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Adapting Cognitive Interviewing for Early Adolescent Hispanic Girls and Sensitive Topics

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Abstract

Cognitive interviewing is a research technique commonly used in survey research to improve measurement validity. However, this technique is useful to researchers planning to use self-report measures in intervention research because invalidity of such measures jeopardizes detection of intervention effects. Little research currently exists regarding the use of cognitive interviewing techniques with adolescent populations, particularly those who are Hispanic. This article describes common challenges to conducting cognitive interviewing with early adolescent girls and how these challenges are impacted by Hispanic culture and sensitive topics. A focus group approach is recommended over the traditional one-on-one cognitive interview format, and experiences from actual focus groups, conducted in preparation for an intervention study are used to illustrate strategies for accomplishing the goals of cognitive interviewing. Creative and careful planning, attention to developmental considerations, and incorporation of cultural values are essential to the success of this approach.

Keywords

Cognitive interviewing; focus groups; refining study measures; adolescent girls; sensitive topics

Cognitive interviewing is a highly recommended technique commonly used with adults for improving the validity of self-report measures (Knafl et al., 2007). However, little research currently exists regarding implementing cognitive interviewing techniques with adolescent populations, particularly those who are Hispanic. The adolescent's unique cognitive developmental characteristics pose challenges to accomplishing cognitive interviewing goals. These difficulties can be exacerbated when assessing sensitive topics, such as those involving sexual behavior, and when working with specific groups with strong cultural values, such as Hispanics.

The purpose of this paper is to discuss our adaptation of cognitive interviewing from a traditional one-on-one interview format into a focus group format. This adaptation was made in response to some of the developmental and cultural characteristics of our target population: early adolescent Hispanic girls. Our purpose for using cognitive interviewing was to assess and improve the response validity of both established and new measures to be used in a randomized control trial evaluating the use of a computer game as part of a pregnancy prevention intervention. We present examples drawn from this work to illustrate specific strategies used in our adaptation of cognitive interviewing, and provide a sense of some of the benefits of conducting this type of work in preparation for intervention testing.

Background

In this section, we describe the goals of cognitive interviewing and describe the challenges that arise when working with early adolescent girls and how these challenges are impacted by Hispanic cultural values. Then, we discuss our rationale for using focus groups as an adaptation of traditional cognitive interviewing techniques.

Cognitive Interviewing Goals

Cognitive interviewing is a process used to address concerns about response validity (Tourangeau, 1984), a common concern in survey research, whether working with established or new measures. Unlike conventional pilot tests for a particular measure, the purpose of cognitive interviewing is to “debug” a survey by revealing respondent thought processes involved in interpreting and answering questions (Presser et al., 2004; Tourangeau, 1984). This “debugging” process is invaluable when planning an intervention study that will utilize self-report measures because unrecognized problems with response validity threaten validity of the intervention study methods.

Problems with response validity can arise for a variety of reasons even when measures with established reliability and validity are used. For example, measures with psychometric properties established in one region of a country may not have similar properties in another region of that same country. Measures with strong psychometrics that were developed at an earlier point in time may use words or phrases that have evolved over time to take on new meanings. Similarly, subtle or unrecognized differences in acculturation, country of origin, or social class can impact generalizability of psychometric properties in research involving immigrant populations. Additionally, established measures may have response validity issues undetected in prior research, particularly if cognitive interviewing was not used as part of the instrument development process (Knafl et al., 2007). Finally, researchers selecting study measures may also differ in ethnicity, or social-economic or educational class from their study population. This creates opportunity for item or response wording to mean one thing to the researcher and something different to the study participant. Cognitive interviewing is an invaluable technique for sorting through these various challenges to measurement validity.

Cognitive interviewing is based on the theory that respondents use a four-stage process to answer questions: question comprehension, memory retrieval of the relevant information, decision making, and response processes (Tourangeau, 1984). Rather than directly obtaining

evidence for reliability and validity, the goal of cognitive interviewing is to reveal difficulties or problems encountered during any of these four stages (Presser et al., 2004). Moreover, cognitive interviewing can assess these processes independent of item content, which is particularly important for sensitive topics, such as those involving sexual behavior.

Cognitive interviewing is commonly conducted in a one-on-one interview with individuals who represent the target population prior to conducting a survey (Presser et al., 2004). The primary interview techniques used are (1) letting the respondents think aloud and (2) having the interviewer guide the respondent by verbal probing to understand the cognitive basis for responses (Presser et al., 2004). When used individually or in combination, these techniques can reveal how survey questions are interpreted and how responses are arrived at from a respondent's perspective (Drennan, 2003). This can help (a) detect potential sources of error in survey questions (Dietrich & Ehrlenspiel, 2010), (b) understand question-response limitations resulting from respondents' ability to determine event frequency or make mathematical calculations (Miller, 2003), and (c) reveal the cultural context within which responses are given (Mavhu, Langhaug, Manyonga, Power, & Cowan, 2008). Once problems or limitations are detected, repairs can be implemented (e.g., revising, deleting, replacing, or rearranging the order of problematic items; Dietrich & Ehrlenspiel, 2010). As a result, item relevance and clarity is improved, thus increasing reliability and validity of survey measures (Knafl et al., 2007).

Adolescent Development

The emotional and cognitive characteristics of early adolescence pose challenges to the traditional cognitive interviewing approach. Emotional characteristics include a strong desire to be with one's peers and a preference for group rather than one-on-one activities (Elliott, 2001). Cognitive characteristics include a short attention span (Pacheco-Unguetti, Acosta, Callejas, & Lupiáñez, 2010; Vakil, Blachstein, Sheinman, & Greenstein, 2009) and a continued reliance on concrete operations, resulting in rule-based thinking (Elkind, 2001). The latter limits early adolescents' ability to think abstractly and understand cause-effect relationships, thus affecting their capacity to participate in an analysis of the cognitive basis for their responses (Flavell, 1963).

These challenges are compounded when cognitive interviewing activities are focused on sensitive topics, particularly those that are sex-related. Physical changes associated with the onset of puberty that begin in early adolescence can make early adolescent girls "feel different" (Comstock, 1994) and uncomfortable with their bodies (Hartzell, 1984), creating embarrassment about discussing reproductive health and sex-related topics. Consequently, early adolescent girls may find it hard to divorce their embarrassment over the subject matter from the response generation process (Aronowitz, Todd, Agbeshie, & Rennells, 2007). Moreover, Hispanic cultural values do not support girls talking about these topics, particularly with non-family members (Castillo, Perez, Castillo, & Ghosheh, 2010; Faulkner, 2003). Unfortunately, not talking about culturally or socially taboo subjects, like sex (Gudelunas, 2005; Levine, 2002), limits the development of formal operations thinking (Flavell, 1963), increasing the reliance on concrete operations thinking when discussing these topics. This increased reliance on concrete operations thinking calls for cognitive

interviewing approaches that do not rely on the participant's ability to think abstractly about one's process for generating an item response. For example, as discussed later in our Illustration section, we assessed the process for generating a response about the frequency of a behavior by asking about activities that were not taboo or sensitive, and using topics that varied in affective qualities (e.g., eating carrots and eating ice cream) and sociability (e.g., getting together with cousins or friends).

Adaptation of Cognitive Interviewing: Use of a Focus Group Approach

There are at least three reasons why focus groups, as compared to one-on-one interviews, provide an excellent forum in which to accomplish cognitive interviewing goals when refining study measures with early adolescents. First, the social nature of the focus group format allows participants to be a part of a larger group of peers and share the responsibility of responding to questions presented in a discussion format (Frazier et al., 2010). Early adolescents, particularly those from collectivistic, or group-based cultures such as Hispanics (Bradford, Meyers, & Kane, 1999), may find it considerably less intimidating to discuss sensitive topics in a group-oriented structure than in one-on-one interactions with an adult (Horner, 2000). Moreover, the focus group format may be more developmentally appropriate because of the adolescent preference for group activities (Elliott, 2001). Second, focus groups allow participants to react to and build on the responses made by other members of the group (Creswell & Plano Clark, 2007; Stewart & Shamdasani, 1990) resulting in a brainstorming process that can be used to find the best word to convey a concept or more clearly articulate what is problematic about a particular question or response option. Third, focus groups provide opportunities for observing non-verbal communication and provide rich data that are not spoken (Horner, 2000; Horowitz et al., 2003). Such data can be useful for identifying signs of confusion or negative reactions to a question that children might be reluctant to voice, and for providing a sense of how shared this confusion or negative reaction may be.

The major drawback to using a focus group approach is the potential for the approach to elicit "imaginary audience" concerns (Norris, Aroian, Warren, & Wirth, 2012). These concerns relate to a feeling of being the focus of everyone's attention, a feeling that arises in early adolescence due to a new cognitive ability to think about what other people are thinking (Elkind, 2001). They can create anxiety within the focus group situation which we address with particular focus group strategies (e.g., warm-up, establishing a norm that disagreement is expected) as described in the next section.

An Illustration

In this section we provide information about the intervention study that was the impetus for conducting cognitive interviewing, describe focus group recruitment and general procedures, and discuss the strategies used in these focus groups that enabled us to address the goals of cognitive interviewing. These focus groups were conducted as part of a program of research that developed and tested the use of a peer resistance skill building, live simulation computer game, involving digital puppetry. Peer resistance skills were taught as part of a developmentally appropriate, culturally tailored pregnancy prevention intervention for Hispanic early adolescent (ages 11–14) girls (see also Norris, Hughes, Hecht, Peragallo, &

Nickerson, 2013). Study measures assessed: demographic characteristics, including questions about onset of menses; peer resistance self-efficacy (DiIorio et al 2001); peer resistance intentions and behaviors; sexual intentions (Kirby, Korpi, Barth, & Cagampang, 1997); and sexual behaviors (Barnett, 2006). The peer resistance intentions and behavior measures, and four additional peer resistance self-efficacy items were developed specifically for the intervention study. The other study measures had been previously used with various adolescent populations, including Hispanic adolescents, with the exception of the peer resistance self-efficacy and sexual behavior measures. All previously used measures had established reliability and validity.

These focus groups were conducted with Hispanic girls recruited from a summer camp program for low income, minority youth conducted at the youth's middle school, located in Orlando, Florida. The majority of youth served by this program were Hispanic and of Puerto Rican origin, with family median incomes below the poverty level. All were entering sixth, seventh, or eighth grades in the Fall.

All research activities were approved by an Institutional Review Board. Recruitment involved distributing study packets containing consent forms, letter to parents, and a flier advertising a parent information session to girls in the program to take home to share with their parents. At the parent information session, bilingual study staff met with parents and provided copies of the study measures for them to review and discuss. Parents were allowed to identify questions they did not want their child to critique in the focus groups. Parents either provided consent at this meeting or gave the parental consent form to camp staff at a later date.

Girls with parental consent who also expressed interest in participating in the focus groups, rode on a bus to the University (transportation provided by Summer Camp as an in-kind donation to the research project). At the University, assent was formally obtained prior to focus group participation with alternative activities provided for girls who did not wish to participate. Fourteen girls assented to participate, resulting in two mixed age/grade level groups, composed of 6–8 participants each. Although the girls were divided into mixed grade-level groups, they either already knew each other or were familiar with each other's names or faces through their involvement in the summer camp program or prior school year attendance.

Each group met for a total of four focus group sessions to review study measures using cognitive interviewing techniques, with each session lasting 45 to 60 minutes. Confidentiality was managed by (1) directing participants at the beginning of each group to keep what was said in the group private and using the “Whatever happens in Vegas stays in Vegas” commercial as a metaphor for these directions, and (2) providing girls with examples of things they should not say and things they could say to parents and friends who asked questions about what was said or done in the groups. These directions were imbedded into the focus group rules reviewed at the beginning of each group (e.g., one person talks at a time, be respectful, okay to pass on a question and just listen) and once learned in the first session, participants enjoyed reviewing these directions and examples for the group leaders at the start of each group.

No monetary incentive was offered to participants, but girls were given a small gift bag (similar to bags given to children attending a birthday party) at the end of each focus group. Each bag contained juice, peanut butter or cheese crackers, and 1–3 small objects such as barrettes, balloons, stickers, pens or highlighters with the PI's University name on them.

The success of these groups was influenced by a combination of particular focus group and cognitive interviewing strategies. We discuss each of these strategies next, along with our rationale, a description of how the strategy was employed, and observations of strategy impact.

Focus Group Strategies

Four focus group specific strategies were used in the course of our adaptation of focus groups for cognitive interviewing. These related to the focus group setting, moderators, structure, and the use of a warm-up activity.

Setting—We used the group setting to empower the participants and reinforce their role as the experts. Defining the participants as experts was also a way to build upon the Hispanic cultural values of *personalismo*, or the preference for warm, personal interactions (Galanti, 2003), *respeto* (respect), and *confianza* (trust building). Hence, we chose to conduct these groups in private, professional conference rooms in a University research office building, where participants sat in adjustable, comfortable chairs around a large conference table.

This professional environment did appear to positively reinforce the girls' role as the experts. At the beginning of each session participants would play with adjusting their chair heights and pretend to be important corporate figures. When one group lost access to their conference room, the girls were visibly disappointed and less productive in the subsequent focus group sessions – their behavior was less professional, their posture was less erect, and the discussions had to be re-directed more often by the moderators.

Moderators—Each focus group had a moderator and an assistant moderator. Both were female and at least one member was bilingual. The assistant moderators were college students – we selected them because they would not be viewed as authority figures and because adolescents are more comfortable interacting socially with those closer to their own age than they are with one-on-one interactions with adults (Horner, 2000). Subjective impressions from the moderators were that the girls were more playful in their attitude with the younger, assistant moderator. On one occasion, the assistant moderator could not be present for one of the focus groups and the participants appeared disappointed when she did not appear. They readily greeted her when she returned for the next group, appearing pleased to see her.

In addition to accommodating girls who wanted to say something in Spanish, the use of a two person moderator team allowed us to model disagreement regarding the study measures in the focus group (moderator training included modeling disagreement). Modeling disagreement was used to make clear that this behavior was expected in the focus group, and to show how it could be accomplished in a manner that was consistent with *personalismo*

and *respeto*, even in situations in which a younger person was disagreeing with someone who was older than them.

Structure—The focus group had a predictable structure. Weekly routines began with greetings, information about the focus group time length, and a review of the group’s purpose and rules, which typically took no more than eight to ten minutes. The total length of each session was limited to no more than 50 minutes of a 60 minute time period, as recommended by Vaughn, Schumm, and Sinagub (1996) for children ages 10 to 14. Additionally, girls were given colorful markers and encouraged to write comments or questions, or to doodle on the small pieces of paper listing various item stem wording that were distributed during the groups.

We observed specific effects of the structure on the girls’ participation. After experiencing the first session and subsequently gaining familiarity with the group structure, the girls became eager to participate: they enthusiastically helped to recount the group rules and define the concept of confidentiality at the start of the session. The anxiety exhibited early on in the first session, quickly dissipated in the second, and did not re-appear at the beginning of subsequent sessions.

Warm-up—To decrease anxiety over peer evaluations related to an imaginary audience and to build mutual trust (*confianza*) within the group, participants played a “talking ball” game as an initial warm-up activity. The game consisted of tossing a small, soft ball for someone to catch and then talk about their favorite thing in the chosen category (e.g., foods, colors, songs, movie stars). The use of this type of activity is consistent with Colucci’s (2007) recommendations for focus groups involving children because it helps them feel comfortable disclosing personal opinions and/or information. Participants had fun playing this warm-up activity and readily offered categories to use once they were familiar with the game.

Cognitive Interviewing Strategies

This section will discuss the strategies used in the formal cognitive interviewing phase. These strategies included providing multiple response modes, ordering and deconstructing items, active listening, and separating the topic from the answer process, all of which were employed in order to minimize the impact of the challenges posed by the early adolescent participants’ cognitive development.

Multiple response modes—In an effort to reduce imaginary audience related anxiety, moderators offered several response modes from which to choose during the questioning process, including answering as themselves, pretending to be someone else such as the “popular” or “shy” girl, or using small red or green, approximately 1 by 2½ inch cards to signify likes (green) or dislikes (red) about the questions. The inclusion of the red and green cards offered participants a more indirect response option. This inclusion, as well as an emphasis on the need to know what other kids (e.g., the “popular” or “shy” girl) would think or say about a given topic, coupled with a de-emphasis on stating identifiably personal opinions in the group, were used to lessen the girls’ anxiety about answering questions on sensitive topics and to reduce discomfort with explicit self-disclosure.

The provision of these response modes as a strategy for alleviating developmental-based anxiety and for increasing engagement was mostly successful, although the use of each respective response mode was observed to be largely dependent on the question type. Overall, the red and green cards were a well-liked answer option – the girls’ use of the cards suggested that they perceived them to be fun to use and to have a game show-like quality, seeing themselves as judges voting or scoring an item stem or set of response options. When discussing question comprehension and less sensitive items, the girls often chose to shout out an answer, raise their hands to comment, or use the red and green cards. However, for items about sexual intentions or behaviors, discussions were more often initiated through the red and green cards.

The option of answering more sensitive items as someone else (e.g., taking on the role of a ‘wild’ girl) did not work well. Even when prompted to respond in this manner, the girls could not sustain a response without reverting back to their own first person account. In retrospect, this strategy may have been too dependent on formal operations thinking for these participants: They could only talk about their own opinions as themselves.

Ordering and deconstruction of items—Different types of items were evaluated using cognitive interviewing techniques, starting with less sensitive items such as demographics before moving to more sensitive items concerning sexual intentions and behavior. As recommended by Irwin, Varni, Yeatts, and DeWalt (2009), items were deconstructed into stems and response options so that each item could be examined in a two-step process in order to lessen the burden of cognitive interviewing activities for participants. In addition, for the new measures we were developing, different sets of response options were presented on cards, two sets at a time, allowing participants to discuss them either in the context of a particular stem or independent of this context, and then vote their preference.

Thus, moderators were able to ask questions about the stem such as: *Is the question unclear? Is there an easier way to word this? How can the question be improved?* For the answer choices, moderators asked questions such as: *Do the choices make sense? Are there enough choices? Are there too many choices? Are there any choices missing? Are there easier or better answer choices? Can the wording be improved? Which set of answers do you like the best and what makes those better?* These verbal probing questions in combination with our focus group strategies were particularly useful for drawing out the expertise of our participants. For example, participants unanimously were confused by the 7-point response option scale in the DiIorio et al (2001) self-efficacy measure (only end and mid-points labeled with two adjacent unlabeled points on either side of mid-point), and felt that other girls would be as well. Their solution was a 5-point response option scale with one unlabeled point on either side which ultimately did not jeopardize the reliability of this established measure (e.g., Cronbach’s alpha .94 in intervention study). When these verbal probing questions were combined with comparison of different sets of response options, we observed clear preferences that varied with the type of question stem, highlighting the advantages of our approach for instrument development.

Active listening—Once cognitive interviewing began, moderators used active listening techniques to convey true interest in what the girls had to say. These techniques included

using verbal probing techniques, explaining that the items are problematic (not the participants), praising participation in the group discussions, openly affirming the usefulness of the responses being offered, and exhibiting nonverbal behaviors that demonstrated active listening (e.g., maintaining eye contact, leaning toward the speaker, jotting field notes). This active attention legitimized each girl's opinion in the group and reinforced each girl's role as an expert. The non-verbal delivery component of these techniques was also consistent with *personalismo*.

Active participation during interviewing activities was readily observed as a result of the active listening techniques. Participants enthusiastically volunteered to read aloud item stems and response options, suggested ways to re-word items, and expressed clear preferences for particular response options even when doing so was at odds with other group member's opinions. As illustrated in Table 1, the moderator's use of verbal probing techniques to follow-up stated responses and opinions encouraged explanation over consensus agreement. Verbal probing was particularly useful in understanding question-response limitations related to frequency, dates, and responses requiring mathematical calculations.

Separating topic from answering process & tailoring for concrete operations thinking—Our questions regarding the frequency of particular sexual behaviors required a combination of strategies. First, we focused on the recall process using neutral topics (i.e., not sensitive or taboo). Second, we posed a variety of questions to participants and observed what they did to generate an answer, asking them questions about their process that were grounded in our observations of specific behaviors. Finally, when we had clarified their process and identified valid time frames for questions about frequency (week vs. month vs. 2–3 months), we presented them with the sexual behavior questions and sought feedback on wording, answer choices, ability for girls like them to respond honestly, and repeated probes related to the validity of the time frames.

Assessing recall using neutral topics (i.e., not sensitive or taboo) such as eating ice cream (positive event frequency) or carrots (mildly negative for most in the groups) and socializing with cousins (social event frequency) first, before moving on to the sexually related items was very successful. Moderators were able to observe a similar cognitive process being used across the different question types, providing a foundation for the sexual behavior-based frequency items. For instance, we observed that participants would often relate events to a particular day in the week and/or month and then count these days (using their fingers) to arrive at an answer. When queried about these behavioral aspects of their answering process, they were able to relate it to counting the days on a paper calendar, indicating the value of providing a calendar to participants as part of the study measure. They were able to articulate a month as being about the limit for generating a valid recall. Three months was clearly too much time, and we were able to replicate these recall time frame data later when discussing the sexual behavior items with them. It also appeared that asking these other, often silly questions warmed up the group and made them more comfortable with discussing the sexual behavior items because it reinforced our focus on understanding how girls in general generated answers for these types of questions. Thus we were able to successfully determine the best word or phrasing to use, the appropriateness of response options, and

whether they thought other girls (i.e., their peers) would be able to respond honestly to a given sexually related question.

Discussion

We found that using cognitive interviewing in a focus group format with early adolescent Latinas was an effective approach for refining study measures. The brainstorming process that typically occurs in focus groups allowed us to find and fine tune alternative wording for items that were unclear or confusing or used wording that the girls did not like. Measures refined through this process appeared to be completed without difficulty during the subsequent intervention study (no questions asked during later data collection with the resulting measures) and we obtained good preliminary reliability ($\alpha > .84$) for all study subscales (i.e., peer resistance self-efficacy and intentions, sexual intentions and behaviors).

Three key points were learned in the process of conducting these cognitive interviewing focus groups with early adolescent Latinas for the purpose of refining study measures. First, the significance of creativity and careful planning should not be minimized. Our use of the red and green cards encouraged involvement and may have diminished self-consciousness. The cards definitely provided a fun method for girls to use to express themselves during the mostly verbal cognitive interviewing process. This no doubt helped avoid the boredom that can arise for children participating in focus groups (Colucci, 2007). The choice of a formal, business like, conference room setting required planning, but appeared influential, giving the girls a feeling of importance and visibly reinforcing their role as experts.

Second, developmental considerations are essential to designing and conducting research with this age group, particularly when focused on sensitive topics. The establishment of a regular group routine provided a sense of comfort that is consistent with the rule-based thinking that is prevalent in early adolescents. Our observation of ready disagreement within these groups suggests that the early adolescent tendency to conform or agree in an effort to gain peer approval can be countered by having two moderators who model disagreement and offer praise for agreeing or disagreeing with the group.

Third, incorporating cultural values transformed our research process, often providing the means to surmount challenges posed by development or topic sensitivity. Participant comfort and engagement in the cognitive interviewing activities were increased by reinforcing the participants' role as experts whose opinions would be fully respected (*respeto*), using a group-based format rather than an individual, one-on-one approach (collectivism of Hispanic culture), and building an atmosphere characterized by warmth (*personalismo*), mutual trust (*confianza*) and respect (*respeto*). These strategies also worked to ease the cultural sensitivity to the sex-related topics, increasing active participation in the discussions.

In summary, with careful planning and thoughtful consideration of the developmental and cultural contexts, a focus group approach can be used to accomplish the goals of cognitive interviewing. The challenges that arise when working with early adolescent Hispanics and

sensitive topics can be managed, particularly when cultural values are incorporated into research procedures, resulting in a rich and productive research process.

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References

- Aronowitz T, Todd E, Agbeshie E, Rennells R. Attitudes that affect the ability of African American preadolescent girls and their mothers to talk openly about sex. *Issues in Mental Health Nursing*. 2007; 28(1):7–20. [PubMed: 17130004]
- Barnett J. Evaluating baby think it over infant simulators: A comparison group study. *Adolescence*. 2006; 41(161):103–110. [PubMed: 16689444]
- Bradford L, Meyers RA, Kane KA. Latino expectations of communicative competence: A focus group interview study. *Communication Quarterly*. 1999; 47:98–117.
- Castillo LG, Perez FV, Castillo R, Ghosheh MR. Construction and initial validation of the Marianismo Beliefs Scale. *Counseling Psychology Quarterly*. 2010; 23(2):163–175.
- Colucci E. “Focus groups can be fun”: The use of activity-oriented questions in focus group discussions. *Qualitative Health Research*. 2007; 17:1422–1433. [PubMed: 18000081]
- Comstock J. Parent-adolescent conflict: A developmental approach. *Western Journal of Communication*. 1994; 58:263–282.
- Creswell, JW.; Plano Clark, VL. *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage; 2007.
- Dietrich H, Ehrlenspiel F. Cognitive interviewing: A qualitative tool for improving questionnaires in sport science. *Measurement in Physical Education and Exercise Science*. 2010; 14:51–60.
- DiIorio C, Dudley WN, Kelly M, Soet JE, Mbwara J, Potter JS. Social cognitive correlates of sexual experience and condom use among 13- through 15-year-old adolescents. *Journal of Adolescent Health*. 2001; 29(3):208–216. [PubMed: 11524220]
- Drennan J. Cognitive interviewing: Verbal data in the design and pretesting of questionnaires. *Journal of Advanced Nursing*. 2003; 42(1):57–63. [PubMed: 12641812]
- Elkind, D. Cognitive development. In: Lerner, JV.; Lerner, RM., editors. *Adolescence in America: An encyclopedia*. Vol. 1. Santa Barbara, CA: ABC-CLIO; 2001. p. 127-134.
- Elliott, DW. Peer groups. In: Lerner, JV.; Lerner, RM., editors. *Adolescence in America: An encyclopedia*. Vol. 2. Santa Barbara, CA: ABC-CLIO; 2001. p. 489-467.
- Faulkner SL. Good girl or flirt girl: Latinas’ definitions of sex and sexual relationships. *Hispanic Journal of Behavioral Sciences*. 2003; 25(2):174–200.
- Flavell, JH. *The developmental psychology of Jean Piaget*. Princeton, NJ: D. Van Nostrand; 1963.
- Frazier LM, Miller VA, Horbelt DV, Delmore JE, Miller BE, Paschal AM. Comparison of focus groups on cancer and employment conducted face to face or by telephone. *Qualitative Health Research*. 2010; 20(5):617–627. [PubMed: 20142606]
- Galanti GA. The Hispanic family and male-female relationships: An overview. *Journal of Transcultural Nursing*. 2003; 14(3):180–185. [PubMed: 12861920]
- Gudelunas D. Talking taboo: Newspaper advice columns and sexual discourse. *Sexuality & Culture: An Interdisciplinary Quarterly*. 2005; 9(1):62–87.10.1111/j.1532-7795.2010.00658.0020.x
- Hartzell HE. The challenge of adolescence. *Topics in Language Disorders*. 1984; 4(2):1–9.
- Horner SD. Using focus group methods with middle school children. *Research in Nursing & Health*. 2000; 23:510–517. [PubMed: 11130609]
- Horowitz J, Vessey J, Carlson K, Bradley J, Montoya C, McCullough B. Conducting school-based focus groups: lessons learned from the CATS project. *Journal of Pediatric Nursing*. 2003; 18(5): 321–331. [PubMed: 14569580]

- Irwin DE, Varni JW, Yeatts K, DeWalt DA. Cognitive interviewing methodology in the development of a pediatric item bank: A patient reported outcomes measurement information system (PROMIS) study. *Health and Quality of Life Outcomes*. 2009; 7(3):10.1186/1477-7525-7-3
- Kirby D, Korpi M, Barth RP, Cagampang HH. The impact of the postponing sexual involvement curriculum among youths in California. *Family Planning Perspectives*. 1997; 29:100–108. [PubMed: 9179578]
- Knafl K, Deatrick J, Gallo A, Holcombe G, Bakitas M, Dixon J, Grey M. The analysis and interpretation of cognitive interviews for instrument development. *Research in Nursing & Health*. 2007; 30:224–234. [PubMed: 17380524]
- Levine, J. Harmful to minors: The perils of protecting children from sex. Minneapolis, MN: University of Minnesota Press; 2002.
- Mavhu W, Langhaug L, Manyonga B, Power R, Cowan F. What is 'sex' exactly? Using cognitive interviewing to improve the validity of sexual behaviour reporting among young people in rural Zimbabwe. *Culture, Health & Sexuality*. 2008; 10(6):563–572.
- Miller K. Conducting cognitive interview to understand question-response limitations. *American Journal of Health Behaviors*. 2003; 27(Supplement 3):S264–S272.
- Norris AE, Aroian KJ, Warren S, Wirth J. Interactive performance and focus groups with adolescents: The power of play. *Research in Nursing and Health*. 2012; 35:671–679. [PubMed: 22949032]
- Norris AE, Hughes C, Hecht ML, Peragallo NP, Nickerson D. A randomized trial of a peer resistance skill building game for Hispanic early adolescent girls: Impact and feasibility of DRAMA-RAMA. *Nursing Research*. 2013; 62(1):25–35. [PubMed: 23150043]
- Pacheco-Unguetti A, Acosta A, Callejas A, Lupiañez J. Attention and anxiety: Different attentional functioning under state and trait anxiety. *Psychological Science*. 2010; 21:298–304. 10.1177/0956797609359624 [PubMed: 20424060]
- Presser S, Couper MP, Lessler JT, Martin E, Martin J, Rothgeb JM, Singer E. Methods for testing and evaluating survey questions. *Public Opinion Quarterly*. 2004; 68(1):109–130.
- Stewart, DW.; Shamdasani, PN. Focus groups theory and practice. Newbury Park, CA: Sage Publications; 1990.
- Tourangeau, R. Cognitive aspects of survey methodology: Building a bridge between disciplines. Washington, D.C: National Academy Press; 1984.
- Vakil E, Blachstein H, Sheinman M, Greenstein Y. Developmental changes in attention tests norms: Implications for the structure of attention. *Child Neuropsychology*. 2009; 15(1):21–39. [PubMed: 18608225]
- Vaughn, S.; Schumm, JS.; Sinagub, J. Focus group interviews in education and psychology. London: Sage Publications; 1996.

Table 1

Examples of cognitive interviewing techniques used in a focus group format.

Example of verbal probing and think aloud techniques for a demographic item:

Moderator (M): (*reading question and answer options*) How long have you lived in the United States? All my life; since I was ____ years old; ____ years.

Participant (P) 1, 2: All my life.

M: Is this question clear about what it is asking?

P7: Yes. But I think it's confusing because I know some girls that go back to the country they were born in every few years. How would they answer this?

P3: They would have to figure it out by remembering and then counting.

M: Is there another way to answer this?

P8: I think it's easiest to ask, "I have lived in the US for ____ years."

(*Quiet pause*)

P4: Okay, I would figure it out this way: I have lived here since I was 5 years old. I'm 12 now, so that means I have been here for 7 years.

P5, 6: (*Used paper-and-pencil and counted on their fingers to figure out the answer*)

Example verbal probing techniques for belief items:

M: (*reading stem*) Girls my age who make out with boys are more popular.

P: (*All of the girls held up the green card showing agreement with this statement*)

M: It looks like you all agree with this statement. Would you recommend changing the wording?

P1: No, I think the wording makes sense to everybody.

M: Do you think other girls would find this embarrassing to talk about?

P2: No, not really, because the girls don't care, that's what makes them popular.

P5: Yeah, if you make out, you're popular.

P6: She may be popular, but the boys may not like those girls because they are stuck-up.

M: What does making out mean to girls your age?

P3: Making out means tongue-to-tongue kissing.

P4: Yeah, that's what it means. It doesn't even matter if the boy is popular or not, the girl will still be popular.

(*Quiet pause*)

M: Okay, so looking at the answer choices, do they make sense for the question?

P: (*All of the girls nodded their heads*)

P7, 8: Yes. Answering agree or disagree makes sense for this question. How you feel about this can let you tell if it's stronger or just regular (*i.e., Strongly Agree or Strongly Disagree*).

Example of the think aloud technique to assess recall processes used to generate answers for sexual behavior items:

M: Since June, how often have you eaten carrots?

P6: I don't eat carrots because I don't like them.

P5: I only eat carrots with dip.

P2: Maybe, (*paused and counted fingers*) three times since June.

P3: Six times.

P4: I'd say, maybe, twice a week.

P7: Well, I eat carrots whenever I go to my friend's house. I went to her house maybe two times since June. So I ate carrots two times.

P1: This is a weird question. If I had a calendar it would be easier to figure out because I don't have carrots too much.