*)
Fixed Effects[a]	Intercept (initial status)	γ_{00}	2.85 (.30)***
Initial status, π_{0i}	Time (rate of change)	γ_{10}	.28 (.12)*
	Anxiety	γ_{01}	.20 (.10)*
Rate of change, π_{1i}	Anxiety by Time	γ_{11}	-.09 (.04)*
Variance Components	Within-person	σ^2_e	.33 (.04)***
Level-1	In intercept	σ^2_0	.91 (.19)***
Level-2	In rate of change	σ^2_1	0

* p < .05. ** p < .01. *** p < .001.

[a]model did not have a positive definite G matrix

Table A.15

Regression Model for Stress Predicting Social-emotional Coping

	Model 1		Model 2		Model 3	
	β	t	β	t	β	t
Initial values						
Social-emotional coping	.75	7.67***	.76	7.44***	.79	7.74***
Initial predictors						
Anxiety			-.04	-.27	.00	-.03
Interactions						
Stress x Sexuality					.01	.05
Stress x anxiety					.18	1.80
Model results						
R^2	.57		.57		.60	
Model *F*	58.87***		28.86***		15.64***	
R^2 change	.57		.00		.03	
F change	58.87***		.07		1.61	

*p < .05. **p < .01. ***p < .001.

Table A.16

Models for Determining the Usefulness of Predictors for Avoidant Coping Behaviors

Model	Variable	-2loglik	AIC	BIC	Chi-square statistic	df
1	Unconditional growth	441.4	453.4	467.7		6
2	Anxiety	436.5	452.5	471.5	-4.9	8
3	Type of stress	429.6	463.6	503.9	-11.8	8
4	Gay-attributed stress	439.3	457.3	478.7	-2.1	8
5	Gay-identified stress	427.7	447.7	471.4	-13.7	8
6	Age	433.8	447.8	464.4	-7.6	8
7	Academic year	433.4	457.4	485.8	-8.0	8
8	Sexuality	436.6	460.6	489.0	-4.8	8
9	Sexual identity confusion	435.5	451.5	470.4	-5.9	8
10	Self-esteem	400.1	416.1	435.1	-41.3*	8
11	Masculinity	440.5	456.5	475.4	-0.9	8
12	Femininity	435.5	451.5	470.5	-5.9	8
13	Out to family	441.1	457.1	476.0	-0.3	8
14	Out to world	437.0	453.0	471.9	-4.4	8
15	Ethnicity	440.5	456.5	475.4	-0.9	8

* p < .001.

Table A.17

Final Predictors for Changes in Avoidant Coping Across the Semester

		Parameter	Estimate (*SE*)
Fixed Effects	Intercept (initial status)	γ_{00}	3.69 (.47)***
Initial status, π_{0i}	Time (rate of change)	γ_{10}	.00 (.20)
	Self-esteem	γ_{01}	-.52 (.09)***
	Anxiety	γ_{02}	.09 (.08)
Rate of change, π_{1i}	Self-esteem by Time	γ_{11}	.01 (.03)
	Anxiety by Time	γ_{12}	-.03 (.04)
Variance Components			
Level-1	Within-person	σ^2_e	.20 (.03)***
Level-2	In intercept	σ^2_0	.31 (.08)***
	In rate of change	σ^2_1	.00 (.01)

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table A.18

Correlations Between Predictor Variables and Final Adjustment Outcomes

	Social adjustment	Academic achievement	Academic initiative	Program satisfaction
Anxiety	-.30*	-.14	-.32*	-.09
School year	.18	.02	-.21	-.04
Sexuality	-.31*	-.29*	-.12	.01
Sexual identity confusion	-.34	-.09	-.20	-.15
Out to family	.17	.14	.15	-.04
Out to world	.19	.13	-.18	-.06
Self-esteem	.52***	.31*	.40**	.18
Masculinity	.15	.03	-.01	-.19
Femininity	.07	-.01	.05	.19
Planning coping	.19	.16	.31*	.06
Social-emotional coping	.14	-.03	-.12	.10
Avoidant coping	-.17	-.18	-.28	-.13

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table A.19

Correlations Between Predictor Variables and Adjustment Outcomes (Overall)

	Social adjustment	Academic achievement	Academic initiative	Program satisfaction
Anxiety	-.33***	-.33***	.38***	-.14*
Age	-.07	.04	-.30***	-.10
School year	-.14*	.13	-.14*	-.21**
Sexuality	-.20**	-.26***	-.09	-.01
Sexual identity confusion	-.33***	-.14*	-.07	-.08
Out to family	.21**	.06	.00	-.08
Out to world	.26***	.13	-.18**	-.06
Self-esteem	.55***	.34***	.38***	.25***
Masculinity	.12	.06	-.00	-.10
Femininity	.05	.13*	-.01	.08
Planning coping	.29***	.05	.31***	.12
Social-emotional coping	.12	-.02	-.07	.06
Avoidant coping	-.34***	-.17*	-.37***	-.25***

* p < .05. ** p < .01. *** p < .001.

Table A.20

Models for Determining the Usefulness of Predictors for Social Adjustment

Model	Variable	-2loglik	AIC	BIC	test statistic	df
1	Unconditional growth	745.5	757.5	771.8		6
2	Anxiety	732.7	748.7	767.7	-12.8	8
3	Type of stress	736.9	770.9	811.1	-8.6	8
4	Gay-attributed stress	742.7	760.7	782.0	-2.8	8
5	Gay-identified stress	738.1	758.1	781.8	-7.4	8
6	Age	745.1	761.1	780.1	-0.4	8
7	Academic year	740.2	764.2	792.7	-5.3	8
8	Sexuality	736.6	760.6	789.0	-8.9	8
9	Sexual identity confusion	741.2	757.2	776.1	-4.3	8
10	Self-esteem	706.8	722.8	741.7	-38.7*	8
11	Masculinity	744.1	760.1	779.0	-1.4	8
12	Femininity	744.4	760.4	779.3	-1.1	8
13	Out to family	743.0	759.0	778.0	-2.5	8
14	Out to world	738.9	754.9	773.8	-6.6	8
15	Ethnicity	745.1	761.1	780.1	-0.4	8
16	Planning coping	740.7	756.7	775.6	-4.8	8.0
17	Social-emotional coping	743.8	759.8	778.8	-1.7	8.0
18	Avoidant coping	731.2	747.2	766.2	-14.3*	8.0

* $p < .001$.

Table A.21

Final Predictors for Changes in Social Adjustment Across the Semester

		Parameter	Estimate (*SE*)
Fixed Effects	Intercept (initial status)	γ_{00}	.90 (1.07)
Initial status, π_{0i}	Time (rate of change)	γ_{10}	.72 (.47)
	Self-esteem	γ_{01}	.90 (.21)***
	Planning coping	γ_{02}	.15 (.16)
	Social-emotional coping	γ_{03}	.09 (.11)
	Avoidant coping	γ_{04}	-.04 (.05)
Rate of change, π_{1i}	Self-esteem by Time	γ_{11}	-.01 (.09)
	Problem by Time	γ_{12}	-.09 (.08)
	Social by Time	γ_{13}	-.02 (.05)
	Avoidant by Time	γ_{14}	-.04 (.16)
Variance Components			
Level-1	Within-person	σ^2_e	.70 (.11)***
Level-2	In intercept	σ^2_0	1.62 (.38)**
	In rate of change	σ^2_1	.01 (.04)

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table A.22

Models for Determining the Usefulness of Predictors for Academic Achievement from Academic Effort

Model	Variable	-2loglik	AIC	BIC	test statistic	df
1	Unconditional growth[a]	733.1	745.1	759.4		6
2	Anxiety[a]	711.0	725.0	741.5	-22.1*	8
3	Type of stress[a]	715.8	747.8	785.8	-17.3*	8
4	Gay-attributed stress[a]	722.9	738.9	757.8	-10.2	8
5	Gay-identified stress	729.3	749.3	773.0	-3.8	8
6	Age[a]	732.0	746.0	762.6	-1.1	8
7	Academic year[a]	722.5	744.5	770.3	-10.6	8
8	Sexuality[a]	725.6	748.8	773.7	-7.5	8
9	Sexual identity confusion[a]	730.1	744.1	760.6	-3.0	8
10	Self-esteem[a]	722.8	738.8	757.8	-10.3	8
11	Masculinity	731.8	747.8	766.7	-1.3	8
12	Femininity[a]	729.9	743.9	760.5	-3.2	8
13	Out to family	731.0	747.0	765.9	-2.1	8
14	Out to world	731.6	747.6	766.5	-1.5	8
15	Ethnicity[a]	725.2	741.2	760.2	-7.9	8
16	Planning coping[a]	733.0	749.0	768.0	-0.1	8.0
17	Social-emotional coping	730.3	746.3	765.2	-2.8	8.0
18	Avoidant coping[a]	731.5	745.5	762.1	-1.6	8.0

* p < .001.

[a]model did not have a positive definite G matrix

Table A.23

Final Predictors for Changes in Grade Return for Academic Achievement from Academic Effort

		Parameter	Estimate (*SE*)
Fixed Effects[a]	Intercept (initial status)	γ_{00}	6.67 (.82)***
Initial status, π_{0i}	Time (rate of change)	γ_{10}	-.25 (.41)
	Anxiety	γ_{01}	-.71 (.15)***
	Type of stress	γ_{02}	.12 (.05)*
	Planning coping	γ_{03}	-.19 (.15)
	Social-emotional coping	γ_{04}	.21 (.10)*
	Avoidant coping	γ_{05}	-.07 (.13)
Rate of change, π_{1i}	Anxiety by Time	γ_{11}	.06 (.06)
	Type of stress by Time	γ_{12}	-.05 (.03)
	Problem by Time	γ_{13}	-.02 (.07)
	Social by Time	γ_{14}	.01 (.04)
	Avoidant by Time	γ_{15}	.05 (.08)
Variance Components			
Level-1	Within-person	σ^2_e	.61 (.07)***
Level-2	In intercept	σ^2_0	1.77 (.37)***
	In rate of change	σ^2_1	0

* $p < .05$. ** $p < .01$. *** $p < .001$.

[a]model did not have a positive definite G matrix

Table A.24

Regression Model for Coping Predicting Academic Achievement

	Model 1		Model 2		Model 3		Model 4	
	β	t	B	t	B	t	β	t
Initial values								
Academic achievement	.77	8.11***	.86	8.94***	.86	7.90***	.87	7.90***
Initial predictors								
Anxiety			.20	2.03*	.23	2.08*	.27	2.41*
Type of stress			-.19	-2.19*	-.17	-1.77	-.14	-1.35
Coping								
Planning coping					.08	.75	.06	.58
Social-emotional coping					-.03	-.34	.00	.01
Avoidant coping					.00	.03	.01	.08
Interactions								
Stress x Sexuality							.01	.04
Stress x anxiety							.11	1.05
Stress x planning coping							.21	2.15*
Stress x social-emotional coping							.00	.01
Stress x avoidant coping							.01	.10
Model results								
R^2	.59		.66		.66		.71	
Model F	65.78***		28.31***		13.52***		7.99***	
R^2 change	.59		.07		.01		.05	
F change	65.78***		4.53*		.22		1.12	

*$p < .05$. **$p < .01$. ***$p < .001$.

Table A.25

Models for Determining the Usefulness of Predictors for Academic Initiative

Model	Variable	-2loglik	AIC	BIC	test statistic	df
1	Unconditional growth	782.3	794.3	808.5		6
2	Anxiety	763.3	779.3	798.2	-19.0*	8
3	Type of stress	774.6	808.6	848.8	-7.7	8
4	Gay-attributed stress	774.8	792.8	814.1	-7.5	8
5	Gay-identified stress	773.6	793.6	817.3	-8.7	8
6	Age	772.5	788.5	807.4	-9.8	8
7	Academic year	772.3	796.3	824.7	-10.0	8
8	Sexuality	774.2	798.2	826.6	-8.1	8
9	Sexual identity confusion	781.7	797.7	816.6	-0.6	8
10	Self-esteem	769.6	785.0	804.9	-12.7	8
11	Masculinity	780.9	796.9	815.8	-1.4	8
12	Femininity	780.8	796.8	815.7	-1.5	8
13	Out to family	781.6	797.6	816.5	-0.7	8
14	Out to world	777.6	793.6	812.6	-4.7	8
15	Ethnicity	782.1	798.1	817.1	-0.2	8
16	Planning coping	777.8	793.8	812.8	-4.5	8.0
17	Social-emotional coping	779.0	795.0	813.9	-3.3	8.0
18	Avoidant coping	775.9	791.9	810.8	-6.4	8.0

* p < .001.

[a]model did not have a positive definite G matrix

Table A.26

Final Predictors for Changes in Academic Initiative Across the Semester

		Parameter	Estimate (*SE*)
Fixed Effects	Intercept (initial status)	γ_{00}	4.15 (.94)***
Initial status, π_{0i}	Time (rate of change)	γ_{10}	-.18 (.52)
	Anxiety	γ_{01}	-.50 (.18)**
	Planning coping	γ_{02}	.17 (.18)
	Social-emotional coping	γ_{03}	.06 (.12)
	Avoidant coping	γ_{04}	-.33 (.16)*
Rate of change, π_{1i}	Anxiety by Time	γ_{11}	-.05 (.08)
	Problem by Time	γ_{12}	-.03 (.10)
	Social by Time	γ_{13}	.06 (.06)
	Avoidant by Time	γ_{14}	.05 (.10)
Variance Components			
Level-1	Within-person	σ^2_e	.88 (.14)***
Level-2	In intercept	σ^2_0	1.38 (.38)***
	In rate of change	σ^2_1	.07 (.06)

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table A.27

Models for Determining the Usefulness of Predictors for Program Satisfaction

Model	Variable	-2loglik	AIC	BIC	test statistic	df
1	Unconditional growth	759.3	771.3	785.6		6
2	Anxiety	758.4	774.4	793.4	-0.9	8
3	Type of stress	747.6	781.6	821.8	-11.7	8
4	Gay-attributed stress	755.9	773.9	795.3	-3.4	8
5	Gay-identified stress	756.6	776.6	800.3	-2.7	8
6	Age	753.7	769.7	788.6	-5.6	8
7	Academic year	744.0	768.0	796.5	-15.3*	8
8	Sexuality	756.3	780.3	808.7	-3.0	8
9	Sexual identity confusion	755.7	771.7	790.6	-3.6	8
10	Self-esteem	752.4	768.4	787.3	-6.9	8
11	Masculinity	755.9	771.9	790.6	-3.4	8
12	Femininity	757.0	773.0	792.0	-2.3	8
13	Out to family	758.0	774.0	793.0	-1.3	8
14	Out to world	757.6	773.6	792.5	-1.7	8
15	Ethnicity	757.1	773.1	792.1	-2.2	8
16	Planning coping	757.9	773.9	792.9	-1.4	8.0
17	Social-emotional coping	759.0	775.0	794.0	-0.3	8.0
18	Avoidant coping	755.1	771.1	790.1	-4.2	8.0

* p < .001.

[a]model did not have a positive definite G matrix

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Table A.28

Final Predictors for Changes in Program Satisfaction

		Parameter	Estimate (*SE*)
Fixed Effects	Intercept (initial status)	γ_{00}	6.28 (.89)***
Initial status, π_{0i}	Time (rate of change)	γ_{10}	.35 (.50)
	School year	γ_{01}	-.45 (.15)**
	Planning coping	γ_{02}	.14 (.17)
	Social-emotional coping	γ_{03}	.08 (.11)
	Avoidant coping	γ_{04}	-.23 (.16)
Rate of change, π_{1i}	School year by Time	γ_{11}	.11 (.07)
	Problem by Time	γ_{12}	-.16 (.10)
	Social by Time	γ_{13}	-.05 (.06)
	Avoidant by Time	γ_{14}	-.05 (.10)
Variance Components			
Level-1	Within-person	σ^2_e	.65 (.10)***
Level-2	In intercept	σ^2_0	1.70 (.38)***
	In rate of change	σ^2_1	.16 (.06)***

* p < .05. ** p < .01. *** p < .001.
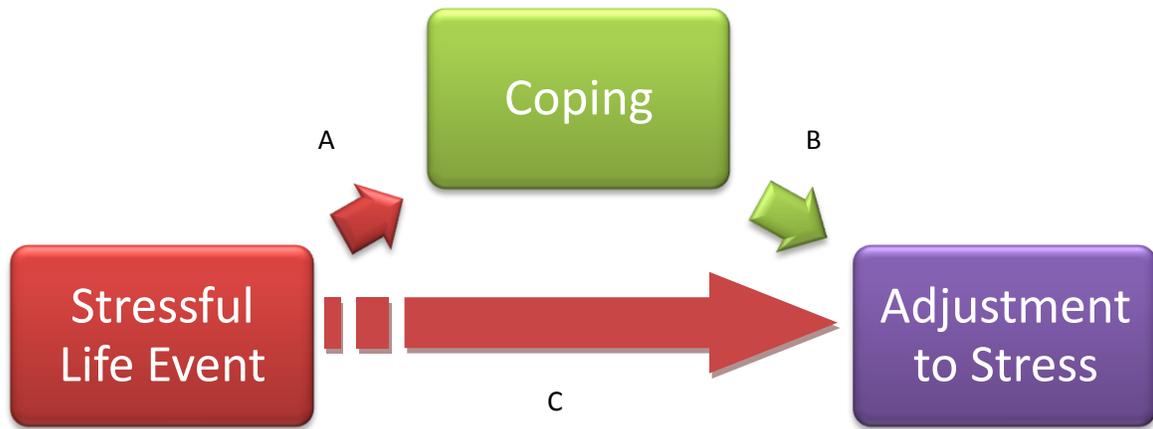
Figures

Figure B.1. Theoretical model of coping.
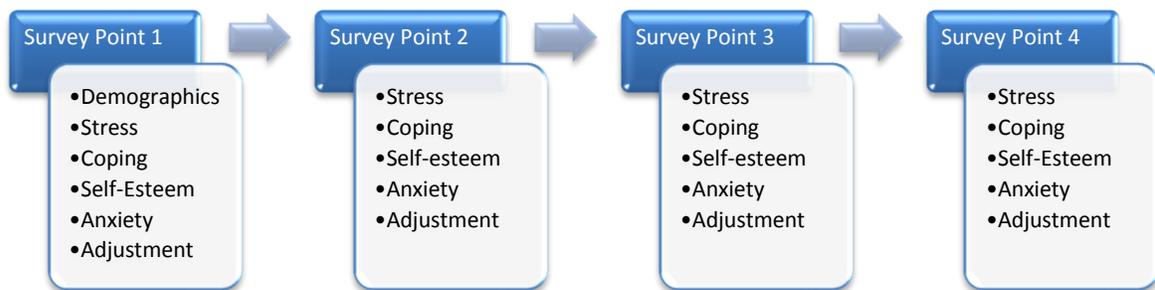
Figure B.2. Questionnaires to be completed at each data collection point.
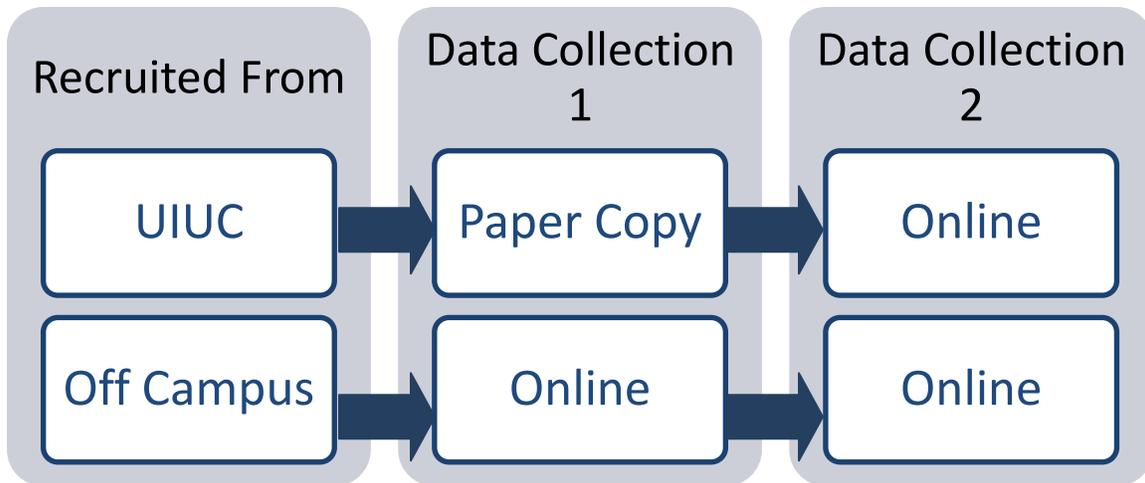
Figure B.3. Data collection method by recruitment type.

Questionnaire

Coping and Adjustment to College Questionnaire Survey

Please provide the following background information:

University email address:_____ *(@illinois.edu or similar)*

Demographic Questions

What is your gender?   Male   Female   Male-to-Female   Female-to-Male

Year in school?   Freshman   Sophomore   Junior Senior

Age   _____

Ethnicity

    _____ American Indian or Alaskan Native

    _____ White, Non-Hispanic

    _____ Asian or Pacific Islander

    _____ Black, Non -Hispanic

    _____ Hispanic

    _____ Other (please specify: _____)

Please check off the choice that best represents your sexuality (we know it can be difficult, but please try to mark the choice that best corresponds to your sexuality)

_____ Heterosexual

_____ Mostly heterosexual

_____ Bisexual

_____ Mostly homosexual

_____ Homosexual

Do you ever feel confused about whether you are lesbian, gay, bisexual or transgender?

(a) Never confused because I consider myself to be straight, lesbian, gay, bisexual or transgender

(b) Rarely confused

(c) Sometimes confused

(d) A lot confused

(e) Always confused

Outness Inventory

The next few items will ask about who you are out to about your sexuality. Please use the rating scale below and place the corresponding number to the right of the individual.

1 = person definitely does NOT know about your sexual orientation status
2 = person might know about your sexual orientation status, but it is never talked about
3 = person probably knows about your sexual orientation status, but it is never talked about
4 = person probably knows about your sexual orientation status, but it is rarely talked about
5 = person definitely knows about your sexual orientation status, but it is rarely talked about
6 = person definitely knows about your sexual orientation status, and it is sometimes talked about
7 = person definitely knows about your sexual orientation status, and it is openly talked about

Out to Family
Mother
Father
Siblings
Extended family/relatives

Out to World
My new straight friends
My work peers
My work supervisors
Strangers
My old straight friends

Out to Religion
Members of my religious community (e.g., church, temple)
Leaders of my religious community (e.g., minister, rabbi)

Qualitative Stress Questions

1. **Please take a minute to think of the most relevant source of stress you have experienced over the past month. Write 2-3 sentences describing what this stressor was.**

Do you think that this stressor was related to your sexuality?

2. **If you feel you had a second significant source of stress over the past month, please describe it here. Write 2-3 sentences describing what this stressful event or source of stress was.**

   Do you think that this stressor was related to your sexuality?

Coping Questions

We are interested in how people respond when they confront difficult or stressful events in their lives. There are lots of ways to try and deal with stress. The following questions ask you to indicate what you generally have done and felt, when you experience stressful events. Obviously, different events bring out somewhat different responses, but think about what you usually did in the past month when you were under a lot of stress. Then respond to each of the following items with what you **did in the past month**.

	not at all		*medium*		*a lot*
3. I take additional action to try to get rid of the problem.	1	2	3	4	5
4. I concentrate my efforts on doing something about it.	1	2	3	4	5
5. I do what has to be done, one step at a time.	1	2	3	4	5
6. I take direct action to get around the problem.	1	2	3	4	5

	not at all		*medium*		*a lot*
7. I talk to someone about how I feel.	1	2	3	4	5
8. I try to get emotional support from friends or relatives.	1	2	3	4	5
9. I discuss my feelings with someone.	1	2	3	4	5
10. I get sympathy and understanding from someone.	1	2	3	4	5

	not at all		*medium*		*a lot*

11. I give up the attempt to get what I want.	1	2	3	4	5
12. I just give up trying to reach my goal.	1	2	3	4	5
13. I admit to myself that I can't deal with it, and quit trying.	1	2	3	4	5
14. I reduce the amount of effort I'm putting into solving the problem.	1	2	3	4	5

Self-Esteem Questions

Circle one number to indicate how true the following statements have been for you in the past month.

	not at all true		somewhat true		very true
15. On the whole, I am satisfied with myself.	1	2	3	4	5
16. I feel I have a number of good qualities.	1	2	3	4	5
17. I feel I do not have much to be proud of.	1	2	3	4	5
18. I am able to do things as well as most other people.	1	2	3	4	5
19. All in all, I am inclined to feel that I am a failure.	1	2	3	4	5
20. I feel I am a person of worth, at least on an equal plane with others.	1	2	3	4	5
21. I take a positive attitude toward myself.	1	2	3	4	5
22. I wish I could have more respect for myself.	1	2	3	4	5
23. I certainly feel useless at times.	1	2	3	4	5
24. At times I think I am no good at all.	1	2	3	4	5

Masculinity/Feminity

25. Please rate yourself on how masculine or feminine you view yourself by circling the appropriate number

Not very masculine		Somewhat in-between			Very masculine
1	2	3	4	5	6

26. Please rate yourself on how masculine or feminine you view yourself by circling the appropriate number

Not very feminine		Somewhat in-between			Very feminine
1	2	3	4	5	6

Anxiety Questions

Following is a list of feelings people sometimes have. Please read each one carefully, and circle the number that best describes **HOW MUCH THAT PROBLEM HAS DISTRESSED OR BOTHERED YOU DURING THE PAST MONTH INCLUDING TODAY.** Circle one number for each problem.

	Not at all	*A little bit*	*Moderately*	*Quite a bit*	*Extremely*
27. Feeling anxious	0	1	2	3	4
28. Nervousness	0	1	2	3	4
29. Feeling fearful	0	1	2	3	4
30. Spells of panic	0	1	2	3	4
31. Feeling tense or keyed up	0	1	2	3	4
32. Feeling so restless that you couldn't sit still	0	1	2	3	4
33. Feeling worried	0	1	2	3	4

Adjustment Questions

The items that follow describe college experiences. Read each one and decide how well it applies to you at the present time (within the **past month**). For each statement, select the response at the point in the continuum that best represents how closely that statement applied to you and write that number in the column to the right.

0   1   2   3   4   5   6   7   8

0=Doesn't apply to me at all

           2=Doesn't apply to me

                  4=Uncertain

                          6=Applies to me

                                    8=Applies very closely to me

Academic Adjustment

	Rating
34. I am finding academic work at college difficult.	
35. I have not been functioning well during examinations.	
36. I am satisfied with the level at which I am performing academically.	
37. I'm not working as hard as I should at my course work.	
38. I'm not really smart enough for academic work I am expected to be doing now.	
39. I haven't been very efficient in the use of study time lately.	
40. Recently I have had trouble concentrating when I try to study.	
41. I'm not doing well enough academically for the amount of work I put in.	
42. I am enjoying my academic work at college.	
43. I am having a lot trouble getting started on homework assignments.	
44. I am satisfied with my program of courses for this semester/quarter.	
45. Most of the things I am interested in are not related to any of my course work at college.	

The items that follow describe college experiences. Read each one and decide how well it applies to you at the present time (within the **past month**). For each statement, select the response at the point in the continuum that best represents how closely that statement applied to you and write that number in the column to the right.

0   1   2   3   4   5   6   7   8
0=Doesn't apply to me at all
        2=Doesn't apply to me
            4=Uncertain
                6=Applies to me
                    8=Applies very closely to me

Social Adjustment

	Rating
46. I am meeting as many people, and making as many friends as I would like at college.	
47. I am very involved with social activities in college.	
48. I have several close social ties at college.	
49. I am satisfied with the extracurricular activities available at college.	
50. I am getting along very well with my roommates(s) at college. (Please omit if you do not have a roommate.)	
51. I am satisfied with the extent to which I am participating in social activities at college.	
52. I have been feeling lonely a lot at college lately.	
53. I am quite satisfied with my social life at college.	

STOP!! You are now finished with this survey.

Thank you for participating in this study. Your responses today and continued participation in the remaining questionnaires is very important to us. We will contact you again in approximately a month with a link to the next questionnaire. Remember, you will receive one entry into the final drawing for each of the four surveys you complete.

If answering any of the questions in this survey has made you feel uneasy, you may want to contact your university's student counseling center.

If any of these questions has made you feel depressed or suicidal, please call the National Suicide Prevention Lifeline at 1-800-255-TALK (8255).