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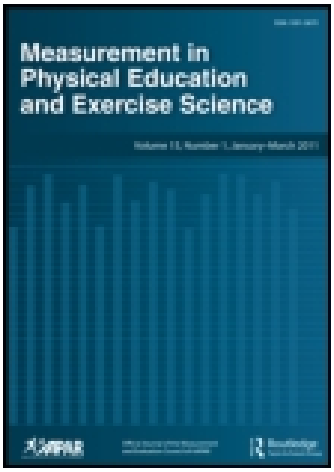

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Scale Development: Heterosexist Attitudes in Women's Collegiate Athletics

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Scale Development: Heterosexist Attitudes in Women's Collegiate Athletics

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Homophobia and heterosexism in women's athletics have been studied extensively using a qualitative approach. Limited research from a quantitative approach has been conducted in the area and none with a sport-specific instrument. The purpose of the current study was to develop a valid and reliable questionnaire to measure heterosexist attitudes in women's collegiate athletics based on the tripartite model of attitudes (Zanna & Rempel, 1988). A panel of experts analyzed a pool of 40 items for item-content related validity. Two samples of collegiate female athletes completed the second and third versions of the Heterosexist Attitudes in Sport–Lesbian questionnaire. Initial evidence of construct validity was found for a 14-item measure of heterosexist attitudes with four subscales: (1) Cognitive/Affective, (2) Language Behaviors, (3) Inclusion Behaviors, and (4) Avoidance of the Lesbian Label. Composite reliability of the four subscales ranged from .64 to .84.

Key words: heterosexism, homophobia, measurement, scale development

INTRODUCTION

Homophobia and heterosexism are negative attitudes about lesbian, gay, bisexual, and transgendered (LGBT) individuals at the individual, institutional, and societal levels (Griffin, 1998; Herek, 2000; Krane & Barber, 2003, 2005; Raja & Stokes, 1998). In women's athletics, homophobia and heterosexism have diminished the abilities and marginalized the participation of women who have invaded the traditionally male domain (Broad, 2001; Cahn, 1993; Coakley, 2007; Elling & Janssens, 2009; Hargreaves, 2000; Krane & Barber, 2003, 2005; Macro, Viveiros, & Cipriano, 2009). To accurately measure homophobia and heterosexism, scale developers must update psychology-based instruments to align with the current manifestations of homophobia and heterosexism (Herek, 1984, 2000; Raja & Stokes, 1998; Ruel & Campbell, 2006). Creating a sport-specific questionnaire would provide insight into how the intricacies of the athletic environment are related to homophobia and heterosexism.

In the 1960s, Weinburg coined the term "homophobia" to describe the fear of being in close proximity to homosexuals (Herek, 2000; Weinburg, 1972). Critics of the term "homophobia" have argued that the language must consist not only of a psychological component (e.g., fear of), but emotional and behavioral components as well (Griffin, 1998; O'Donohue & Caselles,

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1993; Wright, Adams, & Bernat, 1999). Recognition that homophobia and discrimination based on sexual orientation exists at the personal, institutional, and societal levels as well is also needed (Herek, 2000; Raja & Stokes, 1998).

While researchers have recognized a need for change of terminology and definitions, little consensus for a new encompassing term has been reached in the literature (Barber & Krane, 2007; Griffin, 1998; O'Donohue & Caselles, 1993; Wright et al., 1999). A term that has been gaining popularity is "heterosexism." Heterosexism has been defined as "a system of dominance in which heterosexuality is privileged as the only normal and acceptable form of sexual expression" (Griffin, 1998, p. xv). By using a term that is analogous to other discriminatory practices, such as racism, sexism, and ageism, heterosexism is more easily identifiable and understood by the general population (Griffin, 1998; Henley & Pincus, 1978).

Much of the research on the correlates of homophobia and heterosexism was conducted during the beginning and peak of the Acquired Immune Deficiency Syndrome (AIDS) epidemic, when homosexuality and fear of the new disease were inextricably linked (Bouton, Gallaher, Garlinghouse, Leal, Rosenstein, & Young, 1987; Herek, 2000; Ruel & Campbell, 2006). The assessment tools used to measure the levels of homophobia and heterosexism in the 1980s and 1990s were grounded in antiquated definitions of homophobia, emphasizing the "fear of" component, while neglecting such components as institutionalized discrimination and personal discomfort (Griffin, 1998; Herek, 1994; O'Donohue & Caselles, 1993; Wright et al., 1999). The collective attitudes of members of younger generations may not be as influenced by the AIDS epidemic (Ruel & Campbell, 2006). Updated assessments congruent with modern definitions of heterosexism are necessary to gauge the current attitudes toward LGBT individuals (Herek, 1984; Raja & Stokes, 1998; Wright et al., 1999). Consistent with a need to update the language, measurement of heterosexism also requires modernization. In 1994, Herek noted that as attitudes toward LGBT individuals evolve, so too must the psychometrics used to measure the construct.

Attitudes are defined as "items of social knowledge, built from experiences, beliefs, and feelings by attitude objects" (Zanna & Rempel, 1988, p. 315). Attitudes are a source of stored information in our brains that shape the way we think, feel, and interact with other individuals and groups. The tripartite model of attitudes (Zanna & Rempel, 1988) is a theoretical approach to understanding heterosexist attitudes that has been used in the development of psychology-based instruments (e.g., Wright et al., 1999). The tripartite model contends that attitudes are the summative evaluation of three components: the affective, the behavioral, and the cognitive. Individuals make judgments, such as positive/negative, based on thoughts, emotions, and previous behaviors toward the target group. The three-pronged model has been used widely in psychological literature to examine and describe attitudes (Zanna & Rempel, 1988). Haddock, Zanna, and Esses (1993) explained that the tripartite model could be applied to attitudes toward a variety of groups, such as LGBT individuals. More specifically, cognitive information could be explained by both the stereotypes about the out-group and internal or symbolic values of the individual, culminating in a form of prejudice. Haddock et al. (1993) conducted two studies to determine if affective, behavioral, and cognitive information were predictors of attitudes toward LGBT individuals.

In the first study, college-aged participants ($N = 145$; 73 women and 72 men) generally held a negative evaluative attitude toward LGBT individuals, as measured by the 101-point evaluation thermometer. Haddock et al. (1993) found that stereotypes were the strongest predictors of a negative attitude toward LGBT individuals, but symbolic values and affect were also significant predictors of attitude. In the second study, Haddock et al. replicated their findings with 151 college-aged participants. Respondents again held generally negative attitudes toward LGBT

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individuals. Stereotypes remained the strongest predictor of negative attitudes toward LGBT individuals. Symbolic beliefs, affect, and past behaviors were also significant predictors of negative attitudes. Consequently, Haddock et al. confirmed that the tripartite model of attitudes (Zanna & Rempel, 1988) was an appropriate theoretical model for examining attitudes toward LGBT individuals among college-aged individuals. No previous research has applied the tripartite model to the micro-population of college athletes.

An area that would benefit from the development of a domain-specific questionnaire of heterosexism is women's athletics. With the passaged and implementation of Title IX, women have been participating in sport at continuously increasing rates (Acosta & Carpenter, 2008). Homophobia and heterosexism have been used as a tool to marginalize and deter the participation of women in the traditionally masculine athletic domain (Broad, 2001; Cahn, 1993; Coakley, 2007; Elling & Janssens, 2009; Hargreaves, 2000; Krane, 2001; Krane & Barber, 2003, 2005; Macro et al., 2009). In response to the perceived deviation from male domination and gender role stereotypes, women who participate in sport have been pejoratively labeled as lesbians (Broad, 2001; Cahn, 1993; Caudwell, 2003; Greendorfer & Rubinson, 1997; Macro et al., 2009). The "lesbian label" of female athletes was used to diminish the achievements of female athletes as well as provide ego protection for male athletes. The lesbian label, and the resulting avoidance of the lesbian label, has been harmful to both heterosexual and lesbian-identified women. Researchers have consistently shown that female athletes have chosen to "act" in a heterosexual manner, emphasizing stereotypical feminine gender roles, such as being a mother, wife, or girlfriend (Broad, 2001; Caudwell, 2003; Griffin, 1998). This purposeful compulsory heterosexual behavior has demeaned and divided women, both heterosexual and lesbian, in an atmosphere meant to promote cohesion (Barber & Krane, 2007; Blinde & Taub, 1992; Broad, 2001; Caudwell, 2003; Greendorfer & Rubinson, 1997; Griffin, 1998; Kauer & Krane, 2006; Krane, 1996, 1997, 2001; Krane & Barber, 2003, 2005; Macro et al., 2009; Shakib, 2003).

Societal stereotypes and perceptions of the LGBT community have evolved since the publication of prior instruments used to measure homophobia and heterosexism (e.g., Herek, 1994; Raja & Stokes, 1998; Wright et al., 1999). As previous researchers have noted, a need exists to continue to revise questionnaires on heterosexism to accurately measure the cultural attitudes of the time (Herek, 1984, 2000; Raja & Stokes, 1998). The current investigation was devised to examine the affective, behavioral, and cognitive aspects of heterosexism, based on the tripartite model of attitudes explained by Zanna and Rempel (1988), and to develop a self-report assessment of heterosexism in women's collegiate athletics. Additionally, Avoidance of the Lesbian Label was examined as a potential component unique to heterosexism in women's collegiate athletics. The current study consisted of three phases: (1) content validity, (2) exploratory factor analysis (EFA), and (3) confirmatory factor analysis (CFA).

PHASE 1: CONTENT VALIDITY

Method

Initially, the universe of content from which the Heterosexist Attitudes in Sport–Lesbian (HAS-L) was developed using item-content methods where a set of 40 items was generated from the tripartite model of attitudes (Zanna & Rempel, 1988) theoretical framework and sent to a panel of judges for review of item-content related validity (DeVellis, 2003; Dunn, Bouffard, & Rogers,

1999; Messick, 1989). Responses from the panel of experts were evaluated qualitatively and quantitatively as suggested by Dunn et al. (1999).

Instrument development

After completing a thorough review of the existing literature on homophobia and heterosexism, a list of 40 potential items (Appendix A) was constructed based on the tripartite model of attitudes. Half of the items were worded positively in reference to lesbian athletes, and half were negative in reference to lesbian athletes. The factors of the HAS-L were operationally defined according to the content of the classified item. Items were classified into one of the three a priori categories derived from the tripartite model of attitudes, Affective, Behavioral, and Cognitive (Zanna & Rempel, 1988). A fourth category, Avoidance of the Lesbian Label, was added as a result of the literature review of homophobia in women's collegiate athletics (Barber & Krane, 2007; Blinde & Taub, 1992; Elling & Janssens, 2009; Griffin, 1998; Hargreaves, 2000; Kauer & Krane, 2006; Krane, 1996, 1997, 2001; Krane & Barber, 2003, 2005; Macro et al., 2009). Behaviors that purposely avoid the lesbian label are a demonstration of heterosexuality as a privileged form of sexual expression in sport, while other forms of sexual expression, such as lesbianism, are considered abnormal (Barber & Krane, 2007). The proposed theoretical model had a four-factor structure: Affective, Cognitive, and Behavioral, and Avoidance of the Lesbian Label.

Participants

The panel of experts consisted of researchers in sport psychology, social justice, and women's health as well as athletics directors, collegiate coaches, and former collegiate athletes. Researchers in the fields of social justices, sport psychology, and women's health were identified based on whether their history of publications would lend itself to expertise in the areas of homophobia, heterosexism, and scale development. Athletic directors (ADs), coaches, and former athletes were acquaintances of the researcher. Of the 50 experts contacted, 27 returned the questionnaire: 6 sport psychology researchers, 6 social justice researchers, 6 former athletes, 5 athletic administrators or coaches, 1 women's health researcher, and 3 anonymous responses, for a 54% response rate. Of the 27 experts who returned the packet, 5 were removed from the quantitative analysis for incorrect completion of the packet; 22 packets were analyzed to determine evidence of item-content relevance.

Procedures

To establish content-related validity evidence, the items and definitions of proposed factors were sent to the panel of experts who were asked to review the proposed statements for clarity, relevance, and adequacy of representation of the construct from the possible universe of content (DeVellis, 2003). A self-addressed, stamped envelope was included for panelists to return the survey packet. The panel was asked to evaluate the degree to which each item matched the delineated factors. The items were provided to the panel in random order. The experts were instructed to rate the degree of fit between the items and each of the proposed subscale definitions on a 5-point Likert scale, ranging from 1 (*poor match*) to 5 (*excellent match*).

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Statistical analysis

The ratings of the judges were analyzed through the use of a content validity coefficient (*V*) (Aiken, 1985), which is indicative of the degree to which the judges agreed on the fit of an item to the proposed HAS-L subscales. *V* coefficients range from 0 to 1, with values closer to 1 being indicative of higher levels of agreement among the experts. The *V* coefficients were compared to a one-tailed probability table (Aiken, 1985) to determine statistical significance. A *V* coefficient of greater than .64 was significant at the .05 level (Aiken, 1985).

Estimate Size (ES) indices (Cohen, 1977) were also calculated to determine whether the ratings for each item were too closely related to a non-intended domain. ES contrasts of .40 or higher were deemed acceptable (Dunn et al., 1999). Acceptable ES contrasts are indicative of items that are not too closely associated to a non-intended domain (Cohen, 1977; Dunn et al., 1999). Formulas used to calculate Aiken's *V* and the ES indices are available in Appendix B.

A qualitative examination of open-ended responses was also conducted (Dunn et al., 1999). The panel of experts was asked to write additional comments after rating the fit of each item in the intended domains. Analysis of responses related to clarity, jargon, content relevance, and content representativeness was conducted to determine if addition, deletion, or modification of items was necessary (Dunn et al., 1999).

Results

Items with significant Aiken's *V* and ES above .40 were retained. Average Aiken *V* scores for each domain are presented in Table 1. Of the 40 items rated by the judges, 6 items were retained with no changes. Despite having an acceptable Aiken's *V* and ES, three items were removed as a result of comments from the panel of experts indicating that the items lacked polarity when measuring heterosexist attitudes. For example, neither agreement nor disagreement with the statement "Lesbianism is a choice" would necessarily indicate a heterosexist attitude.

Of the remaining 31 items, 11 items were removed from future iterations of the HAS-L due to lack of significant Aiken's *V*, Aiken's *V* coefficients that significantly loaded onto multiple factors, and/or unacceptable ES. One item was omitted from future iterations due to redundancy in content. The remaining items were reworded as a result of comments from the panel of experts, double-loaded Aiken's *V* coefficients, and/or moderate ES to clarify the domain, jargon, or meaning of the sentence. Most reworded items ($n = 18$) remained in the initial keyed domain. Two

TABLE 1
Summary of Item Content Relevance Ratings (*V* Coefficient) of Panel of Experts ($N = 22$) of the 40-Item HAS-L Scale

Subscale	*M*	*SD*	*Min.*	*Max.*
Affective	.78	.10	.64	.91
Behavioral	.84	.07	.69	.92
Cognitive	.79	.09	.62	.89
Avoidance	.49	.35	.05	.94

Note. Table *V* (.05) = .64; Avoidance = Avoidance of the Lesbian Label.

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reworded items were changed to the behavioral domain from the affective domain for the second iteration of the HAS-L. Two items were added as a result of comments from the panel of experts to increase content representativeness: "I feel that two female athletes dating each other during the season hurts the team atmosphere" and "I believe that lesbians create a negative image for female athletes" to the affective and cognitive domains, respectively. The aforementioned changes resulted in a 28-item scale for the second iteration of the HAS-L.

Discussion

Following an examination of the quantitative and qualitative responses to the original pool of items of the HAS-L, 28 items were collected for future analysis. The items remained reflective of the four factor approach hypothesized to describe heterosexist attitudes by female collegiate athletes based on the tripartite model of attitudes (Zanna & Rempel, 1988). Following the procedures suggested by Dunn and colleagues (1999), the panel was able to scrutinize the items with reference to the theoretical approach. As Dunn et al. described:

> The magnitude of these ES values, combined with the statistical significance of Aiken's V statistics, provides strong support for the content-relevance of these items. Thus, the item writer is justified (at this point of the scale construction process) in selecting the items for the inventory. (p. 28)

Qualitative data points were used to reformulate items that did not reach the requirement of a significant Aiken's *V* on the keyed domain or an ES of .40 but were still deemed an important measure of heterosexist attitudes in women's athletics.

PHASE 2: EFA

Method

An EFA was conducted to determine the number of underlying latent factors of the HAS-L (Coughlin, 2005; Pedhazur & Schmelkin, 1991; Warner, 2008). The hypothesized structure of the HAS-L was entered into the EFA.

Participants

Participants consisted of 223 female varsity-level student-athletes at Division I, II, and III colleges and universities. Colleges and universities ($n = 200$) were randomly selected from the entire population of National Collegiate Athletic Association (NCAA) Divisions I, II, and III ($N = 1090$) with women's collegiate athletic teams. After receiving institutional review board approval, ADs and head coaches at the selected institutions were contacted to gain permission to conduct the study.

Procedures

The ADs of the selected institutions were sent an e-mail requesting permission for student-athletes at the institution to complete the second version of the HAS-L. Of the 200 ADs contacted,

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32 granted permission (16%), 14 denied permission (7%), and 5 required further approval through the respective institutional review boards (2.5%). The researcher did not seek further institutional review board approval.

After receiving permission from the ADs, an e-mail was sent to the head coaches ($N = 249$) of women's varsity teams at the institutions, requesting permission to have the student-athletes complete the HAS-L. Upon receiving permission, the coach was furnished with a description of the study and the website address of the survey to email the student-athletes on the respective teams to help ensure anonymity. The survey was posted on surveymonkey.com. Of the 249 coaches contacted, 41 (16.47%) coaches agreed to participate, 18 (7.22%) denied permission, and 190 (76.3%) did not respond. The response rate for coaches was 23.69%.

The athletes were asked to respond to the items on the second version of the HAS-L by indicating the degree to which they agreed with each statement. The items were based on a 5-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) (DeVellis, 2003). Participants were asked to report the following demographics: age, institution, year in college, current sport, years participating on the college team, and sexual orientation identification, ranging from 0 (*exclusively heterosexual*) to 6 (*exclusively lesbian*) (Kinsey, Pomeroy, & Martin, 1948). Approximately one month after receiving the description of the study, coaches were asked to send a follow-up e-mail to the athletes to improve participation rates. Due to the anonymous nature of the study, a true response rate for student-athlete participants is impossible to report.

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Statistical analysis

Using the SPSS version 18.0, an EFA was computed using a principal-axis factor extraction method with an oblique rotation (Coughlin, 2005; Pedhazur & Schmelkin, 1991; Warner, 2008). A minimal factor loading of .40 was used as the criterion for inclusion of the item within the intended factor (Coughlin, 2005; Stevens, 2002). Items that loaded on two factors were either re-written for clarity or removed. The factor structure was determined by examining a scree plot and the eigenvalues. Factors with eigenvalues of 1.0 or greater or factors on the initial slope of the scree plot were evaluated during the conceptualization process of the factor-model of the HAS-L (Coughlin, 2005; Stevens, 2002). All decisions to formulate a factor structure and add, modify, or remove items were made with reference to the guiding theoretical framework, the tripartite model of attitudes (Zanna & Rempel, 1988).

Results

A national sample of collegiate female athletes ($N = 223$) with an average age of 19.15 ($SD = 1.23$) years completed the second version of the HAS-L. Participants represented 21 colleges and universities and 13 different sports (basketball, bowling, cross country, field hockey, golf, ice hockey, lacrosse, soccer, softball, swimming and diving, tennis, track and field, and volleyball). Of the 223 participants, 7.6% ($n = 17$) attended Division I institutions, 4.0% ($n = 9$) attended Division II institutions, 85.2% ($n = 216$) attended Division III institutions, and 3.1% ($n = 7$) did not indicate institution affiliation. Over three-quarters of the sample ($n = 176$, 78.9%) reported being exclusively heterosexual, while 20.7% ($n = 46$) reported being elsewhere on the continuum, and one individual did not indicate sexual orientation.

Factors were moderately correlated with each other, suggesting that the oblique rotation was appropriate for the analysis. After examining the scree plot at the rotated eigenvalues, a 5-factor solution emerged, explaining 51.86% of variance in the model. Eigenvalues ranged from 2.12 to 3.98 (Table 2). Factor loading for item is also provided in Table 2.

Factor 1, explaining 14.20% of variance in the model, consisted of items proposed to be part of the Affective ($n = 5$), Cognitive ($n = 4$), and Behavioral ($n = 1$) domains. From the ten items

TABLE 2
Summary of Principle-Axis Factor Extraction with Direct Oblimin Oblique Rotation ($N = 223$)

Factor	*Eigenvalue*	*% of Variance*	*Cumulative %*
1	3.98	14.20	14.20
2	3.42	12.20	26.40
3	2.69	9.62	36.02
4	2.32	8.28	44.29
5	2.12	7.56	51.86

		Direct Oblimin Rotation Rotated Factor Loadings				
Item	*Proposed Factor*	*1*	*2*	*3*	*4*	*5*
9	Affective	.68				
1	Affective	.62				
5	Cognitive	.57				
19	Cognitive	.49				
23	Affective	.48				
12	Cognitive	.47			(.38)	
18	Affective	.47				(.32)
11	Cognitive	.40			(.39)	
20	Affective	.38				
22	Behavioral	.33				(.31)
2	Behavioral		.77			
16	Behavioral		.76			
8	Cognitive		.52			
7	Cognitive					
17	Behavioral			.72		
15	Behavioral			.62		
26	Behavioral			.60		
10	Cognitive	(.39)		.50		
25	Affective			.39	(.31)	
21	Avoid				.70	
13	Avoid				.65	
6	Avoid				.38	
28	Affective					.53
27	Affective					.48
4	Behavioral					.44
3	Behavioral					−.41
24	Behavioral					.36
14	Affective			(.32)		.34

Note. Avoid = Avoidance of the Lesbian Label; double-loaded items on the non-keyed domain are shown in parentheses.

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that loaded onto the first factor, three were removed due to double-loading. The item originally proposed for the behavioral domain was removed as well, because the item did not load on other behavioral factors. For the third version of the HAS-L, six items were retained, and the factor was renamed Cognitive/Affective.

Factor 2 consisted of two cognitive items and one behavioral item, explaining 12.20% of the variance in the model. The three items consisted of information related to the use of language. The two cognitive items were reworded to emphasize the use of language as a behavior. For the third iteration of the HAS-L, the three-item factor was renamed Language Behaviors.

Factor 3 consisted of five items, three behavioral items, one cognitive item, and one affective item and explained 9.62% of the variance in the model. The cognitive and affective items loaded onto other factors and were removed from the model. The three behavioral items remaining consisted of behaviors related to inclusion, both inside and outside of athletics. Therefore, the third factor was renamed as Inclusion Behaviors.

Factor 4 explained 8.28% of the variance and consisted of three items. The three items were initially proposed as Avoidance of the Lesbian Label. The three items matched the proposed factor structure; therefore, Factor 4 was named Avoidance of the Lesbian Label.

Factor 5 explained 7.56% of the variance in the factor model. The factor consisted of six items. One item was removed due to double-loading. A second was removed due to a negative factor loading, and a third item was removed due to an unacceptably low communality (.26). Consequently, three items were maintained for the fifth factor, two affective items and one behavioral item. The affective items, "I feel equally as comfortable talking with teammates about their boyfriends or girlfriends" and "I enjoy being friends with lesbian athletes," were rewritten as behavioral items for the third version of the HAS-L. The fifth factor was named Relational Behaviors.

One item that did not load on any factor was removed from future analysis. Of the original 28 items used in the EFA, 18 were maintained for the third iteration of the HAS-L. The items comprised a 5-factor model to be confirmed via a CFA.

Discussion

The 5-factor solution determined as a result of the EFA is provided in Figure 1. The resultant factors were (1) Cognitive/Affective, (2) Language Behaviors, (3) Inclusion Behaviors, (4) Avoidance of the Lesbian Label, and (5) Relational Behaviors. Many of the affective and cognitive items loaded together. The inability to separate thoughts and feelings in the current model is similar to the findings of Wright et al. (1999), where items did not load clearly onto the three parts of the tripartite model. Therefore, six cognitive and affective items were combined to create the Cognitive/Affective subscale.

Of the five-factor solution, three subscales were created to express forms of behaviors. Instead of loading together as behaviors, items loaded in terms of individual experience with expression of language, inclusion behaviors regarding lesbian teammates on and off the field, and relational behaviors (e.g., "How do I relate to lesbians I know?"). Consequently, five factor names were created to fit the new structure. Items that were not originally written to assess a behavior were modified to emphasize the behavior component of the item. For example, item 27 of the second version of the HAS-L, "I feel equally as comfortable talking with teammates about their boyfriends or girlfriends," which was created as an affective item and loaded onto the Relational

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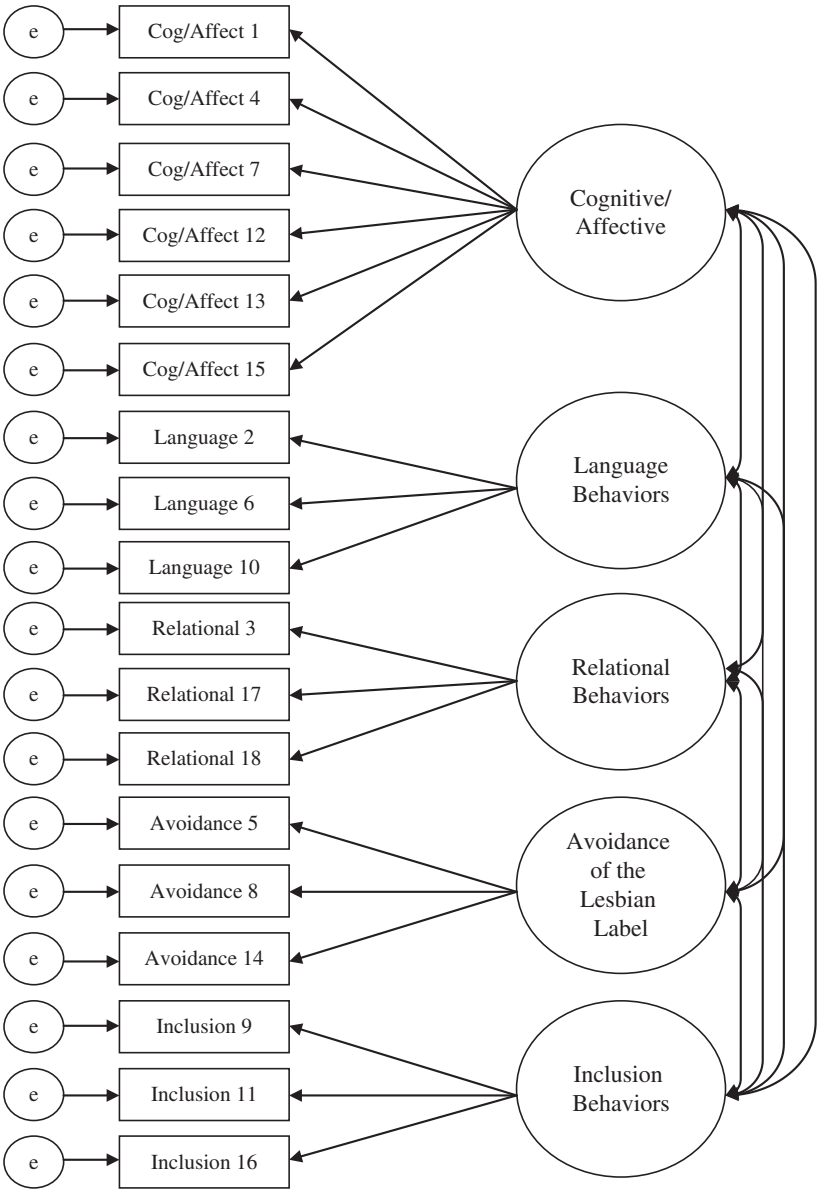

FIGURE 1 Emerged five-factor model of HAS-L scale after EFA.

Behaviors factor, was rewritten for the third iteration as "I do talk with teammates about their boyfriends or girlfriends."

The Avoidance of the Lesbian Label subscale was maintained as intended. Both the factor loading and explained variance were acceptable. Avoidance of the Lesbian Label explained a

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unique portion of variance in heterosexism that may not be a part of a model for a non-athletic population of females.

PHASE 3: CFA

Method

The HAS-L was tested among a second sample of female collegiate athletes to confirm the hypothesized factor structure of the HAS-L (Byrne, 1998, 2001; Coughlin, 2005). The factor structure of the theoretical model of the HAS-L was tested with CFA.

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Participants

In Phase 3, two samples of participants were recruited to ensure a sufficient sample size to conduct a CFA. The national sample of participants consisted of 298 female collegiate student-athletes participating in varsity-level athletics at NCAA Division I, II, and III colleges and universities. A new set of 200 colleges and universities was randomly selected from the entire population of NCAA Division I, II, and III member institutions, not including the initial 200 institutions previously approached.

A convenience sample of female student-athletes ($N = 320$) was recruited from NCAA Division I, II, and III institutions in the northeast region of the United States. The recruitment and approval processes for ADs, coaches, and student-athletes were identical to the participants in the national survey. Only the method in which students completed the survey differed; participants for the local sample completed the HAS-L using paper and pencil with the researcher present.

Procedures

The process of contacting and receiving permission from both the ADs and head coaches was identical to the process used in Phase 2. Of the 200 ADs contacted, 31 granted permission (15.5%); 8 denied permission (4%); 3 required further approval through the institutional review board of the respective institution, which were further contacted by the researcher (1.5%); and 158 institutions did not respond, for a total response rate of 21.5%. Of the 235 coaches contacted, 66 (28.09%) agreed to have the team participate in the study, 6 (2.55%) denied permission, and 163 (69.4%) did not respond. The response rate for coaches was 30.21%. Among the coaches contacted from the convenience sample, 18 (27.27%) agreed to have their teams participate in the study during a practice or team meeting, where the researcher administered and collected the questionnaire.

The athletes responded to the items on the third version of the HAS-L questionnaire by indicating the degree to which they agreed with each statement. The items were based on a 5-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The same demographics as Phase 2 were also collected.

Statistical analysis

The factor structure determined after completing the EFA in Phase 2 was tested using a CFA (Figure 1). An a priori alternative one-factor solution was also tested. Additional models based on modification indices were also examined for fit. AMOS version 19.0 was used to conduct the CFA. Chi-square (χ^2) goodness-of-fit and degrees of freedom were reported for the models. Changes in χ^2 and *df* were reported for the alternate models. Both absolute and incremental fit indices were reported. According to Hu and Bentler (1999) and Byrne (2001), the following cut-off criteria were used for each of the fit indices: standardized root mean residual (SRMR; Bentler, 1995) $< .06$, root mean square of approximation (RMSEA; Steiger & Lind, 1980) $< .08$, comparative fit index (CFI; Bentler, 1990) $> .90$, and Tucker–Lewis index (TLI; Tucker & Lewis, 1973) $> .90$. Standardized regression coefficient weights (Lambda *X* values) were calculated for each item. Values greater than .40 were deemed acceptable (Coughlin, 2005). The tripartite model of attitudes (Zanna & Rempel, 1988) was also considered with each decision to modify the factor structure or scale items.

Composite reliability (Allen, 1974) for the resulting subscales of the accepted factor-solution was calculated. Of the 18 items, 7 were reverse coded so that higher scores indicated higher levels of heterosexist attitudes.

Results

A total of 618 collegiate female athletes with an average age of 19.44 ($SD = 1.27$) years completed the third version of the HAS-L. Participants either completed the survey online ($n = 298$) or during a practice or team meeting ($n = 320$). Participants represented 21 colleges and universities and 15 different sports (basketball, crew, cross country, field hockey, golf, ice hockey, lacrosse, skiing, soccer, softball, swimming and diving, tennis, track and field, and volleyball). Of the 618 participants, 7.9% ($n = 49$) attended NCAA Division I institutions, 18.6% ($n = 115$) attended Division II institutions, 68.6% ($n = 424$) attended Division III institutions, and 4.9% ($n = 30$) did not indicate institution affiliation. Most of the sample ($n = 441$, 71.4%) reported being exclusively heterosexual, while 23.3% ($n = 144$) reported being elsewhere on the continuum, and 5.34% ($n = 33$) did not indicate sexual orientation.

Of the 18 items in the third version of the HAS-L, 15 were significantly positively skewed, and 17 were either leptokurtic ($n = 12$) or platykurtic ($n = 5$). The multivariate test was also significant (157.87; C.R. = 73.59) indicating that the model was not multivariate normal. The maximum likelihood estimation method was used despite the non-normal data due to the robustness of the CFA (Li & Harmer, 1996).

Because the sample had two clear subgroups (national sample and convenience sample), Mann Whitney U-tests were conducted to determine if the samples were equal for each of the 18 items. In 12 of the 18 items, participants who completed the survey online scored significantly higher, indicating higher levels of heterosexist attitudes, than participants who completed the survey with the researcher present. Consequently, item scores for each subgroup were standardized into *Z* scores, as recommended by Bryant and Yarnold (2009). While means and standard deviations of the items are reported in raw scores, the factor loadings, fit indices, and reliability estimates are based on the *Z* scores.

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CFA

In examining the results of a CFA, the χ^2 statistic, SRMR, RMSEA, CFI, TLI, and the standardized regression factor loadings (Lambda *X*) values are critical to determining fit of the model. A summary of the χ^2 analysis and fit indices for the five tested models is provided in Table 3. The χ^2 statistic for the five models was significant ($p < .05$), indicating that a difference exists between the sample covariance matrix and the implied covariance matrix. Several researchers have reported over-sensitivity of the χ^2 statistic with non-normal data and large sample sizes (Byrne, 1998, 2001; Hu & Bentler, 1999). Consequently, other fit analyses were evaluated.

The five-factor solution from the EFA was tested first (M_1). The fit indices were acceptable; SRMR = .05, RMSEA = .06, CFI = .92, and TLI = .90. When examining the factor loadings, items 1 and 17 had unacceptable standardized regression coefficients, .39 and .32, respectively. A comparison to the single-factor a priori alternate model (M_2) was made. The fit of the model worsened. The χ^2 change was significant, such that M_1 was significantly better than the one-factor solution. Fit statistics also indicted worse fit than the initial model. The lack of fit for M_2 indicates that the HAS-L has an underlying factor structure.

The researcher examined the modification indices to determine if post hoc changes to the model could be completed to improve both factor loadings and fit indices. In Model 3 (M_3), the researcher made one change according to the modification index, loading item 1 into the Relational Behaviors factor instead of the Cognitive/Affective Factor. Fit worsened on all indices. A fourth model (M_4) was tested removing item 17 from the model, as the item did not load strongly on any factor. Again, the fit indices were worse than M_1. The standardized regression coefficients for the three items on the Relational Behaviors Factor in M_4 ranged from .30 to .55, lower than every other factor loading with the exception of one item. Consequently, the researcher tested a fifth model, removing the Relational Behaviors Factor.

The χ^2 change of the fifth model (M_5; $\Delta\chi^2 = 54$, $\Delta df = 54$) compared to M_1 was significant ($p < .05$), indicating improved model fit. Most fit indices were acceptable; SRMR = .05; CFI = .93, and TLI = .91. The RMSEA was slightly above an acceptable cut-off (RMSEA = .07). The factor loadings for the 14 items in M_5 ranged from .49 to .77. A summary of fit statistics for all five models is provided in Table 3. The 14-item scale for M_5 is available in Appendix C.

TABLE 3
Summary of χ^2 and Fit Indices for Hypothesized and Alternate Models

Model	$\chi 2$	*df*	$\Delta\chi 2$	Δdf	*SRMR*	*RMSEA*	*CFI*	*TLI*
M_1	420.08	125	—	—	.05	.06	.92	.90
M_2	957.07	135	536.99	10	.07	.10	.76	.73
M_3	472.36	125	52.28	0	.06	.07	.90	.88
M_4	435.50	109	15.42	16	.06	.07	.90	.88
M_5	270.78	71	149.30	54	.05	.07	.93	.91

Note. M_1 = Five-factor model of heterosexism; M_2 = one-factor model of heterosexism; M_3 = five-factor model of heterosexism with four-item relational behaviors; M_4 = five-factor model of heterosexism with three-item relational behaviors; M_5 = four-factor model of heterosexism; *df* = degrees of freedom.

Subscale means and reliability estimates

The means, standard deviations, and correlations of the four subscales derived from the accepted four-factor solution are provided in Table 4. Weighted Omega (Allen, 1974) composite reliability for each of the four subscales ranged from .64 (Avoidance of the Lesbian Label) to .84 (Cognitive/Affective). Subscales with composite reliability greater than .70 were considered to have acceptable levels of internal consistency (Allen, 1974; Nunnally & Bernstein, 1994). The remaining four factors were moderately to strongly correlated, with phi coefficients ranging from .44 to .75. The accepted model of the HAS-L is provided in Figure 2.

Discussion

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A CFA was used to confirm the five-factor solution of the HAS-L. The hypothesized model had acceptable fit statistics, but some items indicated lack of acceptable factor loadings. An a priori alternate one-factor model was examined to determine if heterosexist attitudes would be better measured with a uni-dimensional factor structure. The fit indices were unacceptable, and a one-factor solution was rejected.

The researcher used the post hoc modification indices to determine if changes to the hypothesized model would result in both a better model fit and item factor loadings. Byrne (1998, 2001) cautioned against over-reliance on the modification indices. The modification indices are based on statistical improvement; a scale developer should make changes to the model that would reflect the underlying theoretical model. Therefore, decisions made to modify the model needed to be grounded in the theoretical structure (Byrne, 1998, 2001).

Item 1 did not load well on the Cognitive/Affective domain and did not result in a stronger model fit when moved to the Relational Behaviors domain. After careful evaluation of the items on the Relational subscale, three of the four items were not statistically fit to remain in the factor solution. The final item in the Relational Scale, "I have stood up to individuals who have made unkind remarks about lesbian teammates," was removed as well, as one item is not enough for a subscale and the item did not load on another factor. From a theoretical perspective, the subscale was determined to be measuring similar information as measured by the other four factors and was removed from the final analysis.

The four factor solution of the HAS-L, (1) Cognitive/Affective, (2) Language Behaviors, (3) Inclusion Behaviors, and (4) Avoidance of the Lesbian Label, had improved fit indices

TABLE 4
Subscale Mean and Reliability Estimates and Phi Matrix of the 4-Factor 14-Item HAS-L

Subscale (Number of Items)	*M*	*SD*	Ω	*1*	*2*	*3*	*4*
1. Affective/Cognitive (5)	2.15	0.81	.84	—	.66	.57	.75
2. Language Behaviors (3)	1.72	0.72	.70		—	.57	.64
3. Inclusion Behaviors (3)	1.31	0.49	.79			—	.44
4. Avoidance (3)	1.91	0.71	.64				—

Note. Ω = weighted Omega composite reliability; Avoidance = Avoidance of the Lesbian Label.

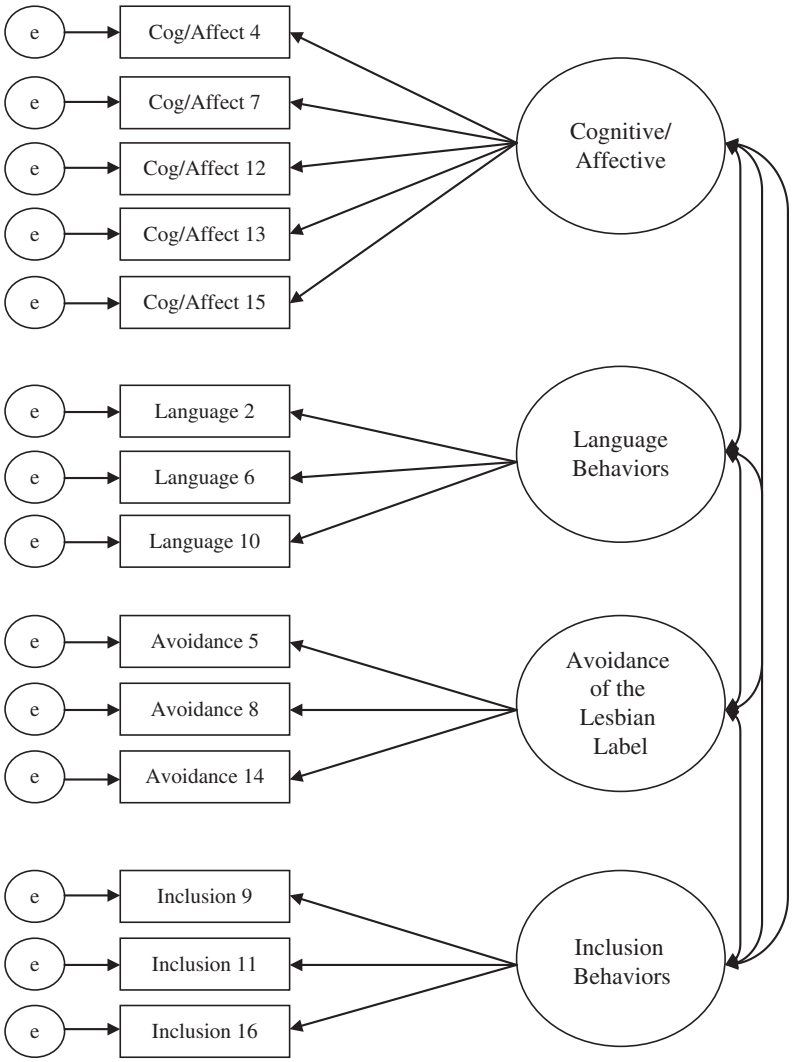

FIGURE 2 Final four-factor model of HAS-L scale.

compared to the initial model. Additionally, the model is considered to be an improved psychometric as a result of being more parsimonious with a shorter time for completion. A limitation of the 14 item HAS-L was low internal consistency reliability estimates. The composite reliability for the Affective/Cognitive subscale, Inclusion Behaviors, and Language Behaviors were considered acceptable, as they were .70 and above (Allen, 1974; Nunnally & Bernstein, 1994). The reliability of the Avoidance of the Lesbian Label was considered unacceptably low. Further investigation of the HAS-L is necessary to improve the fit indices as well as the reliability estimates.

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GENERAL DISCUSSION

A quantitative measurement of heterosexist attitudes in women's collegiate sport was developed and tested for evidence of reliability and validity. The model was grounded in the theoretical perspective of the tripartite model of attitudes, where attitudes are based on three different sources of information: affective, behavioral, and cognitive (Zanna & Rempel, 1988). A unique component of heterosexist attitudes in women's athletics based on the qualitative research in homophobia and women's athletics emerged: avoidance of the lesbian label (Blinde & Taub, 1992; Griffin, 1998; Kauer & Krane, 2006; Krane, 1996, 1997, 2001; Krane & Barber, 2003).

After completing the CFA phase, four subscales combined for an acceptable model fit. The factors—Cognitive/Affective, Language Behaviors, Inclusion Behaviors, and Avoidance of the Lesbian Label—satisfy the intended theoretical structure, including all components of the tripartite model of attitudes (Zannal & Rempel, 1988) while also including the unique portion of Avoidance of the Lesbian Label, which has repeatedly been described in the qualitative literature as an importance piece of heterosexism in women's athletics (Blinde & Taub, 1992; Griffin, 1998; Kauer & Krane, 2006; Krane, 1996, 1997, 2001; Krane & Barber, 2003).

Some limitations to the accuracy of the results of the study were found by the researcher. After examining the results of the CFA, responses to many of the items were skewed or kurtonic. Responses to the overall HAS-L were also multivariate skewed. These findings are not atypical for an affective assessment (Byrne, 2001) but were considered in the evaluation of the findings. The maximum likelihood estimation method was used to conduct the CFA because of the robustness of the analysis (Li & Harmer, 1996); some researchers have suggested using alternative methods that respond better with non-normal data, such as the weighted least squares method or an asymptotic distribution free method (Byrne, 2001; Jöreskog & Sörbom, 1993). Future researchers may wish to use a measure of social desirability to examine whether responding in a socially acceptable manner is the driving force behind the skewed data.

A second limitation of the current study is related to sampling. In both national samples, over 50% of ADs and coaches did not respond to the e-mail request from the researcher. Also, a small percentage of ADs and coaches refused participation in the study. Once the researcher received approval from the coach, only a small number of athletes from each team completed the questionnaire. A low response rate could be due to the subject content of the study, over-participation in research studies, lack of interest, and lack of time. Within the national sample, Division III schools were over-represented compared to Division I and II institutions. ADs, head coaches, and/or athletes may not have felt comfortable participating in a study related to heterosexism due to the sensitive nature of the topic. While the researcher attempted to obtain a sample from randomly selected NCAA institutions, selection bias by the ADs, coaches, and athletes may have influenced the results and limited the generalizability of the results to NCAA female collegiate athletes.

Scale development is a dynamic and on-going process, which requires researchers to continuously examine the psychometric properties of instruments and to provide empirical evidence of reliability and validity (DeVellis, 2003; Li & Harmer, 1996). The current version of the HAS-L has acceptable fit indices but low internal consistency estimates. Future researchers should also examine whether evidence of test–retest reliability and criterion-related validity exists.

Once strong psychometric properties of the HAS-L are established, the instrument may prove valuable in the fields of sport psychology and athletics. In the past, researchers have provided

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inconclusive quantitative evidence regarding whether homophobia and heterosexism negatively influenced psychological variables that may diminish team chemistry (Forbes et al., 2002). Future researchers may use the HAS-L to determine correlates of heterosexism in women's athletics.

In conclusion, a four-factor instrument was created based on the tripartite model of attitudes (Zanna & Rempel, 1988) and extensive qualitative research in women's athletics (Barber & Krane, 2007; Blinde & Taub, 1992; Elling & Janssens, 2009; Griffin, 1998; Hargreaves, 2000; Kauer & Krane, 2006; Krane, 1996, 1997, 2001; Krane & Barber, 2003, 2005; Macro et al., 2009). Empirical support for heterosexist attitudes being composed of affective, cognitive, and behavioral information was found. Additionally, the researcher determined that within a sample of women collegiate athletes, behaviors specific to avoid being called a lesbian explained a unique portion of heterosexist attitudes. The model may provide the groundwork for a larger number of quantitative studies not typical of research in sexual orientation and women's athletics.

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APPENDIX A: INTIAL VERSION OF THE HAS-L

1. The sexual orientation of my teammates was not a factor in deciding where to participate in collegiate athletics.
2. I do not mind spending time with lesbian athletes and their girlfriends.
3. I would not want to share a room with a lesbian teammate on a team trip.
4. Lesbianism is a choice.
5. Generally, people believe that all female athletes are lesbians.
6. Schools and administrators should protect lesbians from harassment.
7. I tolerate the lesbian athletes I know.
8. Jokes about lesbians and gay men can be harmless.
9. I have avoided participating in certain sports because of their association with lesbianism.
10. I am afraid lesbians would try to convert straight teammates to lesbianism.
11. I have used terms like "dyke" and "homo" in conversation.
12. I feel comfortable with my lesbian teammates.
13. I have purposefully not invited lesbian teammates to a party.
14. I would not talk to a lesbian teammate about relationship troubles just like I would talk to a straight teammate.
15. Homosexuality disgusts me.
16. Lesbian athletes should try to appear more feminine.
17. I have made jokes about lesbians.
18. To avoid being called a lesbian, I will not cut my hair short.
19. Diversity in sexual orientation should be appreciated by teams.
20. Homosexuality is wrong.
21. The sexual orientation of my coach was not a factor in deciding where I went to college.
22. I would know if a teammate or fellow athlete was a lesbian regardless of her coming out.
23. I feel equally as comfortable talking with teammates about their boyfriends or girlfriends.
24. I am disgusted when I see two women kiss each other.
25. I purposefully wear feminine clothes to avoid being confused as a lesbian.
26. Lesbian teammates should be treated like any other teammate.
27. I avoid lesbians at team parties.
28. Appearance, such as clothing and haircut, do not define sexual orientation.
29. I do not try to get to know the girlfriends of lesbian teammates.
30. I appreciate the diversity of sexual orientation on my team.
31. I socialize with teammates regardless of sexual orientation.
32. I feel awkward changing in the locker room with lesbian athletes.

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33. I would rather be called a slut than a lesbian.
34. I treat all of my teammates equally on the field, regardless of sexual orientation.
35. I include all teammates in social events, regardless of sexual orientation.
36. I have stood up to individuals who have made cruel remarks about lesbian teammates.
37. I do not spend time with athletes who play lesbian sports.
38. Coaches need to protect their programs by not recruiting lesbian athletes.
39. "Out" lesbians do not affect team environment.
40. There are more lesbians in sport than other group activities.

APPENDIX B: FORMULAS USED TO CALCULATE AIKEN'S *V* AND ES

Aiken's *V* (Aiken, 1985):

Aiken's $V = S/[n(c-1)]$

where:

"The values of *s* for all raters (or items) are then added across the *n* raters or *m* items to yield *S*" (Aiken, 1985, p. 133).

$s = r - lo$

$r =$ expert judge's rating

$lo =$ lowest response option

$n =$ number of raters

$c =$ highest response option

Cohen's ES (Dunn et al., 1999, p. 36):

$$\text{ES} = \frac{\bar{X} - \bar{Y}}{\sqrt{\sigma_x^2 + \sigma_y^2 + 2r_{xy}\sigma_x\sigma_y}},$$

where

$\bar{X}$ is the mean rating for varibale X,

$\bar{Y}$ is the mean rating for varibale Y,

σ_x^2 is the variance of variable X,

σ_y^2 is the variance of variable Y, and

$r_{xy}\sigma_x\sigma_y$ is the covariance of X. Y.

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APPENDIX C: FINAL VERSION OF THE HAS-L

Instructions: Circle the answer that best describes you. Answer the following questions to the best of your ability. There is no right or wrong answer. If you have not had certain experiences, answer the question in terms of how you think you would act.

1. I have used terms like "dyke" and "homo" as put-downs in conversation with teammates.
2. To me, lesbianism is normal.
3. I have avoided participating in certain sports because of the association with lesbianism.
4. To me, jokes that put down lesbians are harmless.
5. Lesbianism disgusts me.
6. I will not wear a butch hairstyle to avoid being called a lesbian by a teammate.
7. I include all teammates in social events, regardless of sexual orientation.
8. I have made jokes to put down lesbians around teammates.
9. I treat all of my teammates equally during practice and competition, regardless of sexual orientation.
10. I believe "out" lesbians negatively affect the team environment.
11. I feel awkward changing and/or showering in the locker room with lesbian athletes.
12. I purposely where feminine clothes to avoid being perceived as a lesbian by coaches or other athletes.
13. I am uncomfortable when I see two women kiss each other.
14. I socialize with teammates regardless of sexual orientation.

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