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Measuring Love: Sexual Minority Male Youths' Ideal Romantic Characteristics

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Abstract

Research examining how sexual minorities characterize love within same-sex relationships is scarce. In this study, we examined the validity of Sternberg's Triangular Theory of Love in a sample of sexual minority male youth ($N = 447$). To test the adequacy of the theory for our population, we examined the psychometric properties of the Triadic Love Scale (TLS) and tested whether the three underlying constructs of the theory (Intimacy, Passion, and Commitment) emerged when participants were asked to consider their ideal relationship with another man. Using confirmatory factor analysis (CFA), we found support for the three-factor solution to characterize sexual minority male youths' ideal romantic relationship, after minimizing item cross-loadings and adapting the content of the Passion subscale. We discuss the implications of our findings regarding the measurement of the TLS among sexual minority male youth and propose ways to enhance its measurement in future research.

Keywords

Love; confirmatory factor analysis; sexual minority; LGBT; youth

While the expression of love within same-sex couples has been examined among adults and linked to well-being (Frost, Stirratt & Ouellette, 2008; Kurdek, 2005), sexual minority youths' participation in romantic relationships have received less attention in the literature (Bauermeister et al., 2010; Savin-Williams, 2005). From a developmental perspective, the limited attention to how sexual minority youths conceptualize love is particularly concerning given that romantic ideation and exploration is a salient characteristic of adolescence and young adulthood, and may inform relationship dynamics later in life (Arnett, 2000; Montgomery, 2005). Furthermore, compared to older counterparts, sexual minority youth coming of age in a post *Gay Liberation* era are more likely to have grown up with portrayals and discussions of same-sex romantic relationships, to envision a future romantic relationship earlier in the life course, and to avoid engaging in risk behaviors that may compromise these long-term goals (Bauermeister, in press; D'Augelli, Rendina, Sinclair, & Grossman, 2006/2007). At present, however, we know little of sexual minority youths' characterization of their ideal romantic relationships. Consequently, as a contribution to the ongoing research examining same-sex relationships, we sought to test the adequacy of Sternberg's (1986) Triangular Theory of Love in a sample of sexual minority young men between the ages of 18 and 24 who had reported recently using the Internet to date other men.

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Sternberg's Triadic Love Theory

Sternberg's (1986) Triangular Theory of Love defines love as the interplay of three components: intimacy, commitment and passion. Intimacy represents the *emotional* component and is characterized by feelings of closeness, emotional support, and connectedness. Commitment embodies the *cognitive* aspect of love and is characterized by decisions to be in and maintain a relationship. Passion refers to the *motivational* aspect of a relationship and is characterized by arousal, both emotional and physical, and sexual consummation. Rather than being independent factors, Sternberg (1987) posited that these three love components are closely interrelated and, when combined in different permutations, may represent eight different styles of love ranging from non-love (i.e., absence of all three components) to consummate love (i.e., presence of all three components). This triangular conceptualization of love is useful as it creates a rubric to examine how different relationship styles arise and why they maintain or dissolve over time (Sternberg & Weis, 2006). Furthermore, these components may be used independently to examine their association to individual (e.g., psychological well-being) and relationship (e.g., satisfaction and quality) outcomes. For example, Overbeek, Ha, Scholte, de Kemp, and Engels (2007) found that each TLS construct was positively associated with the satisfaction and longevity of heterosexual adolescents' romantic relationships.

The Triangular Theory of Love has been critically examined by researchers for almost three decades (Berscheid, 2010; Graham & Christiansen, 2009). Initially, Sternberg (1986) garnered support for his theory using the Triadic Love Scale (TLS). Using exploratory factor analysis, Sternberg discerned a three-factor structure that corresponded to the three love components, with adequate scale reliability estimates for each subscale (i.e., Cronbach's $\alpha \geq .90$). Consistent with his theory, Sternberg also found that the three factors, while measured independently, were strongly correlated with each other (i.e., Pearson's r ranging from .70 to .90). While theoretically meaningful, high correlation coefficients prohibit the simultaneous inclusion of all three TLS constructs in multivariate analyses (i.e., multicollinearity). Other scholars have found results similar to those initially reported by Sternberg, yet have heavily critiqued the TLS given that 22 of the 36 items either contributed to more than one factor or did not load on any factor (Acker & Davis, 1992; Hendrick & Hendrick, 1989). Based on these critiques, Sternberg (1997) subsequently proposed and tested a revised TLS that minimized, though did not fully eliminate, these measurement concerns (i.e., cross-loadings still occurred in the revised scale; Hendrick & Hendrick, 2003).

Conversely, scholars have offered newfound support for the TLS. In a recent meta-analysis, Graham and Christiansen (2009) examined the TLS alongside other love measures and concluded that the high correlations between the TLS scores "suggest the presence of a shared higher order factor, in this case 'love'." Given this evidence, the TLS might prove to be a useful measure of romantic love in a general sense; certainly, it is likely to be a reliable measure that the available psychometric data support." (Graham & Christiansen, 2009, p. 60). Taken together, these past findings suggest that the Triangular Theory of Love has received conceptual support, yet its measurement still warrants further work.

Most research examining the conceptualization and measurement of love has focused on heterosexual individuals (Graham & Christiansen, 2009). Given that data on the psychometric properties of existing measures is vital to advance research among sexual minorities (Moradi, Mohr, Worthington, & Fassinger, 2009), we sought to test the adequacy of the TLS among sexual minority male youth. Beyond a statistical exercise, this analysis provides an opportunity to consider whether there are substantive differences between how sexual minority male youth conceptualize love with past findings from heterosexual

samples. The absence of substantive differences would support the argument that conceptions of same-sex love are no different than different-sex love, and would be consistent with empirical data suggesting that the same-sex and different-sex partnerships share more in common than they are often credited (Peplau & Fingerhut, 2007). On the other hand, if substantive differences exist, these data would suggest that scholars should re-examine how love is conceptualized in the psychological literature and develop new theories that resolve this divergence.

Study Objectives and Hypotheses

Our study had three objectives. Our first objective was to examine the factor structure of an adapted TLS among sexual minority male youth between the ages of 18 and 24. Contrary to past work examining couples' relationships (Peplau & Fingerhut, 2007), we focused our initial conceptual work in this area by examining the *ideal* components of a romantic relationship among *single* sexual minority youth. We recognize that the *ideal* love relationship may be very different from an *actual* relationship; however, researchers have noted that individuals who become involved in romantic relationships tend to rate their feelings based on an *idealized other* (Berscheid, 2010; Sternberg & Weis, 2006). Consequently, we reasoned that testing the idealized components of the Triangular Theory of Love might elucidate how love is conceptualized among sexual minority male youth and inform future measurement of these components in the psychological literature. In accordance with the available literature, we hypothesized that a three-factor structure would emerge and that the factors would be highly correlated. As our second objective, we examined whether items in our adapted TLS would contribute to more than one factor. As past literature suggests, we expected some items to contribute to more than one factor. Finally, our third objective was to test whether the removal of these items would improve the overall model fit. Consistent with psychometric theory (Nunnally & Bernstein, 1994), we hypothesized that a model with orthogonal measures (i.e., items only loading onto one component) would greatly improve the overall fit of the model when compared to a model with items that contributed to more than one factor.

Method

Participants

Data for this paper comes from a cross-sectional observational study examining sexual minority male youths' dating experiences online and their association with HIV/AIDS risks (i.e., the "Virtual Love Study"; Bauermeister et al., 2011). To be eligible for participation, recruits had to be between the ages of 18 and 24 and report having used a dating website in the past 3 months, having been sexually active with a male partner met on a dating website in the past 6 months, and being single. Participants were primarily recruited through advertisements on two social networking sites (i.e., Facebook and Connexion), participant referrals, and flyers posted at local venues commonly frequented by sexual minority youth. Social network advertisements were viewable only to men who fit our age range and who lived in the United States. Promotional materials displayed a synopsis of eligibility criteria, a mention of a \$15 iTunes gift card incentive, and the survey's website.

A total of 548 entries were recorded between December 2009 and March 2010. We examined and removed duplicates and falsified entries ($N = 49$; 8.9% of all entries) by examining participants' email addresses, IP addresses, and operating system and browser information (Bauermeister et al., in press). We concluded with an analytic sample of $N = 499$ sexual minority youth, of which 52 (10%) were eligible and consented but did not commence the survey (i.e., a response rate of 89.6%).

Participants in our final sample ($N = 447$) reported a mean age of 21.48 years ($SD = 1.97$) and having completed at least some college ($M = 6.11$, $SD = 1.57$). Most participants in our sample self-identified as White or European American ($N = 321$; 65.9%), followed by Hispanic/Latinos ($N = 57$; 12.5%), Asian or Pacific Islanders ($N = 34$; 7.0%), African American/Black ($N = 29$; 6.0%), and Native American ($N = 13$; 2.85%). Two participants indicated “Other” as their race/ethnicity. Youths were asked to self-report their sexual identity (“How do you self-identify”?) and asked to check all the responses that applied: gay/homosexual, Bisexual, Straight/heterosexual, Transgender, and Other. Participants also had the option to refuse to answer; this category was later recoded as missing. The vast majority of participants self-identified as gay or homosexual ($N = 380$; 86.4%), followed by bisexuals ($N = 51$; 11.6%), transgender ($N = 6$; 1.6%), straight or other ($N = 3$; 0.7%), or had missing data on their sexual identity ($N = 7$; 1.6%).

Procedure

Study data were protected with a 128-bit SSL encryption and kept within a University of Michigan firewalled server. Upon entering the study site, participants were asked to enter a valid and private email address, which served as their survey username. This allowed participants to save their answers and, if unable to complete the survey at one sitting, continue the survey at a later time. If eligible, participants read a detailed consent form that explained the purpose of the study (i.e., exploring how sexual minority youth use the internet for dating) and their rights as participants. Youth were asked to acknowledge that they read and understood each section of the consent form, respectively (i.e., participation involvement, protection of privacy, uses of data, potential benefit, compensation, terms of the Certificate of Confidentiality, changing their mind about participation, and who to contact if they had questions).

Consented participants then answered a 30-45 minute survey that covered assessments regarding their sociodemographic characteristics, HIV status, Internet use, romantic relationship ideals, sexual and substance use behaviors, and general mood over the last few months. Participants could refuse to answer any question in the survey; refusals were treated as missing data in our analyses. For those surveys that were incomplete, participants were sent reminder emails encouraging them to complete the survey. Participants were compensated with a \$15 iTunes gift card via e-mail upon completion of the survey. Study data was protected by a Certificate of Confidentiality. All study procedures were approved by the Institutional Review Board of the University of Michigan, Ann Arbor.

Measures

Ideal Relationship Characteristics—We adapted Sternberg's (1997) revised TLS to measure sexual minority male youths' *ideal* romantic relationships. Participants rated the importance of a series of listed qualities in their *ideal romantic relationship* with another man (1 = Not at all important, 5 = Extremely important). To minimize order effects (Tourangeau, Rips, & Rasinski, 2000), we programmed the survey to randomize question order within each domain: Intimacy (16 items), Commitment (12 items), and Passion (11 items).

Given that past research has recommended the inclusion of additional sexual satisfaction questions (Marston, Hecht, Manke, McDaniel & Reeder, 1998; Yela, 2006), we measured six items focused on sexual satisfaction in sexual minority youths' ideal romantic relationships. In order to test the factor structure of the revised TLS among sexual minority youth, we did not include these items in our initial confirmatory factor analysis (CFA). Rather, as discussed in our Results below, these items were included *post-hoc* as items to supplement the Passion subscale. We present the mean and standard deviation for all study

items in Table 1. We include the reliability coefficients and their 95% confidence intervals in Tables 2 and 3.

Data Analytic Strategy

Our first objective was to examine the factor structure of an adapted TLS measure that categorizes the ideal romantic qualities sought out by sexual minority male youth. Using a confirmatory factor analysis, we sought to identify the commonalities across items and their underlying factor structure. We used EQS version 6.1 (Bentler, 2008) to conduct the latent-factor modeling. Contrary to factor analysis or linear regression, Structural Equation Modeling (SEM) permits the simultaneous testing of the psychometric adequacy of the latent factors and the correlations between these factors (i.e., the association between Intimacy, Passion, and Commitment) while adjusting for the reliability of the observed measures (Bedeian, Day, & Kelloway, 1997). We estimated our models using the maximum likelihood (ML) convergence in order to minimize inadequate covariance estimates (Reise, Waller, & Comrey, 2000). We did *not* perform an expectation-maximization (EM) imputation for missing data in our analyses as we were unable to assure that data were missing at random (Ragunathan, 2004). Even after accounting for missing data due to list wise deletions, however, we had ample statistical power for the CFA (MacCallum, Browne, & Sugawara, 1996).

Our second objective was to examine whether items in our adapted TLS would contribute to more than one factor. Given that researchers have noted that TLS items may load onto more than one factor (Graham & Christiansen, 2009), we computed item communalities and factor loadings and examined whether additional modifications would improve the model. We used the Wald Test (for removing parameters) and LaGrange Multiplier Test (for adding parameters) to assess whether items contributed to more than one factor (i.e., cross-loading items). Finally, our third objective was to test whether the removal of these items would improve the overall model fit. For parsimony and conceptual clarity, we then removed items not loading into factors adequately (factor loading $\leq .50$) or contributing to more than one latent factor (Nunnally & Bernstein, 1994). We used the provided overall goodness-of-fit measures to inform our model modifications. Following the guidelines proposed by Raykov, Tomer, and Nesselrode (1991) for adequate reporting of SEM, we considered three goodness-of-fit indices for our nested models: Bentler-Bonnet's Normed Fit Index (NFI), Bentler-Bonnet's Non-Normed Fit Index (NNFI), and the Comparative Fit Index (CFI). We also included the ratio between each model's χ^2 statistic and its degrees of freedom (DF), and the root mean-square error of approximation (RMSEA) as indices of misfit (Boomsma, 2000). Criteria for successful measurement models include having values of .90 or higher among fit indices, a 3:1 χ^2 to DF ratio, and values of .06 or lower for RMSEA (Hu & Bentler, 1999). To compare non-nested models, we examined each model's Akaike Information Criterion (AIC). The model with lower AIC is identified as the better fitting model. Finally, Cronbach's alpha reliability coefficients were computed for each latent factor (Nunnally and Bernstein, 1994). Because the number of items in a measure inflates the Cronbach's alpha, we also present the 95% confidence interval for these coefficients within each model (Fan & Thompson, 2001).

Results

Confirmatory Factor Analysis

Most participants rated each characteristic listed as important or extremely important. We include the mean and standard deviations for all study variables in Table 1. We then examined a three-factor solution for sexual minority youths' ideal romantic qualities, and found the proposed items explained 61.11% of the total variance (Intimacy = 53.42%,

Commitment = 5.31%, and Passion = 2.38%). We also found a strong association between Intimacy and Passion ($r = .82, p \leq .05$), Intimacy and Commitment ($r = .87, p \leq .05$), and Passion and Commitment ($r = .89, p \leq .05$). This proposed model, however, fit the data poorly [χ^2 (df = 699, N = 456) = 2599.12; NFI = .80, NNFI = .83, CFI = .84, RMSEA = .08].

We sought to refine our CFA model by examining the Wald and LaGrange Multiplier Tests. Although we found no evidence to suggest that we should remove parameters, we noticed that several items contributed to more than one factor. When we allowed these items to contribute to more than one latent factor (see Table 2), we found a significant improvement in the overall model fit [χ^2 (df = 664, N = 397) = 1670.31; NFI = .87, NNFI = .91, CFI = .92, RMSEA = .06] when compared to the original 3-factor model (Model Improvement: χ^2 (df = 35) = 928.81; $p \leq .001$). We found strong associations between Intimacy and Passion ($r = .84, p \leq .05$), Intimacy and Commitment ($r = .88, p \leq .05$), and Passion and Commitment ($r = .96, p \leq .05$), as well as correlated errors between several Intimacy and Passion items. These correlated errors suggested that the items measured similar concepts. Among the Intimacy items (see Table 1), we found I2 (“To count on your partner in times of need”) to be associated with I3 (“To know your partner counts on you in times of need”; $r = .30, p \leq .05$), I4 (“To receive emotional support from your partner”; $r = .33, p \leq .05$), and I16 (“To feel like your partner would protect you when you felt vulnerable”; $r = .13, p \leq .05$). We also found I10 (“To really understand your partner”) to be associated with I11 (“To feel that your partner really understands you”; $r = .33, p \leq .05$); I12 (“To really trust your partner”) to be associated with I9 (“To feel comfortable with your partner”; $r = .37, p \leq .05$) and I13 (“To feel your partner really trusts you”; $r = .31, p \leq .05$); and, I14 (“To share deeply personal information about yourself with your partner”) to be associated with I15 (“To be able to talk about your insecurities with your partner”; $r = .33, p \leq .05$). Among the Passion items, we found that P2 (“To think about your partner frequently during the day”) had correlated errors with P4 (“To find your partner very attractive”; $r = .18, p \leq .05$) and P6 (“To know another person could make you as happy as your partner”; $r = .19, p \leq .05$); and P3 (“To do romantic activities with your partner”) had correlated errors with P4 ($r = .19, p \leq .05$), P5 (“To know another person could not make you as happy as your partner”), and P6 ($r = .32, p \leq .05$).

Given the extent of cross-loading items in our model, we became concerned that these items would limit our ability to measure each factor adequately. We reran our model *without* these cross-loading factors (i.e., orthogonal model; see Table 2) and found a significant improvement to the overall CFA model fit [χ^2 (df = 86, N = 401) = 215.46; NFI = .95, NNFI = .96, CFI = .97, RMSEA = .06] when compared to the cross-loading CFA model [see Table 4; Model Improvement: χ^2 (df = 578) = 1454.85; $p \leq .001$]. We adjusted for the three remaining pairs of correlated items: I2 and I3 ($r = .24, p \leq .05$), I2 and I4 ($r = .29, p \leq .05$), and I12 and I13 ($r = .46, p \leq .05$). Two items, P4 (“To find your partner very attractive”) and P6 (“To want to be with your partner rather than with anybody else”), had a unique contribution to the Passion factor in the previous model, yet when we created the orthogonal model we found P6 also contributed to the Intimacy factor. Consequently, we removed P6 and were unable to model the Passion factor adequately as we only had one indicator (i.e., P4) left. This resulted in a 2-factor model (Cumulative variance explained: 63.10% [Intimacy = 58.09%; Commitment = 5.01%]) with strong correlations between the two factors (i.e., Intimacy and Commitment; $r = .84, p \leq .05$).

Confirmatory Factor Analysis with Revised Model

Considering that the original items included in the Passion factor had not addressed sexual satisfaction in the ideal relationship, we included several sexual satisfaction items in the model alongside the P4 indicator and tested whether we would attain a 3-factor solution. We

found support for a 3-factor solution that included sexual satisfaction (Cumulative variance explained: 56.99% [Intimacy = 47.99%; Commitment = 5.09%; Passion = 3.91%]). This revised model had adequate fit [χ^2 (df = 203, N = 394) = 457.50; NFI = .91, NNFI = .94, CFI = .95, RMSEA = .06]. Given that this revised model is independent from the original 3-factor model (i.e., not a nested model), we compared the models' AIC. The revised model (AIC = 51.50) had a better fit than the original 3-factor model (AIC = 1201.12]. After revising the Passion factor, we found strong correlations between Intimacy and Passion ($r = .70, p \leq .05$), Intimacy and Commitment ($r = .84, p \leq .05$), and Passion and Commitment ($r = .70, p \leq .05$), and moderate correlations for the three pairs of correlated Intimacy items: I2 and I3 ($r = .25, p \leq .05$), I2 and I4 ($r = .29, p \leq .05$), and I12 and I13 ($r = .47, p \leq .05$).

Parallel to the previous model specification procedure, we then examined whether the sexuality-specific items contributed to more than one latent factor. We found a significant improvement in the overall model fit [χ^2 (df = 200, N = 394) = 415.30; NFI = .92, NNFI = .95, CFI = .96, RMSEA = .05] when compared to the revised initial 3-factor model (Model Improvement: χ^2 (df = 3) = 42.20; $p \leq .001$). Two items, S3 ("To feel sexually satisfied by your partner") and S5 ("To explore your sexuality with your partner"), contributed to both Passion and the Commitment factors (see Table 3). We also noted strong correlations between Intimacy and Passion ($r = .74, p \leq .05$), Intimacy and Commitment ($r = .84, p \leq .05$), and Passion and Commitment ($r = .77, p \leq .05$), and moderate correlations for four pairs of correlated items: I2 and I3 ($r = .25, p \leq .05$), I2 and I4 ($r = .29, p \leq .05$), I12 and I13 ($r = .47, p \leq .05$), and S3 and C12 ("To remain committed to your relationship even when you partner is hard to deal with"; $r = -.14, p \leq .05$).

Finally, we removed the cross-loading items from our model (i.e., revised orthogonal model, see Table 3). This revised 3-factor orthogonal model (Cumulative variance explained: 58.43% [Intimacy = 50.09%; Commitment = 4.41%; Passion = 3.93%]) became the final model based on this model's fit [χ^2 (df = 164, N = 394) = 351.55; NFI = .93, NNFI = .95, CFI = .96, RMSEA = .05], overall improvement when compared to the revised 3-factor model with cross-loading items (Model Improvement: χ^2 (df = 39) = 63.75; $p \leq .001$), and the absence of any additional changes to the model based on theoretical or statistical grounds. Furthermore, this 3-factor revised model (AIC = 23.55) had a better fit than the two-factor orthogonal model (AIC = 43.46). We found similar magnitudes in the correlations when compared to the previous model. We summarize this final model in Figure 1.

Discussion

Although the growing sociocultural acceptance of same-sex relationships (e.g., domestic partnerships, civil unions, marriage) may encourage varying definitions and expressions of love to manifest and enrich the interpersonal relationships of sexual minorities (Peplau & Fingerhut, 2007), we know little of how these individuals conceptualize love. Given this gap, we tested the construct validity of the Triangular Theory of Love (Sternberg, 1986) in a sample of sexual minority male youth. Overall, our findings support the Triangular Theory of Love. Consistent with the extant literature testing the psychometric properties of the TLS with heterosexual samples (Graham & Christiansen, 2009; Berscheid, 2010), we found sexual minority male youth conceptualize love using three inter-related constructs: Intimacy, Passion, and Commitment. These findings build upon the existing literature on same-sex romantic relationships, and may shed light on why same-sex and different-sex partnerships appear to operate similarly with regards to relationship satisfaction and longevity (Peplau & Fingerhut, 2007).

Most participants indicated that each ideal component was important or extremely important (see Table 1). Given the limited variability across the TLS items, we were unable to examine the prevalence of the 8 love styles proposed by Sternberg (1986). While it is possible that their scores reflect the prevalence of consummate love as their ideal relationship, participants' high ratings are consistent with past studies and may also reflect the tendency to overestimate idealized love (Berscheid, 2001; Sternberg, 1997). Similar to measurement recommendations when assessing attitudes (Tourangeau, Rips & Rasinski, 2000), future research that includes participants' rating of each attribute by its importance (i.e., strength) and priority (i.e., salience) would provide useful information about ideal love. Together, these two indicators may increase the variability in the measurement of ideal love and allow for greater exploration across love styles. A deeper understanding of Sternberg's (1986) proposed love styles (e.g., passionate love, consummate love) may allow scholars to determine whether these love styles can explain why some relationships endure while others dissolve. If such differences were found, counselors could use this information to help reconcile sexual minority male youths' expectations of their idealized love (e.g., consummate love) with their actual relationships (e.g., passionate love) in order to improve relationship quality or, conversely, to provide strategies to reduce the negative effects that may arise when a relationship dissolves (Kurdek, 1997; Kurdek, 2008).

In comparison to the existing TLS psychometric literature with heterosexual samples (Graham & Christiansen, 2009), we encountered similar measurement concerns in our initial psychometric analyses. A high proportion of items contributed to more than one factor, specifically 24 of the 39 items included in our adapted TLS. Although their inclusion in multiple factors improved the statistical fit of the model, these cross-loading items multiplied our concerns regarding the interdependence of the three love factors and diminished our ability to achieve conceptual clarity on how to best measure each factor separately. All but one indicator in the Passion factor, for example, contributed to either Intimacy and/or Commitment in our original CFA analysis. Once we removed these cross-loading factors, our original CFA analyses resulted in a two-factor solution that would have erroneously suggested that sexual minority youth idealize love as comprised of Intimacy and Commitment. In fact, once we included the items focused on the sexual aspect of Passion, we found support for the three-factor solution. These findings are consistent with past research indicating that the sexual aspect of the Passion component needs further elaboration (Marston et al., 1998; Yela, 2006). Taken together, our revised TLS model resulted in both statistical and conceptual improvements to our original TLS measure, and provided evidence to reject the two-factor model. Future research measuring the Passion component among sexual minority youth should explicitly capture sexual satisfaction.

Once we addressed these measurement concerns, we found three factors (i.e., Intimacy, Commitment, and Passion) emerged in our confirmatory factor analysis, lending support to the Triangular Theory of Love (see Figure 1). Our final Intimacy factor (9-items) explained most of the cumulative variance in the scale, suggesting that sexual minority male youths highly value social support (e.g., "To receive emotional support from your partner"), trust (e.g., "To really trust your partner"), and attachment (e.g., "To feel close to your partner") in their ideal relationships. These characteristics are consistent with past definitions of intimacy and with heterosexual samples (Sternberg, 1986; Sternberg & Weis, 2006), but may have additional value to sexual minority youth if they are coming out, have experienced rejection from their family or friends, and/or are seeking to explore their sexuality with a partner (Harper, 2007). The Commitment factor (6-items) encompassed the decision-making component of an ideal relationship. Interestingly, none of the long-term commitment items (e.g., "To expect your love for partner to last for the rest of your life", "To view your relationship with your partner as permanent") from the original TLS remained in our final CFA and may be a reflection of the age of our sample (Arnett, 2000). In other words,

consistent with their stage of development, sexual minority male youth may want to be in a relationship but not be ready to make that decision permanent (i.e., “settle down”). Finally, our revised Passion component (5-items) focused on the sexual satisfaction of the relationship. As noted above, this finding is consistent with researchers’ recommendation to include sexual satisfaction items within the Passion factor (Marston et al., 1998; Yela, 2006). Furthermore, given the hypersexualized culture present in sexual minority men's lives and their desire to explore their sexuality (Harper, 2007), it is also plausible that the Passion component is perceived differently (i.e., more sexualized). Further research examining what constitutes ‘passion’ among sexual minority males is recommended. Specifically, we propose that additional qualitative and quantitative research be carried out in order to replicate our findings, and to examine how sexual minority youth conceptualize and pursue these three components in their relationships.

Consistent with the theory and past findings, we found high correlations among the factors. While these high correlations are conceptually consistent with Sternberg's (1986) triadic definition of love, it poses statistical challenges for the use of the TLS. A researcher seeking to test the association between the three factors and an outcome of interest (e.g., relationship quality, individual well-being), for example, may be limited by the few statistical approaches available that account for these correlations and offset the threats of multicollinearity that may ensue. One solution would be to examine the contribution of each factor separately using traditional ANOVAs or multivariate regression approaches, yet one would be unable to test the main effects of the factors simultaneously. Another solution would be to use structural equation modeling (SEM) to test the association between the three love factors and the outcome of interest while simultaneously accounting for the love factors’ intercorrelations. Given Sternberg's rationale for the interdependence of the love factors, we believe the latter solution would be most suitable for future research seeking to test applications of the theory; however, SEM analyses may require a greater sample size to achieve statistical power for complex models (MacCallum et al., 1996) and increase the costs of a study. Researchers should carefully consider these issues as they seek to apply or test the Triangular Theory of Love in the future.

Our study possesses several strengths and limitations deserving mention. First, participants were recruited as a convenience sample as there are no population frames from which to select a randomly representative sample of sexual minority youth. Nevertheless, our high response rate and our ability to recruit a non-college specific sample of sexual minority youth through social network sites is an asset to the diversity of our sample and the generalizability of our findings. Furthermore, we had a sufficient statistical power to carry out our confirmatory factor analyses of the TLS. Second, we did not collect any additional love measures beyond the TLS and so were unable to cross-validate the three factors derived from this study with alternate love theories (Graham & Christiansen, 2009). Nevertheless, our findings are consistent with previous research examining the TLS in other populations and contribute to the body of literature examining love among sexual minority youth. Furthermore, our study focuses on sexual minority males. Given the social construction of gender and its influence on the expression of love (Bauermeister et al., 2010; Diamond & Savin-Williams, 2003; Tolman, 2006), future research that examines whether the Triangular Theory of Love and its measurement are similar among sexual minority females would be useful.

Based on our findings, there is evidence to suggest that a triadic love conceptualization is adequate for sexual minority male youth and conceptually similar to past studies with heterosexual samples. Nevertheless, further research is needed to assess whether the three factor solution derived in this study has equivalent predictive abilities for relationship and well-being outcomes across populations (Graham & Christiansen, 2009). Additionally,

while our study provides evidence for the usefulness of TLS as a measure of love among sexual minority youth, researchers who choose to use it must be cognizant of the statistical properties of the TLS (e.g., cross-loading, multicollinearity of factors, need for sexual satisfaction items) in order to plan their research study accordingly. Future research examining the application of the TLS to understand the romantic relationships of sexual minority youth is warranted.

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Figure 1.
Confirmatory Factor Analysis of a Revised Triadic Love Scale among Sexual Minority Male Youth

Table 1

Descriptive Statistics for Study Measures

Thinking about your ideal romantic relationship with another man, how important would it be for you. . .	Mean (SD)
<i>Intimacy</i>	
To actively support your partner's wellbeing (I1)	4.53(.76)
To count on your partner in times of need (I2)	4.59(.75)
To know your partner counts on you in his times of need (I3)	4.50(.78)
To receive emotional support from your partner (I4)	4.61(.73)
To give emotional support to your partner (I5)	4.57(.72)
To communicate well with your partner (I6)	4.72(.65)
To value the presence of your partner in your life (I7)	4.68(.65)
To feel close to your partner (I8)	4.72(.66)
To feel comfortable with your partner (I9)	4.76(.58)
To really understand your partner (I10)	4.59(.67)
To feel that your partner really understands you (I11)	4.56(.73)
To really trust your partner (I12)	4.78(.62)
To feel your partner really trusts you (I13)	4.73(.61)
To share deeply personal information about yourself with your partner (I14)	4.49(.76)
To be able to talk about your insecurities with your partner (I15)	4.45(.83)
To feel like your partner would protect you when you felt vulnerable (I16)	4.52(.84)
<i>Passion</i>	
To feel happy just seeing your partner (P1)	4.61(.74)
To think about your partner frequently during the day (P2)	4.06(1.01)
To do romantic activities with your partner (P3)	4.44(.75)
To find your partner very attractive (P4)	4.36(.82)
To know another person could not make you as happy as your partner (P5)	4.22(.99)
To want to be with your partner rather than with anybody else (P6)	4.23(.99)
To be affectionate with your partner (P7)	4.58(.70)
To have something indescribable about your relationship with your partner (P8)	4.42(.81)
To feel like you adore your partner (P9)	4.37(.87)
To imagine feeling in love with your partner for the rest of your life (P10)	4.37(.92)
To have a passionate relationship with your partner (P11)	4.60(.71)
<i>Passion (Sexuality-related Items)</i>	
To fantasize about your partner (S1)	4.13(.91)
To share yourself with your partner (S2)	4.47(.77)
To feel sexually satisfied by your partner (S3)	4.38(.85)
To sexually satisfy your partner (S4)	4.51(.76)
To explore your sexuality with your partner (S5)	4.28(.9)
To have your partner share himself with you (S6)	4.45(.79)
<i>Commitment</i>	
To care about your partner (C1)	4.68(.68)
To be committed to helping your relationship grow (C2)	4.54(.74)

Thinking about your ideal romantic relationship with <i>another man</i> , how important would it be for you. . .	Mean (SD)
To not let other people come between you and your partner (C3)	4.35(.92)
To have confidence in the stability of your relationship (C4)	4.62(.70)
To expect your love for your partner to last for the rest of your life (C5)	4.14(1.06)
To view your commitment to your partner as solid (C6)	4.54(.79)
To be certain of your love for your partner (C7)	4.51(.71)
To view your relationship with your partner as permanent (C8)	4.10(1.07)
To view your relationship with your partner as a good decision (C9)	4.57(.73)
To feel a sense of responsibility towards your relationship (C10)	4.45(.77)
To continue your relationship with your partner when things get hard (C11)	4.48(.74)
To remain committed to your relationship even when your partner is hard to deal with (C12)	4.32(.89)

Table 2

Standardized Factor Loadings for Original Model

	Original Model (N = 397)			Orthogonal Model (N = 401)		
	Factor Loading		Error	Loading		Error
	<i>Intimacy</i>	<i>Commitment</i>	<i>Passion</i>			
<i>Intimacy</i> ($\alpha = .959$; 95% CI [.953, .969])						
1	0.81		0.59	0.83		0.57
2	0.69		0.73	0.73		0.69
3	0.77		0.64	0.79		0.61
4	0.76		0.65	0.78		0.63
5	0.83		0.56	0.86		0.51
6	1.05	-0.23	0.52			
7	0.80		0.60	0.82		0.58
8	0.85		0.53	0.84		0.55
9	0.78		0.63			
10	0.48		0.68			
11	0.41		0.75			
12	0.78		0.62	0.73		0.68
13	0.79		0.62	0.75		0.67
14	0.17		0.75			
15	0.44		0.72			
16	0.34	0.39	0.70			
<i>Commitment</i> ($\alpha = .941$; 95% CI [.933, .949])						
1	0.85		0.53			
2	0.43	0.39	0.62			
3		0.71	0.70	0.71		0.71
4	0.36	0.44	0.62			
5	-0.73	1.44	0.50			
6		0.80	0.61	0.80		0.60
7		0.73	0.68	0.73		0.68
8	-0.88	1.48	0.57			

Original Model (<i>N</i> = 397)					Orthogonal Model (<i>N</i> = 401)		
Factor Loading					Error	Loading	Error
<i>Intimacy</i>					<i>Passion</i>		
9		0.69			0.73	0.70	0.72
10		0.73			0.69	0.76	0.65
11		0.75			0.66	0.74	0.68
12	-0.39	1.76			0.61		
<i>Passion</i> ($\alpha = .927; 95\% \text{ CI } [.916, .937]$)							
1	0.59	-0.61			1.13		
2	-0.33				0.92		
3	0.12				0.57		
4					0.46		
5	-0.14				0.82		
6					0.68		
7	0.52	-1.15			1.42		
8		-0.68			1.43		
9		-1.05			1.81		
10	-0.40				1.10		
11	0.56	-1.23			1.45		

Table 3

Standardized Factor Loadings for Revised Model

Revised Model with Orthogonal Factors (N = 394)			Revised Orthogonal Model (N = 394)		
	Intimacy	Factor Loading	Commitment	Passion	Error
<i>Intimacy</i> ($\alpha = .945$, 95% CI [.937, .952])					
1	0.82			0.57	0.57
2	0.72			0.70	0.70
3	0.79			0.61	0.61
4	0.78			0.63	0.63
5	0.86			0.51	0.51
7	0.81			0.58	0.58
8	0.83			0.55	0.55
12	0.74			0.67	0.67
13	0.74			0.67	0.67
<i>Commitment</i> ($\alpha = .892$; 95% CI [.875, .907])					
3		0.71		0.71	0.71
6		0.80		0.60	0.60
7		0.73		0.68	0.68
9		0.69		0.72	0.72
10		0.76		0.65	0.65
11		0.73		0.69	0.69
<i>Revised Passion</i> ($\alpha = .841$; 95% CI [.817, .863])					
P4				0.56	0.83
S1				0.56	0.83
S2				0.64	0.77
S3			-0.30	0.88	0.74
S4				0.72	0.670
S5			-0.45	0.95	0.74
S6				0.70	0.72
					0.69

Table 4

Comparison of Nested CFA Models

Model	χ^2	DF	NFI	NNFI	CFI	RMSEA (90% CI)	χ^2 Ratio	Model Improvement	Δ DF
Original Model (3-factor)	2599.12	699	0.797	0.833	0.843	0.084 (.080,.087)	3.72		
Original Model with Cross-Loadings (3-factor)	1670.31	664	0.870	0.907	0.917	0.063 (.059,.066)	2.52	928.81	35
Orthogonal Model (2-factor)	215.46	86	0.949	0.961	0.968	0.062 (.052,.072)	2.50	1454.85	578
<i>Revised Models</i>									
Initial model (3-factor)	457.50	203	0.913	0.943	0.950	0.057 (.050,.064)	2.25		
Revised Model with Cross-Loadings (3-factor)	415.30	200	0.921	0.951	0.957	0.053 (.046,.060)	2.08	42.20	3
Revised Orthogonal Model (3-factor)	351.55	164	0.928	0.954	0.960	0.055 (.047,.062)	2.14	63.75	36

Note. All model improvements are statistically-significant at $p \leq .001$. Models are compared to the prior nested model.