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From Qualitative Data to Instrument Development: The Women's Breast Conflict Scale

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Abstract

The purpose of this article is to describe the initial development of the Women's Breast Conflict Scale, a predictive instrument designed to identify women who may be least likely to follow recommended mammography screening guidelines. This new instrument incorporates self/body image, teasing, family norms and values, and societal/media influence - themes identified from three qualitative studies and five years of qualitative data collection. The themes aided in the development of a conceptual model (Breast Conflict), which provided the framework for this instrument. A description of the traditional steps involved in instrument development is provided to aid qualitative researchers in the development of meaningful instruments that incorporate the human experience as perceived by the people for whom the instrument is designed.

Keywords

Instrument Development, Mammography Screening, and Qualitative Data

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From Qualitative Data to Instrument Development: The Women's Breast Conflict Scale

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The purpose of this article is to describe the initial development of the Women's Breast Conflict Scale, a predictive instrument designed to identify women who may be least likely to follow recommended mammography screening guidelines. This new instrument incorporates self/body image, teasing, family norms and values, and societal/media influence - themes identified from three qualitative studies and five years of qualitative data collection. The themes aided in the development of a conceptual model (Breast Conflict), which provided the framework for this instrument. A description of the traditional steps involved in instrument development is provided to aid qualitative researchers in the development of meaningful instruments that incorporate the human experience as perceived by the people for whom the instrument is designed. Key Words: Instrument Development, Mammography Screening, and Qualitative Data

According to the World Health Organization (WHO), each year there is a 1-2% increase in the incidence of breast cancer worldwide (WHO, 2005). Given that a large percentage of cases occur in women with no identified risk factors or no early symptoms of the disease, the primary way to control breast cancer mortality is with early screening, diagnosis, and treatment. However, researchers report mammography screening rates have been declining over the past five years (Breen et al., 2007; Chagpar, Polk, & McMasters, 2008). Among women with access to health care, Ryerson, Miller, Ehemann, Leadbetter, and White (2008) found a statistically significant decline in mammography screening among women age 40 to 59 years of age, particularly among non-Hispanic White women. Recent studies suggest that many women are initiating mammography later than recommended, not having mammography screening at recommended intervals, or not receiving appropriate and timely follow-up of positive screening results (Cokkinides, Bandi, Siegel, Ward, & Thun, 2007; Hahn et al., 2007; Taplin et al., 2004). Some women who complete a baseline mammogram at age 40 may not return every two years or every year for follow up mammograms as recommended, which could result in a more advanced tumor size or cancer stage at diagnosis if this disease occurs later in life.

At a time when mammography screening rates appear to be declining, the population growth is predicted to increase (National Center for Health Statistics, National Health Interview Survey, 2007). This population increase will create a significant challenge to achieving the objective of increasing mammography screening rates. The U.S. Census Bureau (2002) predicts that the African American population will double in growth and the Hispanic population will triple in growth between the years 2020 and 2050. The length of time between an abnormal mammogram screening and related diagnostic tests is more than twice as long for African American and Hispanic/Latina women as it is for White women (Agency for Healthcare Research and Quality, 2000). In addition to identifying women least likely to participate in mammography screening

per recommended guidelines, the new instrument proposed in this article has potential to serve as a means to identify women least likely to follow recommended diagnostic and treatment recommendations.

Barriers to Mammography Screening

Key contributors, particularly among diverse racial/ethnic groups, to low mammography screening rates include demographic factors, socioeconomic status, access, differences in beliefs and knowledge about cancer, and knowledge about cancer treatment (American Cancer Society, 2008). Other reasons women report for not following mammography screening guidelines include cost, no healthcare insurance, not able to take time off from work, belief that mammograms are not necessary or the mammogram test itself causes breast cancer, child care issues, or as one woman stated: “My first mammogram was so painful, I will never have another one” (Thomas & Usher, 2009). Other women stated they simply forget to schedule an appointment or forget to keep their appointment. I propose other barriers to mammography screening (Thomas, 2004, 2006; Thomas & Usher). Findings from my qualitative research strongly suggest that women’s life experiences, particularly experiences that occurred during adolescence, can have a lasting impact on women’s mammography screening beliefs and subsequent behaviors. Five years of qualitative data collection resulted in the recognition of self/body image, teasing, societal/media influence, and family norms and values as barriers to mammography screening and contributors to what I have identified as a new concept: *breast conflict*.

Summary of Qualitative Studies Leading to Development of the Instrument

Study 1

My first study was a qualitative descriptive study, using narrative methods to generate data. Data collection took place in a large urban city in Colorado from 2002 to 2003. Social economics was removed as a barrier to breast cancer screening by recruiting 12 professional African American women with at least a two-year college degree and access to healthcare. The women wrote narratives about their early life experiences and participated in one face-to-face audio tape recorded interview. Data collection took place in the participants’ home or place of work. The women received a blank journal and were asked to share at least two stories describing times in their lives when significant events occurred pertaining to their breasts, and one story about a mammography screening experience. The purpose of the interview was to allow the women to elaborate on the experiences described in their written narratives and provide clarification if I had additional questions after reviewing their written narrative. The purpose of this study was to explore whether there is an association between women’s feelings concerning past experiences related to their breasts and their current breast cancer screening behaviors. For a detailed description of the findings, see Thomas, 2004, 2006, and 2010.

Study 2

The next study took place in New Mexico and was a replication of the study described above. This study, conducted from 2003 to 2004 with 12 Hispanic/Latina women served as a check on the transferability of my previous research. The aim of this study was to determine if professional Hispanic women shared similar or different experiences from the African American women who participated in the first study. Hispanic/Latina women had no problem communicating in a similar fashion (narratives and interviews) about their early life experiences and shared examples of similar experiences pertaining to their breasts and their mammography screening behaviors. (The findings from this study are included and discussed in Thomas & Usher, 2009).

Study 3

The purpose of the third qualitative descriptive study, conducted from 2005 to 2007, was to explore women's life experiences pertaining to their breasts in relation to their current mammography screening behaviors and to compare experiences and mammography screening behaviors within and across racial/ethnic groups among women with and without a history of breast cancer. During phase one of this study, 36 White, African American, Hispanic/Latina, and American Indian women, without a history of breast cancer shared written or audiotape recorded narratives about their early life experiences and participated in one individual face-to-face follow-up interview.

During phase two, an additional 17 White, African American, Hispanic/Latina, and American Indian women with a personal history of breast cancer participated in one focus group interview. Each racial/ethnic group participated in a separate focus group interview. I used focus groups as a means of data collection for this phase of the study because I was interested in collecting additional data that may not have been revealed from individual interviews alone. In addition, the focus groups with women who all shared a personal history of breast cancer served as an unintentional support group. Focus group participants were asked to share the number of years since being diagnosed with breast cancer, which ranged from six months to seven years. The purpose of the focus group interview was to elicit a range of ideas and attitudes about concepts and themes identified in my earlier research and from phase 1 of this study, to identify participants' perceptions, and to gather information about the past and present mammography behaviors of women with a history of breast cancer. At the start of the focus group interview, I shared the themes identified from the first phase of the study. All the focus group participants, without prompting, shared examples of similar experiences that occurred during their adolescent years and validated the findings from the first phase of this study. Table 1 provides a list of the qualitative studies and participants by race/ethnicity.

Data analysis

For each study, myself along with two colleagues with experience in qualitative data analysis coded the transcripts independently, then met as a group to discuss the codes, develop a coding dictionary and come to a consensus. Data analysis for all of the

above studies involved line-by-line coding of the transcripts using inductive codes (code words or phrases developed by the research team through direct examination of the data). Sections of the transcripts were reviewed for their significance pertaining to the purpose of the study and interrelationships within and across the transcripts. The next phase of analysis involved organizing the codes into clusters of similar topics and reorganizing the clusters of codes into related categories. Categories were defined as a group of codes having common elements that related to particular sets of patterns or recurrences. Categories of related codes were then grouped to reflect themes. Themes represent the interpretive link between the original transcripts and the researchers' theoretical concepts (Seidel & Kelle, 1995). I was attentive to the recognition of repetition within and across the interviews, metaphors, historical explanations, descriptions, and cultural context (see Thomas, 2004, 2006 for description of the analysis process).

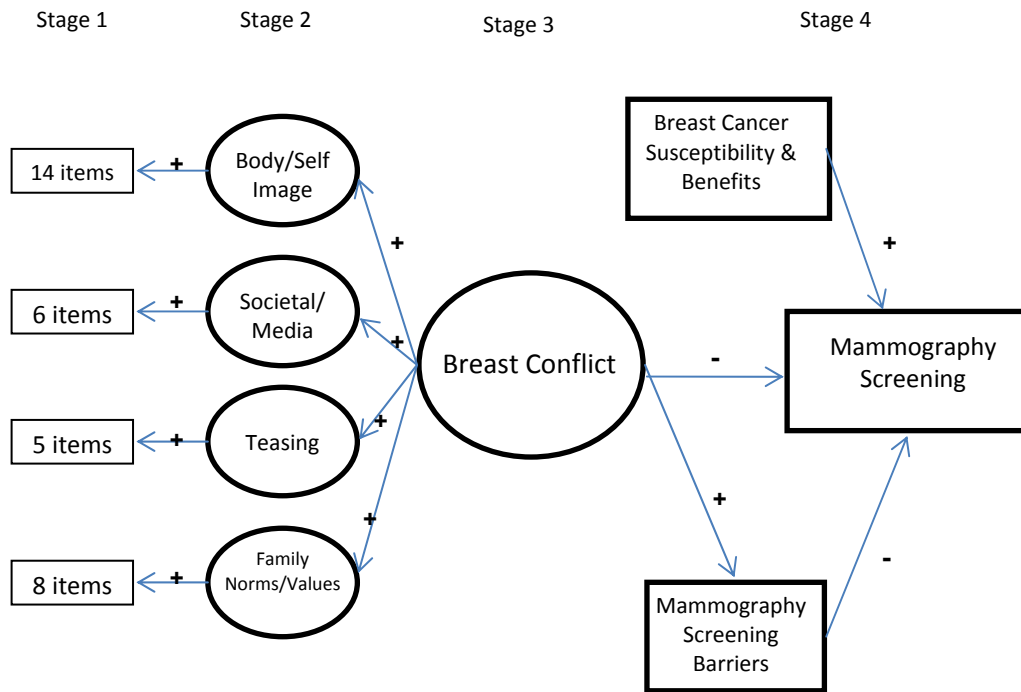
Table 1. *Qualitative studies-participants by race/ethnicity*

STUDY	YEAR	RACE/ETHNICITY	PARTICIPANTS
Ring of Silence – A Paradox of Womanhood: African American Women's Breasts, Beliefs, and Cancer Screening Behaviors.	2002-2003	African American	12
Hispanic Women's Breast and Cancer Screening Narratives.	2003-2004	Hispanic	12
Past Experiences and Current Mammography Screening Behaviors. NIH/NINR: 1-R15 NR009380-01 PHASE I-individual narratives and interviews	2005-2006	White African American Hispanic American Indian	11 9 8 8
Past Experiences and Current Mammography Screening Behaviors. NIH/NINR: 1-R15 NR009380-01 PHASE II- focus groups	2006-2007	White African American Hispanic American Indian	6 5 4 2
TOTAL BY RACE/ETHNICITY		White African American Hispanic American Indian	17 26 24 10
TOTAL			77

Findings from the third study lead me to identify barriers to mammography screening that had not been previously addressed in the literature (Thomas & Usher, 2009). In addition, these findings strongly suggested that occurrences during adolescence have an impact on a woman's long-term beliefs and behaviors pertaining to breast cancer

and mammography screening. Findings from this study stirred my curiosity, which lead me to go back and review the transcripts from my prior research, which further lead me to do a secondary analysis of all prior research transcripts. This secondary analysis along with the findings from my third research study led to the development the *breast conflict* model and subsequent new instrument, the Women’s Breast Conflict Scale. Figure 1 provides a visual description of the conceptual and measurement model: *breast conflict*. The *breast conflict* model serves as the foundation for this newly developed instrument.

Figure 1. *Conceptual and Instrument Model: Breast Conflict*



Conceptual Framework: Breast Conflict

Conflict

Conflict models are most often used in business and management situations in the work environment. Several types of conflict have been identified; however, there appears to be a lack of consensus in definitions and considerable conceptual overlap (Dirk & Park, 2003). I propose another type of conflict, a gender specific form of conflict related to a specific phenomenon. Pondy (1989) describes conflict as a process which consists of 5 stages: latent conflict, perceived conflict, felt conflict, manifest conflict and conflict aftermath. The K. Thomas (1992) conflict model, a model frequently cited in the nursing literature, also describes five stages of conflict: awareness, thoughts and emotions, intentions, behavior, and outcomes. However, neither the Pondy nor the Thomas conflict model fits precisely with the scope and context of this study.

Breast Conflict

I propose that breast conflict is a process that consists of two phases: latent conflict and manifest conflict and is specifically related to prospective mammography screening behaviors. Similar to Pondy (1989) who describes latent conflict as conflict where conditions for conflict are present but are not recognized, breast conflict *is* latent conflict. The conditions for conflict are present, but women are neither aware of nor do they recognize that they are defining themselves in relation to their breasts. Typically, conflict is described as a multidimensional construct with both detrimental and beneficial effects. Most definitions agree that conflict is a process involving two or more people. However, breast conflict, for the purpose of this study, is described as *intrapersonal* conflict where the condition for conflict arises during adolescence and is the direct result of early teasing, family norms and values, and media or societal influence resulting in an altered self/body image. Intrapersonal conflict is defined as conflict that occurs solely in the psychological dynamics of the person's own mind. The second stage in breast conflict is described as manifest (observable) conflict. For the purpose of this study, manifest or latent conflict refers to women's lack of participation in mammography screening as defined by the American Cancer Society guidelines (2008). Breast conflict is also a multidimensional construct with both detrimental and potential beneficial effects. Detrimental effects can result in increased breast cancer mortality and morbidity, while the beneficial effects would result in more positive breast cancer outcomes as a result of following recommended screening guides and treatment options once diagnosed. Breast conflict is a process that can increase or decrease depending on unanticipated events that may occur throughout a woman's lifespan.

I define *breast conflict* as the oblivious discord women experience regarding personal feelings about their breasts (how women define themselves in relation to their breasts). In other words, breast conflict is defined as women's oblivious discordant feelings about their breasts, typically generated during adolescence (Thomas & Usher, 2009). Oblivious, an adjective, is defined by the *Oxford College Dictionary* as "not aware of what is happening around one" and the noun, oblivion is defined as "the state of being unaware or unconscious of what is happening" (Oblivious, 2008, p. 947). Intrapersonal conflict is defined as conflict that occurs solely in the psychological dynamics of the person's own mind. Breast conflict is unconscious *intrapersonal* and interpersonal conflict where the condition for conflict arises during adolescence and is the direct result of early teasing, family norms and values, and media or societal influence (Thomas & Usher).

Many women are not aware of this internal conflict and I propose that breast conflict can engender a negative effect on women's long-term attitudes and behaviors, affecting a woman's decision to participate in mammography screening (Thomas & Usher, 2009). I also propose that breast conflict can persist throughout a woman's lifetime resulting in continuing disparity in a woman's mammography screening behaviors. Items for the Women's Breast Conflict Scale (WBCS) were incorporated from the *breast conflict* model. As far as I am aware, there are no instruments available that were specifically designed based on women's life experiences that can be used to predict women's mammography screening behaviors. Thomas (2004, 2006, 2010; Thomas & Usher) found that while women are knowledgeable about mammography screening and

the value of early detection, many women do not consistently follow established mammography screening guidelines. The problem is this interpersonal and intrapersonal conflict results in some women not following recommended mammography screening guidelines. Long-term beliefs and attitudes about women's breasts and mammography screening may be the result of women's early life experiences.

Breast Conflict Model Constructs

Body/self image. For the non-Hispanic White, Hispanic/Latina, African American, and American Indian women (N=77) who participated in my studies, perceptions formed during puberty and adolescence left 90% of these women with feelings of shame and conflict regarding their breasts, which has impacted their current attitudes and behaviors regarding breast cancer and mammography screening. Researchers report: "body image consists of both attitudinal and perceptual dimensions" (Pulvers et al., 2004, p. 1642). Studies that address body image are typically related to body size or eating disorders. Perceptual studies of body image most often examine a person's accuracy in their body size estimates. However, perceptual dimensions of body image can also be related to social appearance comparison of peers or images seen in the media. Body image has been defined as how a person views his or her physical appearance. Society's standards for an ideal body image when incorporated into a persons' evaluation of their physical appearance can contribute to an altered body image (Roy & Andrews, 1991). A woman's body image includes the symbolic meaning and importance of her breasts (Kraus, 1999; Spencer, 1996). This symbolic meaning along with societal views regarding the breast can have an influence on a woman's decision to participate in mammography screening.

Teasing. Teasing that occurs during adolescence regarding girls' breast size and shape can influence women's prospective mammography beliefs and behaviors. Vander Wal and Thelen (2000) found that peer teasing is a significant predictor of body image dissatisfaction. Studies suggest that women who believe their breasts are important to their feelings of femininity and attractiveness experience greater dissatisfaction with their body image after breast cancer treatment (Kraus, 1999; Martin & Hanson, 2000). This dissatisfaction with body image can occur prior to, or because of, a threat of a breast cancer diagnosis. Dissatisfaction with body image can be the result of teasing. For example, one 54-year-old woman who participated in my early research stated:

I used to get teased by some boys and called bird legs and flat chest. This teasing probably has never completely faded from my memories, I think it has always somehow had an impact on my perception as a woman . . . I think somehow I have felt less attractive because of small breasts. As I grow older, I have given up on my breasts. (Thomas, 2004)

This same woman shared her feelings about her first mammogram:

The woman who assisted me with my mammogram was very kind and caring . . . but I was embarrassed and felt ashamed when I exposed my breasts. I still feel ashamed. I have never returned for a breast exam or mammogram since. (Thomas, 2004)

Societal/media influence. Western society tends to place greater emphasis on the appearance of women than that of men. Women are often evaluated based on physical attractiveness. Leopold (2000) reported that from a cultural perspective, women's breasts create a social expectation of women; subsequently any symptoms of disease of the breast can have a powerful impact. In this context, breasts are a part of the body that represents the whole. Unfortunately, my findings suggest that Western values and traditions have oppressed women with the message that without breasts, women are not whole. It is often difficult for women to sort out their own feelings about their breasts from the messages that women receive from embedded cultural values, social interactions, individual experiences, and the media. Attractiveness in the media sells products; however, attractive images may reinforce women's often unrealistic expectations for how they should look (Jung & Lennon, 2003), especially for young adolescent girls. During the developmental stage of adolescence, young people strive for independence and begin to make decisions that impact them for the rest of their lives. Shroff and Thompson (2006) describe the influence of and support the importance of specific friend and peer influences as potential risk factors for body image, eating disturbance and self-esteem among adolescent girls. Body image can be related to social appearance comparison of peers or images seen in the media (Pelican et al., 2005). The opinion of peers is highly valued by adolescent females, thus impacting body image satisfaction. Research findings suggest that women compare themselves with unrealistic high standards presented in the media (Strahan et al., 2008; Strahan, Wilson, Cressman, & Buote, 2006). In the U.S., Western society appears to be breast obsessed and many American women fear losing their breasts more than dying from breast cancer (Ferguson & Kasper, 2000). Perceptions of breast cancer include "breast cancer as being equated with death or as manageable and survivable; treatment for breast cancer as compromising to a woman's identity, femininity, and self worth" (Rosenbaum & Roos, 2000, p. 153). Societal messages displayed in the media that reflect an ideal body shape can have a negative effect on women, which in turn could lead to questions regarding a person's self worth and may have an impact on women's prospective mammography screening behaviors. Messages about the ideal female body shape in the media reflect societal norms.

Family norms and values. In addition to symbolic meaning and media or societal views, family norms and values can also influence a woman's decision to participate in mammography screening (Thomas & Usher, 2009). Health behaviors that begin during adolescence form the foundation for health behaviors that are carried into adulthood. Culture, family norms and values contribute to the experience of health and prospective health behaviors. A Hispanic and an American Indian participant reflect back on their adolescent experiences (Thomas & Usher):

Some girls slouched and tried to hide the fact of their development but I never did. I think one of the reasons was that my father instilled the belief in all his kids that we should be proud of who we were and carry ourselves with our head held high and square shoulders. [Hispanic]

Grandmother always told me: Don't show off your breasts, you know you're not supposed to show that part of your body, so it [breasts] was always wrapped up in layers. [American Indian]

Parents are important role models throughout childhood and adolescence. In addition to serving as role models for health promotion behaviors such as proper nutrition and exercise, parents can be instrumental in the development of life-long health-related behaviors by participating themselves in cancer screening activities and talking with their adolescent daughters about health promotion and disease prevention activities such as mammography screening. Mothers' participation in breast self-examination and mammography screening can encourage similar behaviors in their daughters. Open discussion further reinforces the importance of routine physical exams and breast cancer screening thus setting the stage for the development of life-long healthy habits.

Development of the Women's Breast Conflict Scale

The literature is inundated with studies that address cultural barriers or culture-specific attitudes and beliefs that may influence women's mammography screening behaviors. As far as I am aware, no instruments have been developed that incorporate women's early life experiences, particularly those experiences that occurred during adolescence, pertaining to their prospective mammography screening behaviors. To date, there are no predictive instruments developed with a specific purpose of identifying women least likely to follow current recommended mammography screening guidelines. My prior qualitative work served as the foundation for the development of the instrument domain and subscale items (Thomas, 2004, 2006, 2010; Thomas & Usher, 2009). This prior qualitative work entailed analysis of audiotape recorded interviews and narratives written by a diverse racial/ethnic group of women who were asked to share examples of times in their lives when experiences related to their breasts may have been especially momentous to them and about their mammography screening experiences and current mammography screening behaviors. Very few (7 out of 77) of the women stated their mammography screening experiences were not particularly uncomfortable physically, yet all of the women expressed some psychological discomfort. For example, some women stated that not only was the room cold, but the technician was cold or not personable. One participant whose mother died from breast cancer shared, "While the mammogram is painful and uncomfortable, it's something all women should do because having breast cancer is much more uncomfortable". All of the women who participated in my studies shared examples of experiences that occurred during their adolescent years.

In addition to racial/ethnic differences or socioeconomic status, based on my research findings, I suggest women's perceptions regarding the need for mammography screening are related to women's life experiences, particularly experiences that occurred during adolescence. In my first study, a participant shared:

My first bra brought with it some mixed emotions because not only the boys teased me but grown men also talked and teased me about my breasts. I wanted to pay no attention or make any mention of my breasts. Consequently, this reluctance caused me to delay my first mammogram when I thought I felt a lump in my breast when I was in my mid-30s. (Thomas, 2004)

For the 77 White, Hispanic, African American and American Indian women who participated in my qualitative studies, perceptions formed during puberty and adolescence left all the participants with some feelings of conflict regarding their breasts, either explicitly or implicitly expressed. Based on this finding, this new instrument includes one domain: When I was age 12 to 18 and four subscales: (1) Body Image, (2) Teasing, (3) Family Norms and Values, and (4) Societal and Media Influence. Table 2 provides examples from the qualitative data and the resulting subscales and scale items.

Establishing Content Validity

Establishment of validity is a critical factor in instrument development as validity refers to the extent to which the instrument measures what it was developed to measure. The Women's Breast Conflict Scale (WBCS) was developed to measure breast conflict. I believe the higher degree of breast conflict; the less likely a woman will be to follow recommended mammography screening guidelines. The WBCS was developed using traditional guidelines for instrument development (DeVellis, 2003) and item validation (Lynn, 1986). Five of the eight steps in instrument development described by DeVellis are presented in this article: (a) determine clearly what is to be measured, (b) generate an item pool, (c) determine the format for measurement, (d) have the initial item pool reviewed by experts, and (e) consider inclusion of validation items. The remaining three steps in instrument development include (f) administer instrument to a development sample, (g) psychometrically evaluate the individual scale items, and (h) optimize the scale length depending on the results of the psychometric evaluation of the scale items, meaning consideration should be given to the optimal trade-off between brevity of the instrument and reliability regarding length of the instrument. The remaining three steps of instrument development will take place when I conduct my next research project to evaluate the psychometric properties of the instrument among 330 White, Hispanic, and African American women.

Determine clearly what is to be measured. The Women's Breast Conflict Scale (WBCS) was developed to be a tool that health care providers can use to identify women who may be at risk for not following recommended mammography screening guidelines. Item selection for the scale was based on prior qualitative work (Thomas, 2004, 2006; Thomas & Usher, 2009), whereby women's experiences and their current mammography screening behaviors were explored. Findings from these studies were used to develop the WBCS, resulting in scale items that are receptive to participants' experiences and relevant to diverse racial and ethnic groups.

Table 2. *Examples of Items Developed from Qualitative Data*

PARTICIPANT QUOTE	THEME	SCALE ITEM	DOMAIN When I was age 12 to 18...	
“I refer to puberty as a heartache because I didn’t know what to expect”	Self portraits	I looked forward to the physical changes that would occur.	SUBSCALE	Internal influence: Self/Body Image
“My mom made this a special occasion”	Family norms and values	My family did something special to celebrate puberty.	SUBSCALE	External Influence: Family Norms & Values
“Wow, never knew she had such knockers” “Because of all that early teasing...to this day, I think of my breasts as a nuisance”	Teasing	Boys said things about my breasts that made me feel bad.	SUBSCALE	External influence: Teasing

Generate an item pool. The Women’s Breast Conflict Scale (WBCS) is comprised of 33 items, which I have identified as contributors to breast conflict; subjective and objective dimensions of experiences that occurred during adolescence. The major contributors to this conflict were body image; teasing; society and media influence; and family norms and values, formed during the adolescent stage. Because women shared stories not only about experiences during adolescence but about also similar experiences that occurred during young, middle and late adulthood; I conceive that this conflict appears to continue to operate in varying degrees across the life span impacting women’s breast cancer beliefs, attitudes and behaviors in subsequent developmental stages. It is my expectation that future testing and development of the WBCS, a predictive tool, will support this assumption. Scale items were written and refined in declarative sentences and arranged in a sequence reflecting internal and external influences that contribute to the development of breast conflict.

Determine the format for measurement. The final version of the WBCS was prepared for administration with consideration given to font style and size so that the instrument would be in an easy-to-read format for women from most socioeconomic backgrounds (Pett, Lackey, & Sullivan, 2003). This tool was developed using a modified likert scale design at a less than 5th grade reading level. The end-descriptive anchors indicate varying degrees of agreement with or endorsement of the statement (from 1, entirely not true to for me, 5 entirely true for me). Response structure was selected to have “roughly equal intervals with respect to agreement” (DeVellis, 2003, p. 79). The

middle descriptor was made neutral in an effort to assure that it reflects a middle amount of the attribute and not an inability to answer the question. The labeling of questions was designed so that higher scores represent a higher degree of breast conflict (suggesting that these women may be least likely to participate in mammography screening) and lower scores indicate a lower degree of breast conflict (women who would most likely participate in mammography screening).

Have the initial item pool reviewed by experts. Steps d and e (DeVellis, 2003) reflect the judgment-quantification stage (Lynn, 1986). This stage entails a content validity study that asserts that items, as well as the entire instrument, are valid. Content validity is a non-statistical type of validity that involves a review of the instrument to determine if the items capture all areas of breast conflict as I have defined this concept. The focus was on determining whether or not the items adequately represent the content domain and subscales and are relevant to the proposed interpretation of breast conflict. In this phase, panel members should have knowledge of the topic or have expertise in instrumentation (Davis, 1992; Lynn; Slocumb & Cole, 1991). Grant and Davis (1997) emphasize the importance of including members of the target population in the content validation of the instrument.

Experts. The rating panel consisted of women from the general population (community experts) and nursing research faculty (professional experts). The use of laywomen from the community is an accepted method used in instrument development and served as a means of addressing qualitative rigor. Expert panel members were asked to evaluate the individual items, and the instrument as a whole, in terms of the item relevance and clarity in representing each subscale.

The professional experts (one African American, two Hispanic and four White) consisted of doctoral prepared nurses (n=7) currently working as faculty at a university school or college of nursing that were skilled in measurement and instrument development or with expertise in breast cancer or breast cancer screening research. Community experts (n=7) were women (one African American, three Hispanic, and three White) in the community who were not healthcare providers, age 40 and older, without a personal history of breast cancer. These two groups evaluated the content validity and clarity of the instrument. I initially conducted a computer search of university schools or colleges of nursing and reviewed current faculty curriculum vitas (CV) looking for faculty with experience in measurement and instrument development, breast cancer or breast cancer screening research. Eleven nursing faculty who met these criteria were contacted by email asking if they would evaluate a new instrument. Seven nurses from Colorado, Arizona, New Mexico, and Minnesota responded to the initial email request indicating their interest and willingness to review the instrument. Packets containing written instructions, the breast conflict model, forms elucidating clarity and validity, and a demographic form were mailed or sent to the experts as an email attachment. The professional experts were instructed to return the completed forms within two weeks. All forms were completed and returned within one month.

Community (lay) experts were recruited by way of a university email research announcement listserv and by word of mouth. This university email research announcement is sent out to all university employees on campuses located in three large

cities in Colorado. Employees of the university shared this announcement with family, friends, and neighbors. In addition, recruitment flyers were posted in local community businesses, such as hair and nail salons, grocery stores, libraries, and small fitness centers. Potential community experts contacted me by leaving telephone voicemail message or by sending me an electronic mail message (E-mail). I then contacted each potential community expert by telephone to assess their eligibility to serve on the expert panel. The first seven women who met the inclusion criteria were selected to serve as a community expert. I met in-person with potential community experts if they met the following eligibility requirements: 40 years of age or older, English speaking, no personal history of breast cancer, and not a healthcare professional. Once I determined if a woman met the inclusion criteria, I then met with each individual community expert in-person to explain her role, the purpose of the instrument, and provided written and oral instructions for completing the content validity and clarity form. I emphasized to each community expert that they were not to answer the items personally but to review and rate each item for clarity and relevance to the domain (does this question fit in this category?). For example, does this question fit under the subscale “teasing”? All members of the community expert panel returned the forms within a two-week period. Both expert panels used the same content validity and clarity form. During the month of June 2008, professional and community experts completed and returned the content validity and clarity form. See Table 3 for the clarity assessment form and Table 4 for an excerpt from the relevance (validity) form sent to the professional and community experts. Finally, Table 5 provides examples of the original instrument item and items revised based on feedback for both the professional and community experts.

Consider inclusion of validation items. The original instrument was comprised of 33 items with one domain and four subscales. The extent of agreement between experts was measured by the use of a content validity index (CVI). Lynn’s (1986) table describes the level of endorsement required to establish the item or instrument content validity beyond the 0.5 level of significance. The item weighted content validity index (I-WCVI) and written comments from the experts (N=14) were used to make decisions about whether to eliminate, revise, or retain items. Items with a weighted CVI score of less than 0.83 were considered for revision. While Lynn requires retaining items with a content validity index score of at least 0.86 when there are seven expert panel members, Polit and Beck (2006, p. 491) state “when there are six or more judges, the standard can be relaxed.” Lynn also recommends retaining only items with I-CVI’s no lower than 0.78. The cutoff established for this study was an I-CVI score of at least 0.83 because the scale CVI for both professional and community experts and the scale mean and scale weighted CVI’s were 0.86 and higher. All comments were reviewed and items were revised if suggestions appeared to be congruent with the purpose of the instrument, did not change the meaning, or did not weaken the item when placed in the Likert scale format (DeVellis, 2003). Final determination of item inclusion was based on the I-WCVI and expert comments for clarification and suggestions for modifications from both professional and expert panel members.

Table 3. *Excerpt from the Clarity Assessment Form*¹**When I was age 12 to 18:**

Items	Clear	Unclear	Comments
1. I felt embarrassed to have breasts. -			
2. My breasts were about the same size as my friends. +			
3. I did things to make my breasts appear smaller. -			
4. Boys said things about my breast that made me feel proud. +			
5. I felt uncomfortable if anyone touched my breast. -			
6. Boys said things about my breasts that made me feel bad. -			
7. Puberty was not a time of celebration for me. -			
8. Women in my family talked openly about their bodies. +			
9. An adult female told me what to expect during puberty. +			
10. I wanted to look like the women I saw in the movies or magazines. -			
11. I believed men liked women with large breasts. -			
12. I believed women should be shaped like the women I saw in the movies or magazines. -			

According to Lynn (1986, p. 382), “validity is a crucial factor in the selection or application of an instrument, for validity is the extent to which the instrument measures what it is intended to measure.” Polit and Beck defined content validity as, “the degree to which an instrument has an appropriate sample of items for the construct being measured” (2004, p. 423). The content validity index is derived from the proportion of items given a rating of “relevant but needs minor revision” (3) and “very relevant” (4). Item evaluation is determined by the proportion of experts who rate the items as content valid (a rating of 3 or 4), and the evaluation of the entire instrument is determined by the proportion of total items judged content valid (Lynn). Agreement is established by the application of the standard error of the proportion; for example, on a ten-item scale, if the total number of 3 or 4 ratings equals 8, then the CVI = 8/10; therefore, I-CVI = 0.80.

¹ The Women’s Breast Conflict Scale is a scale developed to assess women’s hidden feelings about their breasts in relation to their current mammography screening behaviors. Please read the following statements and rate each as either *clear* or *unclear* by placing a check mark in the appropriate box. You may write a comment or edit any statement.

Table 4. *Excerpt from the Relevance (Validity) Assessment Form*²

Internal influence: Concerned with self or body image				
Item	Not Relevant	Unable to assess relevance without revision	Relevant but needs minor revision	Very relevant
1. I felt embarrassed to have breasts. – COMMENTS:	1	2	3	4
2. My breasts were about the same size as my friends. + COMMENTS:	1	2	3	4
3. I did things to make my breasts appear smaller. – COMMENTS:	1	2	3	4
External Influence: Concerned with family norms and values				
Item	Not Relevant	Unable to assess without revision	Relevant but needs minor revision	Very relevant
1. Puberty was not a time of celebration for me. – COMMENTS:	1	2	3	4
2. Women in my family talked openly about their bodies. + COMMENTS:	1	2	3	4
3. An adult female told me what to expect during puberty. + COMMENTS:	1	2	3	4
External influence: Concerned with male or female peers & teasing				
Item	Not Relevant	Unable to assess relevance without revision	Relevant but needs minor revision	Very relevant
1. Boys said things about my breast that made me feel proud. + COMMENTS:	1	2	3	4
2. I felt uncomfortable if anyone touched my breast. – COMMENTS:				
3. Boys said things about my breasts that made me feel bad. – COMMENTS:				
External influence: Concerned with media: movies, magazines, TV, non-related males, etc.				
Item	Not Relevant	Unable to assess relevance without revision	Relevant but needs minor revision	Very relevant
1. I wanted to look like the women I saw in the movies or magazines. –	1	2	3	4

² Please compare each item to the definition that is provided. Rate each statement on a scale of 1 to 4, with 1 being not relevant, 2 being unable to assess relevance without item revision, 3 being relevant but needs minor revision, and 4 being very relevant and succinct. Please circle your response.

COMMENTS:				
2. I believed men liked women with large breasts. – COMMENTS:				
3. I believed women should be shaped like the women I saw in the movies or magazines. – COMMENTS:				

Waltz and Bausell (1981) originally proposed the use of the content validity index by using two experts, with consideration of two limitations to this type of assessment: (a) the possibility of chance inflation of agreement, and (b) the dependence of the CVI on the number of rating categories. Methods proposed by Lynn (1986) addressed both limitations. First, the possibility of agreement inflation is addressed by using a greater number of experts and by setting a minimum number of experts that must agree by using a significant combination. Second, the dependence of the CVI on the number of rating categories is controlled by using a 4-point scale: (1) Not relevant, (2) Unable to assess relevance without revision, (3) Relevant but needs minor revision, and (4) Very relevant. This method avoids any possible ambivalent middle rating and provides sufficient information to calculate a content validity index. As indicated by Waltz, Strickland, and Lenz (2005), a value of 1.0 is perfect agreement, and a value of 0.50 is unacceptable. According to Lynn, acceptable CVI is 0.86, which is equivalent to an agreement of six out of seven experts. Item (I- CVI) and scale (S - CVI) content validity index was calculated then weighted and mean CVI'S were calculated for the individual items (I-WCVI/I-MCVI) and the total scale (S – WCVI/S-MCVI). Although professional expertise is expected to provide useful insight about the content validity of the items, the perceptions of a community panel of women from the general population were considered notable to the items' clarity and relevance (Imle & Atwood, 1988). Input from the community experts rather than the professional experts were weighted heavier for clarity, relevance, and validity. Community CVI was weighted at 60% and professional CVI was weighted at 40%.

Scale CVI's for the Women's Breast Conflict Scale (WBCS) were Community, 0.86; Professional, 0.96; Weighted, 0.90; and Mean, 0.91 respectively. There were 28 items where the I-WCVI was \geq 0.83. Five items on the WBCS had calculated I – WCVI's ranging from 0.57 to 0.77. Four of these five items were revised for clarity as suggested by both sets of experts. The fifth item was retained as originally written (item #1 - Table 5) because participants in my qualitative studies consistently reported both positive and negative perceptions regarding the physical changes that occur during adolescence and therefore I felt it was important to retain this item. One additional item with an I-WCVI of 0.83 (item #6 - Table 5) was revised for clarity based on comments from both community and professional experts. Table 5 provides the qualitative evidence (description of the original items and the subsequent revised items) that supports these results.

Community I-CVI scores for 11 of the 33 items were less than 0.83, ranging from 0.29 to 0.71 [the scale is to 1.0]; while the professional panel CVI scores for these same items ranged 0.86 to 1.0. I am confident that some members of the community panel

personalized their assessment of the items and therefore may have judged the item to be less relevant. In reviewing the comments regarding these particular items, one community expert in response to the item: *I compared my breast size to my peers* wrote, “Well maybe to my friends or to other girls.” Another expert in response to the item: *An adult female told me what to expect during puberty* wrote, “My mom tried.”

Table 5. *Original and Revised Items with Content Validity scores*³

Item Number	Original item	COMM.	PROF.	MEAN	WGT	Revised Item
1	I looked forward to the physical changes that would occur during puberty	0.29	1.00	0.65	0.57	This item was not revised: community members personalized their assessment of this item and therefore judged the item to be less relevant.
2	I compared my breast size to my peers.	0.71	1.00	0.86	0.83	I compared my breast size to my peers breast size
3	I felt comfortable exposing my breasts.	0.71	0.86	0.79	0.77	I felt comfortable exposing my breasts to a healthcare provider
4	I was involved in some type of physical or sexual abuse.	0.71	0.71	0.71	0.71	I was hurt physically or sexually by a family member or stranger
5	My family did something special to celebrate puberty	0.43	1.00	0.72	0.66	At least one family member said or did something to make me feel good about the physical changes that occurred during puberty
6	Having my breasts touched made me feel uncomfortable	1.00	0.86	0.93	0.94	Having my breasts touched by a healthcare provider made me feel uncomfortable

³ Comm. = community experts; Prof. = professional experts;

Mean = averaged CVI; WGT = weighted CVI

Words in **bold**-Both community and professional experts recommended this item be rewritten for clarity and provided suggestions for the revised item

Challenges and Limitations

The use of women from the lay community presented a unique challenge and possible limitation in evaluating the content validity index scores (CVI's). There were significant differences in the item CVI scores between the community members and the professionals for nine of the scale items. Although both groups were given written and oral instructions, several members of the community panel reviewed the items and answered the questions personally. For example, for the item, "Some adults said things about my breasts that made me feel bad"; one community expert responded by writing, "my uncle" instead of scoring the item from 1 to 4.

Despite the challenge of working with community members for assessing the content validity of a new instrument, the use of community members provided the perspectives of the target population for which this instrument is designed. Using a heterogeneous expert panel with members from the community provided a thorough assessment of the content validity of this new instrument. Future use of community members for assessing the validity of a new instrument should include a mock validity and clarity assessment with the researcher in addition to oral and written instructions.

Upon further development, testing, and refinement, the Women's Breast Conflict Scale (WBCS) will serve as a valuable tool that will be useful in identifying women who are at risk for not following recommended mammography screening guidelines. Table 6 shows excerpts from the proposed WBCS subscales with corresponding scale items. This instrument will be useful in identifying women least likely to have a mammogram, indicating these women are likely to have a higher degree of breast conflict than women who do follow recommended mammography screening guidelines. Further evaluation of this instrument with a large racial and ethnic diverse sample should result in a valid and reliable instrument that will be useful among diverse groups and will provide insights for developing unique interventions that address breast conflict. I conceive that body/self image, societal/media influence, teasing, family norms and values are the major contributors to breast conflict, which initially occurs during adolescence and continues to operate in varying degrees throughout a woman's lifetime.

Ethical Considerations and Qualitative Rigor

This project was reviewed by the Colorado Multiple Institutional Review Board (COMIRB) and determined that the project is not human subject research as defined by their policies and current regulations and is in accordance with the Office for Human Research Protections.

One method used to establish rigor in qualitative research is peer debriefing. For the purpose of this project, peers were identified as women who may benefit from the instrument. Peer debriefing is a process used in qualitative research designs to prevent bias. Peer debriefing for this project was obtained by asking professional and community members to review the scale items and to rate on a scale from 1 to 4, how clear and relevant to the purpose of the instrument was each scale item. In addition, the professional and community experts were asked to revise any statements they believed were not clear. Not only were the experts used to validate the instrument; the use of

professional and community experts functioned as a check on the findings from my three qualitative studies that provided the basis for this new instrument.

Table 6. *Proposed WBCS Subscales and Corresponding Instrument Items*

SUBSCALES	SCALE ITEMS
Body/Self Image (14 items)	When I was age 12 to 18: I was aware that my breasts would change 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ Entirely true for me _____ Entirely untrue for me _____
	I looked forward to the physical changes that would occur. 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ Entirely true for me _____ Entirely untrue for me _____
	I felt embarrassed to have breasts. 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ Entirely true for me _____ Entirely untrue for me _____
Family Norms & Values (8 items)	I was hurt physically or sexually by a family member or stranger. 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ Entirely true for me _____ Entirely untrue for me _____
	Women in my family talked openly about their bodies. 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ Entirely true for me _____ Entirely untrue for me _____
Teasing (5 items)	Girls said things about my breasts that made me feel bad. 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ Entirely true for me _____ Entirely untrue for me _____
	Some adults said things about my breasts that made me feel bad. 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ Entirely true for me _____ Entirely untrue for me _____
Societal/Media Influence (6 items)	I wanted to look like the women I saw in the movies or magazines. 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ Entirely true for me _____ Entirely untrue for me _____
	I believed men liked women with large breasts. 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ Entirely true for me _____ Entirely untrue for me _____
	I thought a lot about being shaped like a person I saw in the movies or magazines. 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ Entirely true for me _____ Entirely untrue for me _____

The Breast Conflict Model and subsequent Women's Breasts Conflict Scale (WBCS) is a model and tool developed to assess women's prospective mammography screening behaviors based on women's experiences from an *ecological* perspective. An *ecological* perspective is focused on individual, cultural, and social environmental factors, meaning scale items were developed from women's cultural and social environmental perspectives pertaining to life events regarding their breasts (McLeroy, Bibeau, Steckler, & Glanz, 1988). The resulting scale items were found to be relevant and culturally sensitive to participants' experiences and to diverse racial and ethnic groups.

Discussion and Conclusion

This article described the initial development of the Women's Breast Conflict Scale (WBCS). Both professional and community women reviewed the content of the instrument and provided suggestions for improving readability of the instrument. Qualitative data collected from a diverse racial/ethnic group of women over a five-year period was used to develop the instrument items. The panel of community and professional women all agreed that this instrument has relevance for identifying what I conceive as "breast conflict"- a concept that plays a role in women's health promotion behaviors pertaining to mammography screening.

Data from this initial phase of instrument development provided initial evidence of the validity and clarity of the WBCS indicating that this scale should be useful as a screening tool to identify women who may be at risk for not following recommended mammography screening guidelines. One goal in the development of the WBCS is to make available an instrument that will be of value among women from diverse racial/ethnic groups, which is important if disparities in breast cancer outcomes among minority groups are to be improved. Effective culturally relevant tools are needed to identify women least likely to participate in mammography screening. This instrument offers the prospect of aiding in meeting the goal of improving breast cancer outcomes among women from a variety of racial/ethnic and socioeconomic groups.

The next phase in the development of this instrument will focus on further evaluation of validity and reliability of the instrument by combining traditional psychometric methods and building on that foundation by using an innovative analytic technique - *measurement invariance analysis*, a technique that is a necessary requirement for appropriate across population group comparisons. Finally, a prospective, longitudinal study will be conducted to determine predictive validity of the instrument with a large racial and ethnic diverse sample of women from a larger geographical area.

Despite significant funding to support research to identify barriers to mammography screening or to develop tools developed to assess women's breast cancer screening attitudes and beliefs, the rates of mammography use among ethnic minority women have not increased substantially. Even with years of exploring barriers to mammography screening and addressing challenges to encouraging women to follow up with treatment, deaths attributed to breast cancer remain high. My exploration of women's life experiences related to their breasts and their current mammography screening behaviors has revealed other important factors that may influence a woman's decision regarding mammography screening. In addition to racial or ethnic differences

and socioeconomic status, disparity in the use of mammography screening can be related to breast conflict, which is an internal and unrecognized conflict. My research findings suggest a relationship between mammography screening behaviors and women's experiences, particularly experiences that occurred during adolescence. The development of this instrument is significant because I believe that future research and refinement of the instrument will broaden our understanding of what hinders many women from following recommended mammography screening guidelines. No assurances can be made that there will be improvements in mammography screening rates or changes in clinical practice until the instrument and model are tested among a large diverse racial/ethnic population across a broad geographical area. However, it is my goal that further development and refinement of the instrument and breast conflict model will result in a positive impact on breast cancer outcomes, particularly among diverse racial/ethnic groups. My long-term goal is to develop a tool that will be of use for influencing all aspects of breast cancer care, from screening to diagnosis and treatment. My aspiration is that the development of this instrument will contribute to a broader understanding of how the complex associations, that result in breast conflict, can provide a foundation for identifying unique approaches that will aid in the development of groundbreaking, culturally appropriate and relevant mammography screening interventions.

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Author Note

For the past ten years, Dr. Thomas has worked as a public/community health nurse in the areas of school nursing, hospice, home healthcare, and primary care of indigent populations in the U.S. and globally. Her interest in health promotion and disease prevention lead her to explore health disparities in the area of cancer screening behaviors of racial/ethnic minority groups. For almost a decade, her program of research has focused on studies that addressed White, Hispanic, African American, and American Indian women's, experiences pertaining to their breasts, and their mammography screening behaviors. Findings from her qualitative research lead to the identification of the Breast Conflict model and the development of a new predictive instrument, a tool that should be useful in identifying women who may be at risk for not following recommended mammography screening guidelines. The next phase in the development of this instrument will focus on further evaluation of validity and reliability including predictive validity within and across diverse racial/ethnic groups.

Recently Dr. Thomas expanded her research foci to include men's health: knowledge and beliefs pertaining to colorectal, prostate, and male breast cancer. Knowledge gained from this study will provide health care professionals with new insights that may aid in the development of educational interventions that address masculinity and gender specific issues. Dr. Thomas developed and teaches the Global Health course, a graduate level elective, developed to increase awareness of global health issues. She recently completed the certification for international public health and is making plans to travel to an undeveloped country within the next few years.

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