



# The construct validity of the First Coital Affective Reaction Scale and Virginity Beliefs Scale



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## ABSTRACT

Virginity loss is a pivotal life event which can have long-lasting effects on sexual behavior. The purpose of this study was to investigate the construct validity of two measures related to first sexual experience: the First Coital Affective Reaction Scale (FCARS) and the Virginity Beliefs Scale (VBS). Construct validity was investigated using exploratory and confirmatory factor analyses, convergent and discriminant validity, and the known-groups method. Factor analysis of the FCARS suggested that a two-factor model – in which positive and negative affective reactions are separated – accurately reflects the variance in responses. Overall, the results provide support for the construct validity of the FCARS and VBS; however, a two-factor model of FCARS and removing one item of the VBS may improve the measures' psychometric properties.

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## 1. Introduction

The nature of first sexual intercourse and virginity loss, especially with regard to consent, can impact individuals' attitudes and feelings about virginity and subsequent sexual intercourse. A large body of sexuality research has investigated the impact of first sexual experience, virginity, and virginity loss in respect to affective reactions to virginity loss and beliefs about virginity (e.g., Carpenter, 2001, 2002; Else-Quest, 2014; Moore & Davidson, 1997; Reissing, Andruff, & Wentland, 2012; Rapsey, 2014; Smith & Shaffer, 2013; Sprecher, 2014). Positive first sexual experiences can be linked with future relationship satisfaction and sexual functioning (Reissing et al., 2012; Smith & Shaffer, 2013; Zimmer-Gembeck, See, & O'Sullivan, 2015). Negative context of first sexual experiences (e.g., rape, drug use, alcohol use) is associated with guilt, poorer health, and increased risk of STIs (Else-Quest, Hyde, & DeLamater, 2005). Studies have found gender and cultural differences with women reporting more negative affective reactions and more women believing in gift script while more men believed stigma script (Barnett, Melugin, & Cruze, 2016; Carpenter, 2002; Else-Quest, 2014; Reissing et al., 2012; Sprecher, 2014; Sprecher & Treger, 2015). The purpose of this study was to investigate the construct validity of two measures related to first sexual experience: the First

Coital Affective Reaction Scale (FCARS; Schwartz, 1993) and the Virginity Beliefs Scale (VBS; Eriksson & Humphreys, 2011).

### 1.1. Nonconsensual sexual activity

In the U.S., lifetime rape prevalence for women is approximately 19.3%, which is >23 million women (Breiding et al., 2014). Eighty percent of female rape victims in the United States were younger than 25 years old (White House Council on Women and Girls & United States of America & CWG, 2014). Data collected from 1993 to 1999 in nine countries including the U.S. showed that one-third of adolescent girls reported their first sexual experience as being forced (Krug, Dahlberg, Mercy, Zwi, & Lozano, 2002). The Campus Sexual Assault (Krebs, Lindquist, Warner, Fisher, & Martin, 2007) study reported that 1 in 5 women were sexually assaulted while in college (CWG, 2014).

Negative sexual experiences have important physical and psychological repercussions for women. Rape is associated with lower self-esteem, self-blame, sexual dysfunction, anxiety, depression, and post-traumatic stress disorder (Perilloux, Duntley, & Buss, 2011). After experiencing sexual assault/rape, victims also may begin to engage in riskier sexual behaviors, increased frequency of sexual activity, and have an increased number of sexual partners (Burgess & Holmstrom, 1979; Campbell, Sefl, & Ahrens, 2004; Wyatt, Guthrie, & Notgrass, 1992). Future sexual relationships may be affected by negative affective reaction to first sexual intercourse, specifically by leading to negative expectations and assumptions about following sexual relationships (Rapsey, 2014).

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Rape is a prevalent problem on college campuses (Franklin, Bouffard, & Pratt, 2012; Sinozich & Langton, 2014), as well as casual sex (Eshbaugh & Gute, 2008; Grello, Welsh, & Harper, 2006; Turchik, Garske, Probst, & Irvin, 2010). Virginity loss occurring during casual sex or if the relationship ended shortly after having sex caused the individual to express more negative emotions (Symons, Vermeersch, & Van Houtte, 2014; Carpenter, 2001; Smith & Shaffer, 2013), have lower self-esteem (Meier, 2007), and develop depression (Grello et al., 2006; Meier, 2007).

### 1.2. First coital affective reaction

First coital affective reaction (FCAR) is defined as feelings experienced at the time or shortly after first sexual intercourse occurred (Schwartz, 1993). Negative first coital affective reactions can be linked with future sexual difficulties (Rapsey, 2014). Zimmer-Gembeck et al. (2015) use the FCARS (Schwartz, 1993) to evaluate participants' most recent sexual intercourse and found that more negative affective reactions and lower psychological sexual health were linked with sex occurring outside of a steady romantic partner relationship. Women have more negative reactions to their first coital experience, especially in areas of guilt and regret (Else-Quest, 2014; Higgins, Trussell, Moore, & Davidson, 2010; Reissing et al., 2012). Feelings of guilt about first sexual intercourse can be linked to lower current physiological and psychological satisfaction (Moore & Davidson, 1997). The FCARS can be instrumental in linking first coital experience to several aspects of subsequent sexual experiences and sexual adjustment; therefore, it is important to establish its construct validity.

### 1.3. Virginity beliefs

Virginity is a complex social construct (Carpenter, 2002; DeLamater & Hyde, 1998; Erickson, Badiane, & Singer, 2013). Sexual debut is linked to individuals' interpretation of their own virginity and its loss (Carpenter, 2002; Erickson et al., 2013). The Virginity Beliefs Scale (Eriksson & Humphreys, 2011) is based on Carpenter's (2001, 2002) original virginity framework of gift, stigma, and process. Gift-oriented individuals place a high value on virginity and its loss. They are more likely to have a positive first experience because intimacy has grown and developed over time with a committed partner (Humphreys, 2013). Stigma framework is the inverse of virginity as a gift (Carpenter, 2002). Often ashamed of the title "virgin," these individuals do not disclose their virginity status with others (Eriksson & Humphreys, 2014). Stigma-oriented individuals place less significance on emotion, love, and having a committed partner (Eriksson & Humphreys, 2014). Process-oriented individuals view virginity loss as a natural step in a long process on the way to adulthood (Carpenter, 2001, 2002). Viewing virginity loss as a process may help the experience be "empowering and health-enhancing" (Carpenter, 2002; p.362).

## 2. The current study

Given the importance of individuals' first sexual experience, it is important to have measures of affective responses to and beliefs about first sexual experience that have demonstrated reliability and validity. Two measures relevant to first sexual experience have been developed – the FCARS and the VBS – however, apart from the initial scale construction, no extant research has investigated the construct validity of these measures. The purpose of this study was to investigate the construct validity of these two measures in a sample of female U.S. college students.

We investigated the construct validity of the FCARS and the VBS using exploratory and confirmatory factor analyses, convergent and discriminant validity, and the known-groups method. The known-groups method (Cronbach & Meehl, 1955; DeVellis, 2003; Hattie & Cooksey, 1984; Portney & Watkins, 2000) of validity states that test scores should be discriminate across groups that theoretically are expected to be

different on the trait measured. In this study, comparisons were made between four groups of women: 1) women who identified as virgins, 2) women who identified as having lost their virginity in a consensual act and have not been raped, 3) women who identified as having lost their virginity in a consensual act and were subsequently raped, and 4) women who identified as having lost their virginity in a nonconsensual act.

Individuals vary in their definition of which sexual behaviors constitute "having sex" or loss of virginity (Barnett, Fleck, Marsden, & Martin, 2016; Bersamin, Fisher, Walker, Hill, & Grube, 2007; Hans & Kimberly, 2011; Trotter & Alderson, 2007) or even the activities that constitute rape or sexual assault (Deming, Covan, Swan, & Billings, 2013; Moriarty, 2008; Peterson & Muehlenhard, 2004). In this study, we utilized participants' subjective, self-report definitions of virginity and nonconsensual sexual activity because this subjective interpretation of one's own sexual experience shapes sexual attitudes and behaviors (Meier, 2007; Reissing et al., 2012; Smith & Shaffer, 2013).

### 2.1. Hypotheses

#### 2.1.1. Factor analyses

For the FCARS and VBS, we expected to replicate the existing factor structures: a one-factor model for the FCARS (Schwartz, 1993), and a three-factor model for the Virginity Beliefs Scale (Eriksson & Humphreys, 2011).

#### 2.1.2. Convergent and discriminant validity

As a measure of affective reaction to first coitus and not overall affect, we expected the FCARS to demonstrate discriminant validity with overall affect. Therefore, we hypothesized that ( $H_1$ ) the FCARS would demonstrate at most small correlations with positive and negative affect. Because the belief that virginity is a gift is associated with more ideal expectations about sex, the perfect partner, and love, we hypothesized that ( $H_2$ ) the gift subscale would be positively associated with communion, which represents the belief in idealistic sex with items such as sex between people in love is the ultimate interaction, it is the merging of two souls, and it is the closest form of communication measuring this factor (Hendrick, Hendrick, & Reich, 2006). Hendrick et al. (2006) found that the scale was positively associated with passionate love and altruistic love. Both gift and process are focused on relationship commitment; therefore, we hypothesized that ( $H_3$ ) the gift and process subscales would be negatively associated with permissiveness, which represents casual sexual attitudes (Hendrick et al., 2006). Since the process framework views virginity loss as a natural, inevitable part of life, we hypothesized that ( $H_4$ ) the process subscale would be positively associated with instrumentality, which contains items such as the belief that sex is primarily a biological function, primarily physical, and to enjoy oneself (Hendrick et al., 2006).

#### 2.1.3. Known-groups method

We expected the FCARS to be able to detect more negative affective reactions to nonconsensual virginity loss and more positive affective reaction in anticipated virginity loss. The FCARS should be able to differentiate between affective reaction, specifically in response to virginity loss, not simply a history of nonconsensual sexual activity. The VBS is expected to find different understandings of virginity and virginity loss based on whether the individual is a virgin or not and if the event was consensual or not. Therefore, we hypothesized that: ( $H_5$ ) women who lost their virginity in a nonconsensual act will have more negative FCAR than the other three groups; ( $H_6$ ) women who identify as virgins will have the highest (anticipated) positive FCAR; ( $H_7$ ) women who identify as virgins will have higher belief that virginity is a gift than the other groups; ( $H_8$ ) women who identify as having lost their virginity in a non-consensual act will have lower belief that virginity is a gift than the other groups; ( $H_9$ ) women who identify as having lost their virginity in a nonconsensual act will have lower belief that virginity is a process

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