

COGNITIVE COMPLEXITY IN SEXUAL MINORITY
INDIVIDUALS:
THE EFFECT OF POSITIVE IDENTITY FACTORS,
AGE, ETHNICITY, AND EDUCATION LEVEL ON
COGNITIVE COMPLEXITY

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Abstract: Cognitive complexity is defined as a multidimensional way of looking at people and the world. Previous qualitative research has examined cognitive complexity in sexual minority individuals, suggesting that sexual minority individuals possess higher levels of cognitive complexity due to the activities and emotional events involved in their identity formation process. This assertion, however, has not been subjected to quantitative methodology in a sample other than self-identified lesbian participants. Using Mechanical Turk to recruit participants, 198 individuals were administered a demographics questionnaire, the Role Category Questionnaire, and the Lesbian, Gay, and Bisexual Positive Identity Measure or the Transgender Positive Identity Measure. Analyses reveal that belonging to an ethnic minority group decreases cognitive complexity. Additionally, indicating higher levels of community was also shown to decrease cognitive complexity, but having higher levels of social justice increased cognitive complexity. These findings suggest that groupthink may be a factor that serves to decrease cognitive complexity due to insulating individuals from examining alternatives or outside opinions of issues. Finally, clinical implications are suggested for counselors working with sexual minority individuals followed by limitations of the study and future directions for continued research on cognitive complexity in sexual minority individuals.

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CHAPTER I

INTRODUCTION

Historically, most research on sexual minority individuals has focused on deficits, such as predictor rates of mental illness in sexual minority communities (Vaughn et al., 2014); however, a growing body of research exists that examines positive aspects of being non-heterosexual. For example, Seligman and Csikszentmihalyi (2000) proposed a three pillar model to conceptualize the positive aspects, or strengths, of individuals. The first pillar, positive subjective experiences, encompasses positive experiences that may occur to an individual throughout the day, positive outcomes during times of adversity (resilience), and stress related growth. The second pillar, virtues and character strengths, contains trait-like qualities that develop over time and can be fostered in individuals through cultural and social institutions. The six virtues proposed by Seligman and Csikszentmihalyi (2000) are wisdom and knowledge, courage, humanity, justice, temperance, and transcendence. Within each of these virtues are character traits (24 total across the six virtues) that lead a person to the respective virtue. The third pillar addresses positive social institutions, such as groups or organizations that foster character strengths and virtues.

In researching strengths and positive aspects of sexual minority identity, one strength in sexual minority individuals that has been highlighted is cognitive complexity (Abes & Jones, 2004; Riggle & Rostosky, 2011). Specifically, Riggle and Rostosky (2011) put forth that sexual minority individuals may be motivated to think more complexly about themselves, the world around them, and how they interact with other. Subsequent research also suggests that other

positive aspects about a sexual minority identity may increase not only cognitive complexity, but emotional and physical health (Riggle, Gonzalez, Rostosky, & Black, 2014; Riggle, Whitman, Olson, Rostosky, & Strong, 2008). In order to fully explore Riggle and Rostosky's (2011) assertion, it is important to understand both cognitive complexity, models of sexual minority identity development, and how cognitive complexity works within sexual minority identity development models.

Cognitive Complexity

The term cognitive complexity has been defined in many different ways depending on how the term is used in that particular field of study. Riggle and Rostosky (2011) and Abes and Jones (2004) define cognitive complexity as a multidimensional way of thinking that allows an individual to analyze relationships and situations in a higher-order way. Individuals possessing high levels of cognitive complexity tend to perceive subtler differences in individuals and situations and are able to better process different contexts and differences in individuals (Kelly, 1955). High cognitive complexity includes an awareness of a range of customs, values, and approaches to life. People with high cognitive complexity expect differences in people and can better relate to and understand these differences. Additionally, people high in cognitive complexity are better able to predict what others will do because they can make more inferences based off the ability to see subtle differences in people and situations. People who are high in cognitive complexity also approach people on less extreme terms because they are able to accept different customs and values in people.

Cognitive complexity was proposed by Kelly's (1955) personal construct theory. Kelly (1955) suggested that people are scientists because they attempt to understand, predict, and control events in their environment. Since a person is a scientist, individuals make observations, construe relationships among events, formulate theories, generate hypothesis, test the hypothesis,

and draw conclusions. Through this scientific process, people create personal constructs or cognitive templates through which they look at, interpret, and explain events and people the world. According to Kelly, a personal construct, at its most primitive form, is a bipolar dimension of judgment (e.g., thin-fat, short-tall, black-white, man-woman). People use these constructs in order to see and understand the world the world's realities. In other words, there are billions of people in the world, and individuals must have a way of categorizing these individuals into men and women, old and young, tall and short, etc. It is a way for individuals to see how people and things are alike and different from other people or things. Personal constructs are "transparent templates" or bipolar dimensions which a person "creates and then attempts to fit over the realities of which the world is composed" (Kelly, 1955, p. 9). The bipolar constructs, however, do not always accurately fit a situation or a person; nevertheless, they are the simplest means by which people make sense out of the world.

After Kelly's personal construct theory was published, Bieri (1955) introduced the idea of cognitive complexity. Bieri states "cognitive complexity refers to the degree of differentiation in an individual's construct system, i.e., the relative number of different dimensions of judgment used by a person." (O'Keefe & Sypher, 1981, p. 73). Because of this definition, the phrase cognitive complexity and construct differentiation are used synonymously. Therefore, the more construct differentiation one has the more cognitively complex they are said to be.

Cognitive Complexity in Sexual Minority Identity Development

Cognitive complexity has been examined as a trait present in sexual minority individuals. Using a qualitative approach, Abes and Jones (2004) examined the narratives of 10 undergraduate, self-identified lesbian participants. They concluded that cognitive complexity is a reciprocal factor in that cognitive complexity was a major factor to lesbian identity construction and that cognitive complexity helped to foster lesbian identity. Abes and Jones (2004) also

suggest that their findings mirror Fassinger (1998) in that sexual orientation identity development “might result” (Abes & Jones, 2004, p. 627) in a more rapid development of cognitive complexity. This research, however, examined cognitive complexity using a qualitative methodology and using only an undergraduate aged and self-identified lesbian sample. Riggle and Rostosky (2011) highlight Abes and Jones (2004) research and further add that they believe individuals who identify as a sexual minority may also develop increased cognitive complexity through sexual orientation identity development. This statement, however, has not been followed up with quantitative evidence beyond Abes and Jones (2004) qualitative study.

There have been a number of models for sexual minority identity development, starting with Cass (1979). Many of these models contain similar stages or steps toward identity development. Ritter and Terndrup (2002) have attempted to synthesize various models into a five phase model. In the first phase, individuals may feel alone or different in some way, may experiences same sex attractions but not fully understand these feelings, and may attempt to protect themselves using various defense mechanisms. In the second phase, individuals may start to feel sexually different from other peers, begin to question their sexual identity but work to avoid acknowledging it, and may immerse themselves into heterosexual customs and behaviors or engage in substance use in order to avoid acknowledging that they may not be heterosexual. In the third phase, individuals may acknowledge the possibly of being gay/lesbian, may seek out other sexual minority individuals, be unsure of how to behave, experience a developmental delay in terms of sexual or social experiences, and may seek out a peer group where their private self can be shared. In the fourth phase, individuals accept their sexual orientation, develop social and relational connected with other sexual minority individuals, begin to clarify their sexual, emotional, and psychological needs, and begin to freely disclose their sexual orientation to other individuals and group. Finally, in the fifth stage, individuals prefer their identity to a heterosexual identity, begin to see and understand different sexual *orientations*, immerses

themselves in different subcultures, abandon previous passing strategies, and begin to recognize similarities between sexual minority and heterosexual individuals.

Opportunities for increasing cognitive complexity occur in all five of the stages of the identity formation model. From the first stage, individuals are already viewing the world in a me versus them dichotomy because of the feelings they are beginning to have about sexual attraction. In the second and third stages, individuals may take steps to protect themselves in terms of who to trust and who to feel safe around because of their sexual attractions, which requires cognitive complexity in terms of identifying individuals they can and cannot trust. Finally, in the fourth and fifth stages, individuals may continue to develop and rely on their cognitive complexity in terms of who to disclose to, who they can rely on for emotional support, and by noticing differences and similarities between other sexual minority and heterosexual individuals.

Although research revealed that individuals who possess more cognitive complexity see the world and the people in it differently, there remain a number of questions about cognitive complexity. Riggle and Rostosky (2011) and Abes and Jones (2004) suggested that increased cognitive complexity results from a non-heterosexual sexual orientation identity process, however this claim has not been followed up with subsequent research. Further, there may be other factors that could increase cognitive complexity. Bieri (1955) and O'Keefe & Sypher (1981) suggest that cognitive complexity increases with age. Education level could also contribute to cognitive complexity because of the number of people, subjects, and experiences that individuals are exposed to as their education level increases. Ethnicity may also play a role in cognitive complexity, because like sexual minority individuals, there are a number of racial and ethnic identity developmental models which propose stages where individuals recognize differences between themselves and the dominant culture and eventually reach a point where they accept their culture and how that culture fits in with other cultures (Sue & Sue, 2016). Finally, other

positive identity factors as proposed by Riggle and Rostosky (2011) may also play a role in increasing cognitive complexity.

Purpose and Objective

Cognitive complexity is defined as a multidimensional way of thinking that allows an individual to analyze relationships and situations in a higher-order way (Riggle & Rostosky, 2011). Although a number of factors may contribute to cognitive complexity, this study focused on age, ethnicity, education, and factors related to positive sexual minority identity. The following research questions will help to guide the study:

R1: What factors affect the level of cognitive complexity that an individual possesses?

H1: Higher levels of cognitive complexity will be associated with being older, belonging to an ethnic minority group, and having attained higher education.

R2: How do positive identity factors effect cognitive complexity in sexual minority individuals?

H2: Higher levels of cognitive complexity will be associated with higher levels of positive identity factors, including self-awareness, authenticity, community, intimacy, and social justice.

CHAPTER II

METHODS

The methods chapter will cover three areas of the study. First, the characteristics of the participants will be described. Second, the demographics questionnaire and the psychometric properties of the Role Category Questionnaire (RCQ), the Lesbian, Gay, and Bisexual Positive Identity Measure (LGB-PIM), and the Transgender Positive Identity Measure (T-PIM) will be explained. Finally, the procedures will be described in terms of how the data was collected.

Participants

Originally, 1891 individuals accessed the screener survey. Of these individuals, 239 qualified for the full survey. During the data cleaning process, 41 individuals were removed for inconsistencies in their responses. Specifically, six individuals were removed for missing attention check items, 23 people were eliminated for not answering the Role Category Questionnaire, three individuals were eliminated for indicating heterosexual as their sexual orientation, which was inconsistent with the answer they provided on the screener questionnaire. Additionally, one individual was eliminated for not answering the Lesbian, Gay, and Bisexual Positive Identity Measure, two cases were removed for having the same Worker ID number, and six individuals were eliminated for unusual responses on the Role Category Questionnaire. This brought the final sample to 198 participants.

A power analysis was conducted using GPower (Paul, Erdfelder, Lang, & Buchner, 2007)

to determine the optimal sample size for analysis. To achieve a moderate effect ($f^2 = 0.15$) with $\alpha = 0.05$ and $\beta = 0.95$ using eight predictor variables, a total sample size of $n = 160$ is needed. The current sample of $N = 198$ is sufficient for the study.

A complete description of the demographic characteristics of the sample, which is broken down by bisexual, gay/lesbian, specify, and the overall sample can be found in Table 1. The following descriptions apply to the overall sample. The age of the sample ranged from 18 to 67 years old ($M = 29.73$; $SD = 7.88$). The majority of the sample (52%) identified as female and 53.5% of the sample identified their gender as woman. Although six individuals identified as Female to Male and four identified as Male to Female, only one participant identified as Transgender. This could be due to participants indicating their confirmed gender as opposed to retaining a transgender label. The majority (64.1%) of the sample identified as bisexual and 48.5% of the sample identified their ethnicity as White. Most of the sample (36.4%) indicated having a bachelor's degree and 35.9% indicated having some college/AA Degree/Technical School Training. Most of the sample indicated that they lived in a suburban area (49.5%) and 33.2% of the sample indicated that they were single. Most participants (70.2%) indicated that they Never/Rarely attend religious/spiritual services.

Instruments

Demographics Questionnaire. The demographics questionnaire consists of 11 items to assess participants' age, gender, sex, sexual orientation, ethnicity, education level, state where participant resides, area where participant lives, relationship status, religious/spiritual affiliation, and how often participants attend religious/spiritual services. For gender, sex, sexual orientation, ethnicity, education level, relationship status, and frequency of religions/spiritual services, categorical options were provided and a Please Specify option was also offered with a text box for participants to enter an answer not included in the provided categories. Age and

religious/spiritual affiliation were free response answers and only categories were provided for state and area where the participant resides.

Lesbian, Gay, and Bisexual Positive Identity Measure. (LGB-PIM; Riggle, Mohr, Rostosky, Fingerhut & Blasam, 2014). The LGB-PIM measures the ability to have positive emotions, thoughts, and to feel good about oneself in the context of identifying as a lesbian, gay, or bisexual individual. This self-report measure contains 25 randomly presented items measured on a 7-point scale ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). The LGB-PIM derives five scales, calculated by averaging the items corresponding to the subscale: Self-Awareness (items 1, 2, 3, 4, 5) defined as the belief that self-awareness is increased by LGB identity; Authenticity (items 6, 7, 8, 9, 10) defined as a comfort with and expressing one's LGB identity; Community (items 11, 12, 13, 14, 15) defined as one's sense of support and involvement from the LGB community; Intimacy (items 16, 17, 18, 19, 20) defined as one's LGB identity changing intimacy and freedom; and Social Justice (items 21, 22, 23, 24, 25) defined as one's LGB identity increasing one's concern for oppression and activism. On all response scales, higher scores indicate higher positive views about one's identity.

The LGB-PIM was validated on 272 self-identified male and female gay, lesbian, and queer participants with a mean age of 28.27 years ($SD = 11.14$). The sample was mostly white ($N = 208$) and most had at least a bachelor's degree ($N = 264$). Convergent validity for the subscales included Self-Awareness being positively associated with Emotional Self-Awareness ($r = .17$), Authenticity being positively associated with Authentic Living ($r = .46$), Community being positively associated with Group Identity ($r = .56$), Intimacy being positively associated with Emotional Intimacy ($r = .19$), and Social Justice being positively associated with Attitudes Toward Social Justice ($r = .62$). All scales were negatively associated with Internalized Negativity. Test-retest reliability (16 months) for the scales were: Intimacy ($r = .54$), Self-Awareness ($r = .71$), Social Justice ($r = .77$), Community ($r = .84$), and Authenticity ($r = .87$). For

the current study, Cronbach's alpha coefficients for the subscales were: Self-Awareness $\alpha = .86$, Authenticity $\alpha = .88$, Community $\alpha = .93$, Intimacy $\alpha = .86$, and Social Justice $\alpha = .83$.

Transgender Positive Identity Measure. (T-PIM; Riggle & Mohr, 2015). The T-PIM measures the ability to have positive emotions, thoughts, and to feel good about oneself in the context of identifying as a transgender individual. This self-report measure contains 24 randomly presented items measured on a 7-point scale ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). The T-PIM derives five scales, calculated by averaging the items corresponding to the subscale: Self-Awareness (items 21, 22, 23, 24), defined as the belief that self-awareness is increased by LGB identity; Authenticity (items 1, 2, 3, 4, 5), defined as an understanding of and benefiting from one's identity; Community (items 11, 12, 13, 14, 15), defined as a sense of being part of the LGB community; Intimacy (items 6, 7, 8, 9, 10), defined as knowing one's self and experiencing personal growth; and Social Justice (items 16, 17, 18, 19, 20) defined as compassion and recognition of oppression and working toward equal rights. On all response scales, higher scores indicate higher positive views about one's identity.

The T-PIM was validated on 138 self-identified transgender individuals with a mean age of 34.06 years ($SD = 12.82$). The sample was mostly white (87.8%) and most had at least a bachelor's degree (89.9%). Convergent validity for the scales of the T-PIM was calculated by correlating the scales with the Identity Affirmation measure: Authenticity ($r = .65$), Intimacy ($r = .36$), Community ($r = .47$), Social Justice ($r = .43$), and Insight ($r = .57$). Cronbach's alpha for the T-PIM was $\alpha = .93$. Because only one individual in the current study identified as transgender, Cronbach's alpha coefficients were not calculated. In Riggle and Mohr's (2015) exploration of the scale, Cronbach's alpha coefficients for the subscales were: Self-Awareness $\alpha = .81$, Authenticity $\alpha = .89$, Community $\alpha = .91$, Intimacy $\alpha = .92$, and Social Justice $\alpha = .90$.

Role Category Questionnaire. (RCQ; Crockett, 1965). The RCQ is a two item, self-report measures that assesses the estimated number of constructs that a person possesses. Participants write impressions of two people they know well: one of whom they like and one whom they dislike. Participants spend five minutes writing about each person. The measure is scored by counting the number of constructs across the two impressions (Crockett, Press, Delia, & Kenny, 1974). Higher levels of cognitive complexity are reflected by more constructs described by the participant. There are various reports (e.g., O’Keefe, Shepherd, & Streeter, 1982) pertaining to the average number of constructs derived utilizing a pencil and paper administration. These reports, however, will not be accurate as the measure will be administered in an electronic format and individuals can generally type faster than then can write.

The measure exhibits good test-retest reliability, with Crockett (1965) reporting $r = .95$ over four months. O’Keefe, Shepherd, and Streeter (1982) reported a test-retest reliability of $r = .84$ over a one-month span. Because the RCQ is not a true multi-item test, internal consistency cannot be adequately calculated. Burleson and Walkman (1988), however, point out that studies have explored internal constancy of the RCQ and found alphas ranging from .60 to .84.

Procedure

Research participants were recruited through Amazon.com’s Mechanical Turk (MTurk; mturk.com) using the IRB approved advertisement materials (see Appendix 3). MTurk is a crowd sourcing website where researchers post Human Intelligence Tasks (HITs) that workers can complete for small amounts of money, generally between \$0.25 and \$1.00. In situations where subject pools are small or if a specific type of subject pool is required, MTurk can provide a cheap and fast alternative to convenience samples obtained from universities or other sources. MTurk can provide several hundred to several thousand responses in a matter of days to a few weeks depending on the amount of money being offered to complete the survey. Because of this,

MTurk it is becoming popular with social science researchers (Chandler & Shapiro, 2016). Buhrmester, Kwang, & Gosling (2011) found that MTurk samples were more diversified than university samples on gender, age, and race, making them more generalizable than university samples.

In order to manage the workers on MTurk, TurkPrime (TurkPrime.com; Litman, Robinson, & Abberbock, 2017) was used. TurkPrime connects to a researcher's MTurk account and manages the workers based on their unique Worker ID number. TurkPrime ensures that workers do not participate in the same HIT twice. MTurk charges researchers based on the number of HITs that they post. TurkPrime has the option of breaking the HITs into smaller batches in order to reduce costs for the researcher. These batches can also be posted on MTurk throughout the day and week. This can be helpful as there may be certain characteristic about workers who only work in the morning versus the afternoon or during the week versus on the weekends. For the current study, HITs were distributed in batches of nine throughout the day over the course of one week.

Participants who access the HIT were asked to click on a link that took them to Qualtrics, where the survey was hosted. They were first presented with a screener questionnaire in order to collect a sample of individuals who identified as lesbian, gay, or bisexual. The screener questionnaire asked for age, sex, sexual orientation, and ethnicity. Age, sex, and ethnicity were added in order to make it more difficult for workers to guess which demographic variable would allow them to participate in the full survey. The additional demographic items also served as an integrity check against the demographic questions in the full survey for those who qualified.

If participants selected *Heterosexual*, they were informed that they did not qualify for the study at this time and were asked to return the HIT, meaning that the HIT was made available for other workers to access. If the worker indicated *Bisexual*, *Gay/Lesbian*, or *Please Specify*, they

were told that they qualified for the full survey. Participants were then presented with the Informed Consent Statement (see Appendix 3). After agreeing to the Informed Consent Statement, participants were presented with the demographics questionnaire. Participants were then presented with the remainder of the questionnaires, which were counterbalanced to avoid any ordering effects. Participants who identified their gender as *Transgender* were presented with the T-PIM and those who identified as *Gay/Lesbian* or *Please Specify* were presented with the LGB-PIM. One attention check item was placed in the LGB-PIM and one in the T-PIM. When participants were prompted to write for five minutes per the instruction for the RCQ, a timer was placed on the webpage and participants were not allowed to advance in the survey until the five minutes had passed. Measures can be seen in Appendix 2. After completing the survey, participants were presented with a Debriefing Statement (see Appendix 3).

Finally, participants were paid \$2.00 for completing the survey. It is an unwritten rule among workers on MTurk that \$0.10 per minute is optimal payment. Because it was estimated to take approximately 20 minutes to complete the survey, \$2.00 was chosen as adequate compensation. This study was funded through the Myron C. Ledbetter Diversity Endowed Scholarship.

CHAPTER III

ANALYSIS

The analysis chapter will describe the statistical analyses used to evaluate the hypotheses generated from the research questions. First, the data preparation procedures will be examined. Second, analyses for the two hypotheses will be examined, including assumptions for the analyses. Finally, additional analysis examining between group differences will be explored.

Data Preparation

Role Category Questionnaire. The responses from the RCQ were coded by the primary researcher according to the rules provided by Crockett et al. (1974) (See Appendix 5). To assess for interrater reliability, ten randomly selected responses from the RCQ were also coded by the primary researcher's advisor. There was perfect agreement on all of the responses except one, which differed by one construct between the two raters. The cognitive complexity scores had an overall mean of 20.67 with a standard deviation of 10.33. Bisexual individuals ($N = 127$) had a mean of 20.94 ($SD = 10.54$, range = 3 – 61). Gay/lesbian individuals ($N = 67$) had a mean of 19.34 ($SD = 9.17$, range = 6 – 51). Those indicating *Please Specify* ($N = 4$) had a mean of 34.50 ($SD = 13.92$, range = 15 – 48).

Demographic Variables. Because there were seven options for ethnicity, this demographic variable was collapsed into two categories: White ($n = 96$) and Ethnic Minority individuals ($n = 102$). For the purposes of regression analysis, these two categories were dummy coded with the White group receiving a code of 0 and the ethnic minority group receiving a code

of 0 and the ethnic minority group receiving a code of 1.

Hypothesis 1

Higher levels of cognitive complexity will be associated with being older, belonging to an ethnic minority group, and having attained higher education.

To see how age, ethnicity, and education were related to cognitive complexity, multiple linear regression was conducted. First, bivariate correlations were conducted using Pearson Product-Moment correlation to assess for multicollinearity (See Table 2). The correlation table revealed that there were no correlations above $r = .9$, suggesting that the multicollinearity assumption is not violated. However, none of the independent variables were correlated with the dependent variable above $r = .111$. Pallant (2007) suggests that at least some of the independent variables should be correlated at $r = .3$ and above. Additionally, the Variance Inflation Factor (VIF) values for the independent variables are all below 10 and Tolerance values for the independent variables are all above .10 suggesting that multicollinearity is not violated.

In terms of outliers, Mahalanobis distances were examined. Tabachnick and Fidell (2012) suggest that a critical chi-square value of 16.27 should be used for a regression model with three independent variables at the $p < .001$ level. Only one participant had a value (26.34) above the critical value. Additionally, two participants had standard residual values above 3. However, Cook's Distance values revealed that no cases were above 1, which Tabachnick and Fidell (2012) suggest means that the outliers did not have any undue influence on the regression model.

Age, dummy coded ethnicity, and education were entered into a simultaneous multiple regression equation to predict cognitive complexity (dependent variable). The model was not significant, $F(3, 193) = 2.092, p = .103$. See Table 3 for regression coefficients. However, because ethnicity was significantly correlated with cognitive complexity ($r = -.172$), linear regression was conducted with cognitive complexity as the dependent variable and ethnicity as

the independent variable. This analysis produced a significant model $F(1, 196) = 5.985, p = .015$, $R^2 = .030, R^2_{Adjusted} = .025$. Ethnicity produced a standard beta coefficient of $-.172, t(196) = -2.446, p = .015$.

Hypothesis 2

Higher levels of cognitive complexity will be associated with higher levels of positive identity factors, including self-awareness, authenticity, community, intimacy, and social justice.

To see how positive identity factors (i.e., self-awareness, authenticity, community, intimacy, social justice) were related to cognitive complexity, multiple linear regression was used. One individual was eliminated from the analysis because they were the only participant to complete the T-PIM. Although a number of participants self-identified their sex as FTM or MTF, they did not self-identify as transgender and, therefore, did not route to the T-PIM in the survey. Many individuals, during and after transitioning, do not identify as transgender but identify with their confirmed gender identity. Additionally, because of incomplete data sets on the LGB-PIM, N s range from 191 to 198.

First, bivariate correlations were conducted using Pearson Product-Moment correlation to assess for multicollinearity (See Table 4). The correlation table revealed that there were no correlations above $r = .9$, suggesting that the multicollinearity assumption is not violated. However, none of the independent variables were correlated with the dependent variable above $r = .181$. Pallant (2007) suggests that at least some of the independent variables should be correlated at $r = .3$ and above. Additionally, the Variance Inflation Factor (VIF) values for the independent variables are all below 10 and Tolerance values for the independent variables are all above .10 suggesting that multicollinearity is not violated.

In terms of outliers, Mahalanobis distances were examined. Tabachnick and Fidell (2012) suggest that a critical chi-square value of 20.52 should be used for a regression model with five independent variables at $p < .001$ level. One participant had a value (25.84) above the critical value. Additionally, three participants had standard residual values above 3. However, Cook's Distance values revealed that no cases were above 1, which Tabachnick and Fidell (2012) suggest means that the outliers did not having any undue influence on the regression model.

The five positive identity factors (independent variables) were entreated into a simultaneous multiple regression equation to predict cognitive complexity (dependent variable). The model was significant, $F(5, 183) = 6.131, p < .001, R^2 = .143, R^2_{Adjusted} = .120$. Awareness, authenticity, and intimacy were not significant in the regression equation. Community was significant ($p < .001$) with a unstandardized beta of -3.009 and social justice was significant ($p < .001$) with an unstandardized beta of 3.843. Regression coefficients can be seen on Table 5.

Additional Analyses

Between Groups Analyses. To see if cognitive complexity scores differed between different demographic variables, t-tests and one-way ANOVAs were conducted. There were no significant differences in cognitive complexity scores for sex $F(3, 194) = .718, p = .543$; gender $t(193.053) = -1.201, p = .231$ (the one self-identified transgender participant was excluded from the analysis); ethnicity $F(6, 191) = 1.505, p = .178$; education $F(6, 190) = .882, p = .509$; area $F(2, 195) = 1.663, p = .192$; relationship status $F(6, 189) = .974, p = .444$; or religious attendance $F(5, 191) = 1.873, p = .101$.

A significant difference was found $t(195) = 2.499, p = .013$ when comparing cognitive complexity between White ($M = 22.59, SD = 10.64$) and ethnic minority individuals ($M = 18.95; SD = 9.80$). Additionally, a significant difference was found $F(2, 195) = 4.32, p = .015$ when comparing cognitive complexity between bisexual ($M = 20.94, SD = 10.54$), gay/lesbian ($M =$

19.34, $SD = 9.17$), and the please specify option, which consisted of two self-identified asexual and two self-identified pansexual participants ($M = 34.50$, $SD = 13.92$). Post hoc analysis using Tukey HSD revealed that those participants selecting *Please Specify* had significantly higher cognitive complexity scores than bisexual participants ($p = .025$) and gay/lesbian participants ($p = .012$).

CHAPTER IV

DISCUSSION

The discussion chapter will present implication for the findings in the analysis chapter. First, findings for the main analyses will be explored followed by an exploration of the additional analyses. Second, the implications for counseling will be discussed in terms of how the findings can inform clinical practice. Finally, limitations of the project will be highlighted followed by directions for future research on cognitive complexity in sexual minority individuals.

This study attempted to answer two broad questions: What factors affect the level of cognitive complexity that an individual possesses? and How do positive identity factors effect cognitive complexity in sexual minority individuals? In order to answer these two questions, two hypotheses were proposed.

Hypothesis 1

Hypothesis 1 stated that higher levels of cognitive complexity will be associated with being older, belonging to an ethnic minority group, and having attained higher education. Although age, education, and ethnicity in combination do not produce a significant model, when examining ethnicity alone, a significant negative association with cognitive complexity exists. In other words, belonging to an ethnic minority group reveals a decrease in cognitive complexity in ethnic minority sexual minority individuals. This seems contrary given that sexual minority individuals should experience more cognitive complexity simply by navigating the complex social and interpersonal issues of coming out and developing a sexual minority identity. There

exist a number of racial and ethnicity identity developmental models (Sue & Sue, 2016), which also allude to navigating societal and interpersonal issues.

One explanation for this difference could involve the intersectionality between an individual's sexual minority identity and their racial/ethnic identity, which relates to structural stigma (Hatzenbuehler, 2014; Hatzenbuehler, Phelan, & Link, 2013). In many ethnic minority cultures, being a sexual minority individual is looked down upon or is unacceptable (Adelson, 2012). In many cases, people of one's own racial group may be homophobic and other sexual minority individuals may be racist. In this case, ethnic minority sexual minority individual may be forced to stay in the closet or modify areas of their life in order to fit in with their ethnic group and with other sexual minority individuals. For example, a gay African American male may have to find another church if they want to be out or may have to "re-closet" part of their gay identity in order to fit in with their family or their friends, who may also be African American. In this case, an individual may not seek out experiences that would increase their cognitive complexity because their world view becomes narrower in terms of navigating their sexual minority and racial identities. This "re-closeting" can have many psychological consequences, such as loneliness, which has been linked to decreased condom use and increased substance use (Hubach, DiStefano, & Wood, 2012) as well as chronic health conditions (Hatzenbuehler, 2014; Hatzenbuehler, Phelan, & Link, 2013).

Hypothesis 2

Hypothesis 2 stated that higher levels of cognitive complexity will be associated with higher levels of positive identity factors, including self-awareness, authenticity, community, intimacy, and social justice. Results reveal that positive identity factors do produce a significant regression model but that the community subscale and social justice subscale are the only significant predictors in the model. Similar to hypothesis 1 where belonging to an ethnic minority

group decreases cognitive complexity, the community subscale is negatively associated with cognitive complexity. In other words, the higher the individual scored on the community subscale, the lower their cognitive complexity score was. Social justice, on the other hand, is positively associated with cognitive complexity, indicating that the higher an individual scored on the social justice subscale, the more cognitive complexity they possessed.

Sloman and Fernback (2017) suggest that knowledge no longer lies solely within the individual, but lies within a collective group. This can be seen in the research that is conducted in any field: it is much more common to see articles published with multiple authors instead of one. The articles also contain numerous citations because the knowledge is held within a group of individuals, not just one individual. The same principle would also hold for other groups, such as a religious/spiritual, ethnic minority, or social advocacy groups: the knowledge about the world is not held within the individual but within the group and the individual relies on the group for complete knowledge. In relation to the findings, if an individual who identifies strongly with a community is assessed for how cognitively complex they are, they would show a decrease in cognitive complexity because the individual does not have the group to rely on for complete knowledge or cognitive complexity. Sloman and Fernback (2017) call this the “knowledge illusion” in that individuals think they know a great deal about a subject, but in actuality they know much less than they think because they treat the knowledge of a group as if it were their own individual knowledge.

One explanation for why individuals engage in the knowledge illusion is groupthink. Janis (1971) describes groupthink as “...a quick and easy way to refer to the mode of thinking that persons engage in when *concurrency-seeking* becomes so dominant in a cohesive ingroup that it tends to override realistic appraisal of alternative courses of action” (p. 43). Belonging to a group provides many benefits, such as a sense of belonging, support, common interests, and shared beliefs. Indeed, in many ethnic minority cultures, collectivism is emphasized over

individualism (Ivey, Ivey, & Zalaquett, 2014; Pederson & Pope, 2010). While having a strong connection to a group can provide benefits, it can also serve to insulate the individual from outside information or opinions, creating an “echo chamber” that provides self-confirming opinions while rarely challenging the dominant thinking of the group. For example, individuals choose to follow groups, news outlets, people, etc. on social media and this creates a vacuum for the information they receive. While this may be helpful in some ways in order to find a community of people with shared interests (e.g., church, clubs, organizations, etc.), it can also be insulating in that individuals do not look outside of the confines of the group’s beliefs, which creates communal group think, which a person engages in as part of loyalty to the group. Because there is lack of examination of contrary opinions, this may decrease the cognitive complexity of an individual who highly identifies with a specific community or group.

While community seems to provide an insulating effect, social justice seems to encourage participants to more closely examine society, issues, and individuals, which increases cognitive complexity. Results show that participants who more highly endorsed items on the social justice subscale of the LGB-PIM had higher cognitive complexity scores. The social justice subscale contains items that endorse advocacy, education, justice, sensitivity, and respect for sexual minority rights, which inherently force individuals to seek out information, internalize the information, and convey the information to others instead of relying on a group to provide what might be incomplete, biased, or incorrect information with little deviation from what the group believes. Because of the diverse information that those participants who scored high on the social justice subscale experience, they become more aware and therefore increase their levels of cognitive complexity. It is worth noting that the Pulse nightclub shooting occurred on June 12, 2016 and data were collected for this study between June 7, 2016 and June 21, 2016. The possibility exists that participants responses could be influenced due to the increased attention of sexual minority issues during this time.

Additional Analyses

In additional analyses, a significant difference in cognitive complexity was found between sexual orientations. Specifically, pansexual/asexual participants had significantly higher cognitive complexity scores than bisexual and gay and lesbian participants. There were no significant differences in cognitive complexity scores between bisexual and gay/lesbian participants. Although statistical power issues are present because there are not enough participants in each cell of the ANOVA, it does lend some support to the idea that being a sexual minority individual may increase cognitive complexity. Bisexual individuals contend with biphobia wherein they receive discrimination from both the heterosexual and sexual minority communities. Pansexual individuals contend with individuals who do not understand their unique attraction and who often equate it with bisexuality. Finally, asexual individuals are just beginning to be noticed in society and the scientific literature. Therefore, because of the unique experiences that bisexual, asexual, and pansexual individuals experience, this may serve to increase their cognitive complexity.

Cognitive Complexity and Social Justice

Why is cognitive complexity important? It seems to be an outdated construct because newer theories of cognition have been presented and cognitive complexity is difficult to measure because there are so many facets and, therefore, definitions of cognitive complexity. Additionally, cognitive complexity happens within the “black box” of the mind. So why study it? If researchers and clinicians can understand cognitive complexity they can promote social justice. Part of social justice promotion involves an awareness of not just differences, but subtle differences in the world. These subtle differences help individuals to understand various forms of racism, homophobia, ageism, etc. Given the models of awareness and the promotion of social justice (Ratts, Singh, Nasar-McMillan, Butler, & McCullough, 2016), being more cognitively complex helps individuals to better see what happens in the world, how to critically evaluate

these events, and how to devise a calculated plan of how to respond to these events. This plan can lead to more action for changing the status quo. Indeed, by the end of Kelly's life, he was concerned about how his theory could be used to help solve social and international problems (Warren, 1992). He believed that Americans struggled with understanding how different events are construed or interpreted by other people. Given the results of this study, it seems that cognitive complexity can underline social action because its central task is to help increase knowledge within the individual about themselves and the world around them.

Implications for Counseling

There are many steps that counselors can take to help individual increase their cognitive complexity. First, counselors can assist clients in making meaning of their world and their identity through psychoeducation. This psychoeducation may consist of presenting models of psychological or identity development. By presenting this information in a therapeutic setting, clients may be able to write or rewrite their own scripts about themselves, society, etc., which can change cultural or relational images. Given the finding that increased social justice increases cognitive complexity, encouraging clients to become more aware of issues facing various communities is important.

Although counselors can encourage clients to seek out groups or communities, the results of this study suggest that community connectedness can have a detrimental effect on cognitive complexity, possibly through groupthink. Therefore, counselors should encourage their clients to critically examine what is being said at group meetings or in the media. Counselors can teach critical thinking skills or teach clients how to evaluate information as well as encourage their clients to talk with people outside of the group, such as other experts. Clients should play "Devil's Advocate" with a friend or with their counselor. This being said, it is important to make sure that the client has adequate support as dissenting or deviating from the group's beliefs can

cause backlash or ostracism from the group. This becomes more salient when the group that a client belongs to is family or a group that provides protection or fiduciary support.

Limitations and Future Directions

Although the results of the study suggest interesting information about community, ethnicity, social justice, and cognitive complexity, there are a number of limitations that must be addressed, which can be incorporated into future research. First, a comparison group of heterosexual individuals was not used in the study. Because of this, the question of whether sexual minority individuals have higher levels of cognitive complexity because of their sexual orientation cannot be answered. Future studies should incorporate a heterosexual comparison group keeping in mind that factors that heterosexual individuals may experience can affect cognitive complexity, such as identifying with an ethnic minority group.

Second, in addition to the use of a heterosexual group, a larger group of individuals who do not identify as gay, lesbian, or bisexual should be sought. Given the finding that asexual and pansexual participants report higher levels of cognitive complexity than bisexual or gay/lesbian participants, there may be something about their experiences and identity development which causes them to have increased levels of cognitive complexity.

Third, the RCQ presents problems with coding and interrater reliability. Although there are other assessments to measure cognitive complexity, they present many of the same issues as the RCQ in that they can be subjective or hard to interpret. Future studies should attempt to locate and utilize more objective measures of cognitive complexity. Additionally, other measures that assess positive identity in heterosexual individuals should be utilized as an analogue to the LGB-PIM and T-PIM.

Finally, ethnicity warrants further examination in future studies. Specifically, intersectionality should be taken into consideration. This study did not examine the salience of

group membership. Assessing for level of outness or level of identification with a participant's various groups may serve as a mediating or moderating factor for cognitive complexity.

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APPENDICES

EXTENDED LITERATURE REVIEW

Historically, most research on sexual minority individuals has focused on deficits, such as predictor rates of mental illness in sexual minority communities (Vaughn et al., 2014); however, a growing body of research exists that examines positive aspects of being non-heterosexual. For example, Seligman and Csikszentmihalyi (2000) proposed a three pillar model to conceptualize the positive aspects, or strengths, of individuals. The first pillar, positive subjective experiences, encompasses positive experiences that may occur to an individual throughout the day, positive outcomes during times of adversity (resilience), and stress related growth. The second pillar, virtues and character strengths, contains trait-like qualities that develop over time and can be fostered in individuals through cultural and social institutions. The six virtues proposed by Seligman and Csikszentmihalyi (2000) are wisdom and knowledge, courage, humanity, justice, temperance, and transcendence. Within each of these virtues are character traits (24 total across the six virtues) that lead a person to the respective virtue. The third pillar addresses positive social institutions, such as groups or organizations that foster character strengths and virtues.

In a recent article analysis, Vaughn et al. (2014) examined sexual minority themed articles for positive factors using the three pillar model. They identified 339 articles between the years 1973 and 2011. Of the identified empirical articles, the majority (25.66%) were quantitative in nature. Of the non-empirical articles, the majority (10.91%) were theoretical/conceptual in nature. Although the analysis only utilized PsycINFO, which does not include some journals that publish articles related to sexual minority strengths, the results

showed that there is an underrepresentation of positive themed sexual minority papers being published. Therefore, Vaughn et al. (2014) recommend that researchers who focus on sexual minority research utilize the three pillars when conducting research and to use a variety of research techniques (e.g., qualitative, mixed methods, etc.) when studying sexual minority samples.

In researching strengths and positive aspects of sexual minority identity, one strength in sexual minority individuals that has been highlighted is cognitive complexity (Abes & Jones, 2004; Riggle & Rostosky, 2011). Specifically, Riggle and Rostosky (2011) put forth that individuals identifying as a sexual minority may be motivated to think more complexly about themselves, the world around them, and how they interact with others. Subsequent research also suggests that other positive aspects about a sexual minority identity may increase not only cognitive complexity, but emotional and physical health (Riggle, Gonzalez, Rostosky, & Black, 2014; Riggle, Whitman, Olson, Rostosky, & Strong, 2008). In order to fully explore Riggle and Rostosky's (2011) assertion, it is important to understand both cognitive complexity, models of sexual minority identity development, and how cognitive complexity works within sexual minority identity development models.

Cognitive Complexity

Cognitive complexity has been studied as a construct in other disciplines, such as impression management (Meltzer, Crockett, & Rosenkrantz, 1966), personality psychology (Vannoy, 1965), and behavior psychology (Bieri, 1955). In terms of counseling psychology, cognitive complexity has been examined as a trait in the therapist-counselor relationship and the counselor-supervisor relationship (Welfare & Borders, 2010).

The term cognitive complexity has been defined in many different ways depending on how the term is used in that particular field of study. Riggle and Rostosky (2011) and Abes and

Jones (2004) define cognitive complexity as a multidimensional way of thinking that allows an individual to analyze relationships and situations in a higher-order way. Individuals possessing high levels of cognitive complexity tend to perceive subtler differences in individuals and situations and are able to better process different contexts and differences in individuals (Kelly, 1955). High cognitive complexity includes an awareness of a range of customs, values, and approaches to life. People with high cognitive complexity expect differences in people and can better relate to and understand these differences. Additionally, people high in cognitive complexity are better able to predict what others will do because they can make more inferences based off the ability to see subtle differences in people and situations. People who are high in cognitive complexity also approach people on less extreme terms because they are able to accept different customs and values in people.

Personal Construct Theory. Cognitive complexity was proposed by Kelly's (1955) personal construct theory. Kelly (1955) suggested that people are scientists because they attempt to understand, predict, and control events in their environment. Since a person is a scientist, individuals make observations, construe relationships among events, formulate theories, generate hypothesis, test the hypothesis, and draw conclusions. Through this scientific process, people create personal constructs or cognitive templates through which they look at, interpret, and explain events and people the world. According to Kelly, a personal construct, at its most primitive form, is a bipolar dimension of judgment (e.g., thin-fat, short-tall, black-white, man-woman). People use these constructs in order to see and understand the world the world's realities. In other words, there are billions of people in the world, and individuals must have a way of categorizing these individuals into men and women, old and young, tall and short, etc. It is a way for individuals to see how people and things are alike and different from other people or things. Personal constructs are "transparent templates" or bipolar dimensions which a person "creates and then attempts to fit over the realities of which the world is composed" (Kelly, 1955,

p. 9). The bipolar constructs, however, do not always accurately fit a situation or a person; nevertheless, they are the simplest means by which people make sense out of the world.

When a personal construct does not fit a person or situation, a more refined construct is created. In other words, personal constructs are not fixed and final but open to reformulation because they often must be revised when more information is available. In Kelly's (1955) personal construct theory, he proposed a dichotomy corollary: "a person's construction system is composed of a finite number of dichotomous constructs" (p. 59). So, when an individual is encountered that does not fit into the "tall" or "short" category, a more refined construct is created to help compare this individual's height to other individuals.

After Kelly's personal construct theory was published, Bieri (1955) introduced the idea of cognitive complexity. Bieri states "cognitive complexity refers to the degree of differentiation in an individual's construct system, i.e., the relative number of different dimensions of judgment used by a person." (O'Keefe & Sypher, 1981, p. 73). Because of this definition, the phrase cognitive complexity and construct differentiation are used synonymously. Therefore, the more constructs one has the more cognitively complex they are said to be.

Bieri (1955) originally called it this construct "cognitive complexity-simplicity" (p. 263). Kelly suggests movement in the direction of greater predictability of individuals' interpersonal environment and constructs help with predictions. Success or failure of predications about people have an effect on the constructs; so, unsuccessful predictions are presumed to cause greater changes in the construct system than successful predications. For example, if an individual perceives someone as *hostile* and they are not hostile, that individual's *hostile* construct will change. If the person is *hostile*, then the individual's construct might not change much except to refine further what *hostile* looks like.

By adulthood, cognitive complexity is conceived to be relatively stable (Bieri, 1955; Kelly, 1955). Perhaps a better way to think about stability is to say that a person's cognitive complexity is subtler or more refined because people continue to learn and are exposed to more people and situations as they age, creating more personal constructs. However, test-retest statistics on measures of cognitive complexity, which are usually below .70, also suggest that cognitive complexity does not reach a point of stability (O'Keefe & Sypher, 1981). O'Keefe and Sypher (1981) suggest that cognitive complexity is linked to social perspective taking (i.e., the ability of a person to understand another's perspective or point of view), which suggests that cognitive complexity can be affected by how a person views certain groups of people or events in the world.

The greater the number of constructs one possesses, the better able one is to differentiate what is happening in the environment (Bieri, 1955; Crockett, 1965; Kelly, 1955). If the individual has only a few constructs, the individuals will have a difficult time differentiating people's behavior because they do not have much information to use; but if an individual has a great number of constructs, they are better able to understand what is happening around them and better able to understand uniqueness of individuals. Low cognitive complexity is comparable to black and white thinking, and the higher the cognitive complexity, the more shades of gray someone has to work with in terms of differentiating environmental happenings and individual differences of people.

Crockett's Cognitive Complexity. Crockett's (1965) idea of cognitive complexity is a fusion of Kelly's theory and structural-development theory by Werner (1957) (Burlison & Waltman, 1988). Crockett expanded on Kelly's idea of cognitive complexity and defines differentiation as "the number of parts of the whole." (Crockett et al., 1974, p. 2). This is different from Kelly's definition in that a construct is bipolar (Kovářová & Pilip, 2015). He believed that an impression of another individual was a result of the behaviors and appearance of

a perceived person, the relationship between the two individuals, and the cognitions, motives, beliefs, personality, and psychological state of the perceiver (Welfare & Borders, 2010). A perceiver only sees a few characteristics of a person, but uses these characteristics to draw inferences about the person (Crockett, 1965). Crockett (1965) believed that a person's cognitive system became more complex as the person encountered more individuals and experiences, but if an individual does not experience new stimuli, then their cognitive complexity for a specific domain will not increase (Welfare & Borders, 2010). Therefore, individuals can be cognitively complex in certain areas or domains, but not as cognitively complex in others, which does not reflect one's overall cognitive complexity (Welfare & Borders, 2010). It is possible for people to have highly developed constructs for people while having relatively underdeveloped construct systems for automobiles or furniture. (Burlison & Waltman, 1988).

Cognitive Complexity in Sexual Minority Identity Development

Cognitive complexity has been examined as a trait present in sexual minority individuals. Using a qualitative approach, Abes and Jones (2004) examined the narratives of 10 undergraduate, self-identified lesbian participants. They concluded that cognitive complexity is a reciprocal factor in that cognitive complexity was a major factor to lesbian identity construction and that cognitive complexity helped to foster lesbian identity. Abes and Jones (2004) also suggest that their findings mirror Fassinger (1998) in that sexual orientation identity development "might result" (Abes & Jones, 2004, p. 627) in a more rapid development of cognitive complexity. This research, however, examined cognitive complexity using a qualitative methodology and using only an undergraduate aged and self-identified lesbian sample. Riggle and Rostosky (2011) highlight Abes and Jones (2004) research and further add that they believe individuals who identify as gay, bisexual, transgender, and queer may also develop increased cognitive complexity through sexual orientation identity development. This statement, however,

has not been followed up with qualitative empirical evidence beyond Abes and Jones (2004) qualitative study.

There have been a number of models for sexual minority identity development, starting with Cass (1979). Many of these models contain similar stages or steps toward identity development. Ritter and Terndrup (2002) have attempted to synthesize various models into a five phase model. In the first phase, individuals may feel alone or different in some way, may experiences same sex attractions but not fully understand these feelings, and may attempt to protect themselves using various defense mechanisms. In the second phase, individuals may start to feel sexually different from other peers, begin to question their sexual identity but work to avoid acknowledging it, and may immerse themselves into heterosexual customs and behaviors or engage in substance use in order to avoid acknowledging that they may not be heterosexual. In the third phase, individuals may acknowledge the possibly of being gay/lesbian, may seek out other sexual minority individuals, be unsure of how to behave, experience a developmental delay in terms of sexual or social experiences, and may seek out a peer group where their private self can be shared. In the fourth phase, individuals accept their sexual orientation, develop social and relational connected with other sexual minority individuals, begin to clarify their sexual, emotional, and psychological needs, and begin to freely disclose their sexual orientation to other individuals and group. Finally, in the fifth stage, individuals prefer their identity to a heterosexual identity, begin to see and understand different sexual *orientations*, immerses themselves in different subcultures, abandon previous passing strategies, and begin to recognize similarities between sexual minority and heterosexual individuals.

Opportunities for increasing cognitive complexity occur in all five of the stages of the identity formation model. From the first stage, individuals are already viewing the world in a me versus them dichotomy because of the feelings they are beginning to have about sexual attraction. In the second and third stages, individuals may take steps to protect themselves in terms of who to

trust and who to feel safe around because of their sexual attractions, which requires cognitive complexity in terms of identifying individuals they can and cannot trust. Finally, in the fourth and fifth stages, individuals may continue to develop and rely on their cognitive complexity in terms of who to disclose to, who they can rely on for emotional support, and by noticing differences and similarities between other sexual minority and heterosexual individuals.

Although it has been shown that individuals who possess more cognitive complexity see the world and the people in it differently, there still remain a number of questions about cognitive complexity. Riggle and Rostosky (2011) and Abes and Jones (2004) have suggested that cognitive complexity is a result of a non-heterosexual sexual orientation identity process, however this claim has not been followed up with subsequent research. Further, there may be other factors that could increase cognitive complexity. Bieri (1955) and O'Keef & Sypher (1981) suggest that cognitive complexity increases with age. Education level could also contribute to cognitive complexity because of the number of people, subjects, and experiences that individuals are exposed to as their education level increases. Ethnicity may also play a role in cognitive complexity, because like sexual minority individuals, there are a number of racial and ethnic identity developmental models which propose stages where individuals recognize differences between themselves and the dominant culture and eventually reach a point where they accept their culture and how that culture fits in with other cultures. Finally, other positive identity factors as proposed by Riggle and Rostosky (2011) may also play a role in increasing cognitive complexity.

QUESTIONNAIRES

Demographics Questionnaire

1. How old are you?
 - [Text Box]
1. Which category best describes your sex?
 - Female
 - Male
 - Female to Male
 - Male to Female
 - Please specify [Text Box]
2. Which category best describes your gender?
 - Man
 - Woman
 - Transgender – (router question for Transgender Positive Identity Measure)
 - Please specify [Text Box]
3. Which category best describes your sexual orientation?
 - Bisexual
 - Gay/Lesbian
 - Heterosexual
 - Please specify [Text Box]
4. Which category best describes your ethnicity?
 - **American Indian/Native American or Alaska Native** – A person having origins in any of the original peoples of North, Central, or South America, and who maintains tribal affiliation or community attachment.

- **Asian or Asian American** – A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent, including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.
- **Black or African American** – A person having origins in any of the black racial groups of Africa.
- **Native Hawaiian or Other Pacific Islander** – A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.
- **White/Caucasian** – A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.
- **Two or more races** – All persons who identify with more than one of the above five races. Please specify: [Text Box]
- Please specify [Text Box]

5. What is your highest level of education?

- Did not graduate high school
- High school graduate/GED
- Some college
- Bachelor's degree
- Master's degree
- Doctorate
- Please specify [Text box]

6. Which state do you live in now?

- States listed

7. What type of area do you currently live in?

- Rural

- Suburban
- Urban

8. What is your relationship status?

- Dating
- Divorced
- Living together
- Married or Long-term relationship
- Separated
- Single
- Widowed
- Please specify [Text box]

9. Please indicate your religious/spiritual beliefs.

- [Text box]

10. How often do you attend religious/spiritual services?

- Multiple times per week
- Every week
- 2 – 3 times per month
- Monthly
- 1 – 2 times per year
- Never/rarely
- Please specify [Text box]

Role Category Questionnaire

Our Interest in this questionnaire is to learn how people describe others whom they know. Our concern here is with the habits, mannerism—in general, with the personal characteristics, rather than the physical traits—which characterize a number of different people.

In order to make sure that you are describing real people, we have set down a list of two different categories of people. In the blank space beside each category below, please write the initials, nicknames, or some other identifying symbol for a person who your acquaintance who fits into that category. Be sure to use a different person for each category.

A person your own age whom you like. _____

A person your own wage whom you dislike. _____

Spend a few moments looking over this list, mentally comparing and contrasting the people you have in mind for each category. Think of their habits, their beliefs, their mannerisms, their relations to others, any characteristics they have which you might use to describe them to other people.

Now describe [name of liked person inserted] as fully as you can. Write down as many defining characteristics as you can. Do not simply put down those characteristics that distinguish them/her from others on your list, but include any characteristics that he/she shares with others as well as characteristics that are unique to him/her. Pay particular attention to his/her habits, beliefs, ways of treating others, mannerisms, and similar attributes. Remember, describe him/her as completely as you can, so that a stranger might be able to determine the kind of person h/she is from your descriptions. Please spend five (5) minutes describing him/her.

[Text Box with Timer]

Now describe [name of disliked person inserted] as fully as you can. Write down as many defining characteristics as you can. Do not simply put down those characteristics that distinguish them/her from others on your list, but include any characteristics that he/she shares with others as well as characteristics that are unique to him/her. Pay particular attention to his/her habits, beliefs, ways of treating others, mannerisms, and similar attributes. Remember, describe him/her as completely as you can, so that a stranger might be able to determine the kind of person h/she is from your descriptions. Please spend five (5) minutes describing him/her.

[Text Box with Timer]

Lesbian, Gay, and Bisexual Positive Identity Measure

We are going to ask you a series of questions about your identity as a Lesbian, Gay, or Bisexual identified (LGB) person. There are several questions and some of the questions may seem similar, but there are differences in the wording, so please try to answer all of the questions. Please answer the questions by thinking about which response category best represents your feeling about your experiences. Indicate how you really feel now, not how you think you should feel. There is no need to think too much about any one question. Answer each question according to your initial reaction and then move on to the next. Choose the response that best reflects your feelings about your lesbian, gay, or bisexual identity.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

Presented in Random Order

1. My LGBT identity leads me to important insights about myself.
2. I am more aware of how I feel about things because of my LGBT identity.
3. My LGB identity motivates me to be more self-aware.
4. Because of my LGB identity, I am more in tune with what is happening around me.
5. My LGB identity has led me to develop new insights into my strengths.
6. I feel I can be honest and share my LGB identity with others.
7. I am honest with myself about my LGBT identity.
8. I have a sense of inner peace about my LGB identity.
9. I embrace my LGB identity.
10. I am comfortable with my LGB identity.
11. I feel supported by the LGB community.

12. I feel visible in the LGB community.
13. I feel included in the LGB community.
14. I feel a connection to the LGB community.
15. I find positive networking opportunities in the LGB community.
16. My LGB identity allows me to understand my sexual partner better.
17. My LGB identity allows me to be closer to my intimate partner.
18. My LGB identity frees me to choose who I want as my sexual/intimate partner.
19. I have a sense of sexual freedom because of my LGB identity.
20. My LGB identity helps me to communicate better with my intimate partner.
21. As an LGB person, it is important to act as an advocate for LGB rights.
22. My LGB identity makes it important to me to actively educate others about LGB issues.
23. My experience with my LGB identity leads me to fight for the rights of others.
24. I am more sensitive to prejudice and discrimination against other because of my LGB identity.
25. I have a greater respect for people who are different from society's expectations because of my LGB identity.

Transgender Positive Identity Measure

We are going to ask you a series of questions about your identity as a lesbian, gay, bisexual, or transgender (LGBT) identified individual. There are several questions and some of the questions may seem similar, but there are differences in the wording, so please try to answer all of the questions. Please answer the questions by thinking about which response category best represents your feeling about your experiences. Indicate how you really feel now, not how you think you should feel. There is no need to think too much about any one question. Answer each question according to your initial reaction and then move on to the next. Choose the response that best reflects your feelings about your LGBT identity.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

Presented in Random Order

1. I embrace my LGBT identity.
2. I am comfortable with my LGBT identity.
3. I have a sense of inner peace about my LGBT identity.
4. My LGBT identity has given me more confidence.
5. I am honest with myself about my LGBT identity.
6. My LGBT identity allows me to feel free to explore different experiences of physical intimacy with a partner.
7. My LGBT identity allows me to be closer to my intimate partner.
8. My LGBT identity helps me to communicate better with my intimate partner.
9. My LGBT identity allows me to understand my sexual partner better.

10. My LGBT identity allows me to explore new ways of having romantic relationships instead of following typical “heterosexual” patterns.
11. I feel included in the LGBT community.
12. I feel supported by the LGBT community.
13. I feel a connection to the LGBT community.
14. I find positive networking opportunities in the LGBT community.
15. I feel visible in the LGBT community.
16. I am more sensitive to prejudice and discrimination against others because of my LGBT identity.
17. I am more sensitive to the experiences of other minority group members because of my experiences as an LGBT person.
18. I think more critically about the suffering in the world because of my LGBT identity.
19. As an LGBT person, I feel it is important to work towards equality for all people.
20. My LGBT identity prompts me to speak out against prejudice and discrimination.
21. My LGBT identity inspires me to strive towards reaching my full potential in life.
22. My LGBT identity helps me develop skills that enhance my life.
23. My LGBT identity proved me with many opportunities for person growth.
24. I am free to express my full range of emotions because of my LGBT identity.

INFORMED CONSENT STATEMENT

Project Title:

Factors Related to Cognitive Complexity in Heterosexual and non-Heterosexual Individuals

Investigators:

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Purpose:

The purpose of this study is to examine cognitive complexity in heterosexual and non-heterosexual individuals. Additionally, factors that contribute to higher or lower levels of cognitive complexity will be examined.

Procedures:

If you volunteer to participate in this study, you will be asked to fill out questionnaires designed to assess various psychological variables related to cognitive complexity, social understanding, emotional understanding, and positive identity factors.

Risks of Participation:

If you volunteer to participate in this study, you will be asked to fill out demographic questions designed to collect basic information about you. This should take about 2

minutes to complete. Then you will fill out further questionnaires, which should take approximately 30 minutes to complete.

Benefits of Participation:

As this is a research project, the benefits to society are contingent upon the results. It is hoped that the study will contribute valuable scientific knowledge about people's social and emotional understanding, as well as their interactions with other individuals. While you may not experience any direct benefits from participation, information collected in this study may help to contribute to the study of social interactions.

Confidentiality:

All information provided by you will be kept confidential and will not be released. Any information obtained in connection with this study will remain confidential and will be disclosed only with your permission or as required by law. Responses will be anonymous and will be catalogued electronically without identifying information. All information will be kept in a secure place that is open only to the researchers and oversight by the Oklahoma State University Institutional Review Board. This information will be saved for seven years after publication of the results. Results from this study may be presented at professional meetings and in publications. Results will not be reported individually; we will be looking at the group as a whole. It is also recommended that you delete the internet history and cookies at the conclusion of this study to ensure your responses will not be saved on your computer.

Recently, researchers found a data security vulnerability in Amazon Mechanical Turk (MTurk) that can allow MTurk worker IDs to be connected to personally identifying information that MTurk workers post on their Amazon profile pages. For a thorough discussion of this topic, see the journal article titled "Mechanical Turk is Not Anonymous" available at papers.ssrn.com/sol3/papers.cfm?abstract_id=2228728 .

Mechanical Turk has specific privacy policies. If you have concerns you should consult this service directly. Mechanical Turk's Privacy Notice is provided at <https://www.mturk.com/mturk/privacynotice> .

Compensation:

Completing the short survey will result in a \$2.00 deposit in your Mechanical Turk account.

Contacts:

You may contact any of the researchers at the following addresses and e-mail addresses, should you desire to discuss your participation in the study and/or request information about the results of the study: Brent W. Schneider, M.A. School of Applied Health and Educational Psychology, 414 Willard Hall, Stillwater, OK 74078, brent.schneider@okstate.edu, or Tonya R. Hammer, Ph.D., School of Applied Health and Educational Psychology, 2434 Main Hall, Tulsa, OK 74106, tonya.hammer@okstate.edu.

If you have questions about your rights as a research volunteer, you may contact the IRB Office at 223 Scott Hall, Stillwater, OK 74078, 405-744-3377 or irb@okstate.edu.

Participant Rights:

I understand that my participation is voluntary, that there is no penalty for refusal to participate, and that I am free to withdraw my consent and participation in this project at any time, without penalty.

Consent Documentation:

It is recommended that you print a copy of this consent page for your records before you begin the study.

I have been fully informed about the procedures listed here. I am aware of what I will be asked to do and of the benefits of my participation. I also understand the following statements:

Have you read the Informed Consent Statement?

Yes No

Are you 18 years of age or older?

Yes No

Do you agree to participate in the study?

Yes No

DEBRIEFING STATEMENT

Thank you for participating in this study! We appreciate your time!

If you have any questions about this survey, please contact Brent W. Schneider, M.A. at brent.schneider@okstate.edu.

MECHANICAL TURK RECRUITMENT POSTINGS

Tagline: Study about attitudes \$2.00

Description: The following study pertains to attitudes about certain groups of people. After accepting the HIT, you will complete a screening questionnaire. If you qualify for the study, you will advance and receive \$2.00 for successful completion. If you do not qualify, you will be instructed to return the HIT.

Please have your MTurk Worker ID ready and remember to enter the completion code at the end of the study.

SCORING RULES FOR DIFFERENTIATION CODING

Scoring the degree of differentiation of the impression involves identity, recording, and counting the number of elements that an impression includes. The discussion as to which elements of an impression are to be scored as constructs is sometimes difficult to make. To reduce the ambiguity in scoring procedures, a set of rules have been developed which clarify the application of the general principles just discussed.

Rule 1: (a) Whenever it is debatable whether a phrase should be scored as one construct or several constructs, or (b) when two nearly synonymous but not identical qualities are mentioned in an impression the subject should be given the benefit of the doubt and multiple constructs should be scored instead of just one. Further specifications of this rule are provided in Rules 2 through 4.

Rule 2: When the subject uses an adverbial or adjectival qualifier which, as used, appears to be an intrinsic part of the noun it modifies contrary to Rule 1, the two words are to be scored as one construct. In such instances, it is presumed that the qualifier refers to the degree to which the attribute is held, or to one manner in which it appears, rather than to the qualitatively different attribute. Thus, the phrase “unreasonably selfish” is scored as one construct, not as both “unreasonable” and “selfish” because the word “unreasonably” refers more to the degree of selfishness than to the distinct quality of unreasonableness.

Rule 3: Identical repeated words or phrases are scored only once. Words which are very similar in meaning but which are not identical are scored twice. Thus, if a subject describes the other person as “domineering, assertive, and aggressive,” all three are scored as constructs. Similarly, if the other person is described as a “hard and thorough worker,” two constructs are scored on the assumption that the subject is reporting both a hard worker and a thorough worker and that the two adjectives described somewhat different aspects of the other person. On the

other hand, if a person is described as “helpful” twice in the same question – even if it is phrased as “very helpful” the second time—only one construct should be scored. Thus, the statement “John is a bit, fat slob” is scored as only one construct because it is conventionally used as a single unit.

Rule 4: Idiomatic constructs which run to several words are usually scores as one construct.

Rule 5: Only qualities which are relevant to the task the subject has been set should be scored as constructs. In most of our studies only aspects of the other person’s personality or his stimulus value for his associates have been scored as constructs owing to the nature of the task that was set for the subject. Physical traits, information about the other person’s social role, his age, or the like usually are not scored. Sometimes the restriction must be liberalized, however. For example, Noymer (1965) conducted an experiment in which subjects formed impressions from pictures which were presented at gradually increasing shutter speeds. It was expected that the content of subjects’ impressions would shift, which increased exposure, from descriptions of the other person’s appearance and dress to inferences about his internal, dispositional qualities. In this case, carrying out the critical comparisons in the experiment required the scoring of both dispositional and external qualities in the subjects’ descriptions.

Rule 6: General statements about what people should do about the nature of mankind or about the subject’s own feeling are not scored as constructs unless they are specifically tied to characteristics of the person who is being described. For example, statements like “People should be humble,” “No one likes people who are selfish,” “Nobody is perfect,” or “I would like him as a roommate” (as opposed to “He was make a good roommate”) say nothing about the person under consideration, however much they are may say about the criteria the subject has used in evaluating the person.

Table 1

Demographics

Variable	Bisexual <i>N</i> = 127	Gay/Lesbian <i>N</i> = 67	Specify <i>N</i> = 4	Overall <i>N</i> = 198
Age:	<i>M</i> = 29.91	<i>M</i> = 29.45	<i>M</i> = 28.5	<i>M</i> = 29.73
	<i>SD</i> = 8.27	<i>SD</i> = 7.28	<i>SD</i> = 6.4	<i>SD</i> = 7.88
	Rng = 19 – 67	Rng = 19 – 52	Rng = 22 – 34	Rng = 18 – 67
Sex:				
Female	74 (58.3%)	26 (38.8%)	3 (75%)	103 (52%)
Male	47 (37%)	38 (56.7%)	--	85 (42.9%)
Female to Male	4 (3.1%)	1 (1.5%)	1 (25%)	6 (3%)
Male to Female	2 (1.6%)	2 (3%)	--	4 (2%)
Gender:				
Woman	74 (58.3%)	29 (43.3%)	3 (75%)	106 (53.5%)
Man	52 (40.9%)	38 (56.7%)	1 (25%)	91 (46%)
Transgender	1 (0.8%)	--	--	1 (0.5%)
Ethnicity:				
White	68 (53.5%)	25 (37.3%)	3 (75%)	96 (48.5%)
Black/African American	29 (22.8%)	29 (43.3%)	--	58 (29.3%)
Asian/Asian American	11 (8.7%)	7 (10.4%)	--	18 (9.1%)
American Indian/Native American or Alaska Native	11 (8.7%)	1 (1.5%)	--	12 (6.1%)
Two or More Races	5 (3.9%)	3 (4.5%)	1 (25%)	9 (4.5%)

Native Hawaiian or Other Pacific Islander	--	1 (1.5%)	--	1 (0.5%)
Islander	3 (2.4%)	1 (1.5%)	--	4 (2.0%)
Please Specify:	1	1	--	2
Latino	1	--	--	1
Hispanic	1	--	--	1
Latinx				

Education:

Did not graduate high school	1 (0.8%)	2 (3%)	--	3 (1.5%)
High school/GED	18 (14.2%)	4 (6%)	--	22 (11.1%)
Some college/AA degree/technical school	48 (37.8%)	22 (32.8%)	1 (25%)	71 (35.9%)
Bachelor's Degree	42 (33.1%)	28 (41.8%)	2 (50%)	72 (36.4%)
Some Graduate School	6 (4.7%)	1 (1.5%)	1 (25%)	8 (4%)
Master's Degree	9 (7.1%)	9 (13.4%)	--	18 (9.1%)
Doctorate/Medical Degree/Law Degree	2 (1.6%)	1 (1.5%)	--	3 (1.5%)
No Answer	1 (0.8%)	--	--	1 (0.5%)

State:

California	9 (7.1%)	11 (16.4%)	1 (25%)	21 (10.6%)
New York	10 (7.9%)	7 (10.4%)	--	17 (8.6%)
Florida	11 (8.7%)	2 (3%)	--	13 (6.6%)
Michigan	8 (6.3%)	4 (6%)	--	12 (6.1%)

Texas	7 (5.5%)	5 (7.5%)	--	12 (6.1%)
Georgia	6 (4.7%)	3 (4.5%)	--	9 (4.5%)
North Carolina	5 (3.9%)	3 (4.5%)	1 (25%)	9 (4.5%)
Alabama	5 (3.9%)	2 (3%)	1 (25%)	8 (4%)
Colorado	6 (4.7%)	2 (3%)	--	8 (4%)
New Jersey	6 (4.7%)	1 (1.5%)	--	7 (3.5%)
Ohio	5 (3.9%)	2 (3%)	--	7 (3.5%)
Washington	3 (2.4%)	4 (6%)	--	7 (3.5%)
Illinois	4 (3.1%)	2 (3%)	--	6 (3%)
Missouri	4 (3.1%)	1 (1.5%)	--	5 (2.5%)
Virginia	2 (1.6%)	3 (4.5%)	--	5 (2.5%)
Minnesota	3 (2.4%)	1 (1.5%)	--	4 (2%)
New Mexico	2 (1.6%)	2 (3%)	--	4 (2%)
Pennsylvania	3 (2.4%)	1 (1.5%)	--	4 (2%)
Arizona	2 (1.6%)	1 (1.5%)	--	3 (1.5%)
Indiana	2 (1.6%)	1 (1.5%)	--	3 (1.5%)
Kentucky	3 (2.4%)	--	--	3 (1.5%)
Maryland	2 (1.6%)	1 (1.5%)	--	3 (1.5%)
Massachusetts	2 (1.6%)	1 (1.5%)	--	3 (1.5%)
Oklahoma	1 (0.8%)	1 (1.5%)	1 (25%)	3 (1.5%)
South Carolina	3 (2.4%)	--	--	3 (1.5%)
Iowa	1 (0.8%)	1 (1.5%)	--	2 (1%)
Louisiana	2 (1.6%)	--	--	2 (1%)
Oregon	1 (0.8%)	1 (1.5%)	--	2 (1%)
Tennessee	2 (1.6%)	--	--	2 (1%)

Connecticut	--	1 (1.5%)	--	1 (0.5%)
Idaho	1 (0.8%)	--	--	1 (0.5%)
Kansas	1 (0.8%)	--	--	1 (0.5%)
Maine	--	1 (1.5%)	--	1 (0.5%)
Nebraska	--	1 (1.5%)	--	1 (0.5%)
Nevada	1 (0.8%)	--	--	1 (0.5%)
New Hampshire	1 (0.8%)	--	--	1 (0.5%)
Vermont	1 (0.8%)	--	--	1 (0.5%)
West Virginia	1 (0.8%)	--	--	1 (0.5%)
Wisconsin	--	1 (1.5%)	--	1 (0.5%)
Wyoming	1 (0.8%)	--	--	1 (0.5%)

Population Area:

Suburban	63 (49.6%)	33 (49.3%)	2 (50%)	98 (49.5%)
Urban	40 (31.5%)	25 (37.3%)	1 (25%)	66 (33.3%)
Rural	24 (18.9%)	9 (13.4%)	1 (25%)	34 (17.2%)

Relationship Status:

Single	33 (26%)	29 (43.3%)	3 (75%)	65 (32.8%)
Dating	29 (22.8%)	19 (28.4%)	--	48 (24.2%)
Living Together	32 (25.2%)	12 (17.9%)	--	44 (22.2%)
Married or Long-Term	25 (19.7%)	6 (9%)	--	31 (15.7%)

Relationship

Divorced	5 (3.9%)	--	--	5 (2.5%)
Consensually Non-	1 (0.8%)	--	1 (25%)	2 (1%)

Monogamous

Please Specify:

Married and a	1	--	--	1
boyfriend	--	--	1	1
Relational Anarchy	--	--	--	1 (0.5%)
Separated	1 (0.8%)	--	--	--
No Answer	1 (0.8%)	1 (1.5%)	--	2 (1%)

Religion:

None	32 (25.2%)	27 (40.3%)	--	59 (29.8%)
Christian	30 (23.6%)	19 (28.4%)	2 (50%)	51 (25.8%)
Agnostic	27 (21.3%)	3 (4.5%)	2 (50%)	32 (16.2%)
Atheist	21 (16.5%)	10 (14.9%)	--	31 (15.7%)
Spiritual	5 (3.9%)	4 (6%)	--	9 (4.5%)
Other	8 (6.3%)	1 (1.5%)	--	9 (4.5%)
Buddhist	4 (3.1%)	2 (3%)	--	6 (3%)
No Answer	--	1 (1.5%)	--	1 (0.5%)

Religious Attendance:

Multiple Times Per Week	2 (1.6%)	1 (1.5%)	--	3 (1.5%)
Weekly	4 (3.1%)	2 (3%)	1 (25%)	7 (3.5%)
2 to 3 Times Per Month	3 (3.1%)	1 (1.5%)	1 (25%)	5 (2.5%)
Monthly	6 (4.7%)	2 (3%)	--	8 (4%)
1 to 2 Times Per Year	22 (17.3%)	12 (17.9%)	--	35 (17.7%)
Never/Rarely	89 (70.1%)	48 (71.6%)	2 (50%)	130 (70.2%)

Table 2

Means, Standard Deviations, and Correlations between Age, Cognitive Complexity, Ethnicity, and Education

Measure	1	2	3	4
1. Cognitive Complexity	--			
2. Age	-.014	--		
3. Ethnicity (White = 0)	-.172*	-.076	--	
4. Education Level	.012	.111	.103	--
<i>M</i>	20.67	29.73	.52	4.64
<i>SD</i>	10.33	7.88	.50	1.17

*Note: * $p < .05$*

Table 3

Regression Coefficients Predicting Cognitive Complexity for Hypothesis 1

Variable	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
Constant	22.389	3.930		5.697	.000
Age	-.041	.094	-.031	-.438	.662
Ethnicity (White = 0)	-3.670	1.474	-.178	-2.490	.014
Education	.300	.634	.034	.474	.636

Table 4

*Means, Standard Deviations, and Correlations between Cognitive Complexity and LGB-PIM**Subscales*

Measure	1	2	3	4	5	6
1. Cognitive Complexity	--					
2. Self-Awareness	.041	--				
3. Authenticity	.031	.567**	--			
4. Community	-.145*	.583**	.661**	--		
5. Intimacy	.027	.663**	.688**	.681**	--	
6. Social Justice	.182**	.755**	.590**	.581**	.585**	--
<i>M</i>	20.67	5.12	5.37	4.67	5.06	5.15
<i>SD</i>	10.33	1.19	1.21	1.51	1.23	1.20

Note: * $p < .05$; ** $p < .01$

Table 5

Regression Coefficients Predicting Cognitive Complexity for Hypothesis 2

Variable	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
Constant	13.734	2.696		3.716	.000
Awareness	-1.379	.995	-.159	-1.386	.167
Authenticity	.490	.891	.057	.550	.583
Community	-3.009	.706	-.439	-4.261	.000
Intimacy	1.110	.940	.132	1.181	.239
Social Justice	3.843	.950	.446	4.044	.000

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