Computerized Aid Improves Safety Decision Process for Survivors of Intimate Partner Violence

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Abstract

A computerized safety decision aid was developed and tested with Spanish or English-speaking abused women in shelters or domestic violence (DV) support groups (*n* = 90). The decision aid provides feedback about risk for lethal violence, options for safety, assistance with setting priorities for safety, and a safety plan personalized to the user. Women reported that the decision aid was useful and provided much-needed privacy for making safety decisions. The majority (69%) reported severe to extreme danger in their relationship as scored by Danger Assessment (DA); only 60% reported having made a safety plan. After using the safety decision aid, the women felt more supported in their decision (*p* = .012) and had less total decisional conflict (*p* = .014). The study demonstrated that a computerized safety decision aid improved the safety planning process, as demonstrated by reduced decisional conflict after only one use in a sample of abused women.

Intimate partner violence (IPV) is well established as a widespread problem with important negative physical, mental health, social, and cost consequences for the victims, their families, and the community. IPV, commonly known as domestic violence, is defined as threatened, attempted, or completed physical or sexual violence or emotional abuse by a current or former intimate partner (Morbidity and Mortality Weekly Report [MMWR], 2008; Saltzman, Fanslow, McMahon, & Shelley, 1999). IPV results in an estimated 1,200 deaths and 2 million injuries among women annually in the United States (Centers for Disease Control and Prevention, 2004; MMWR, 2008). National surveys find that nearly one-quarter of women are victims of IPV in their lifetime (MMWR, 2008; Tjaden & Thoennes, 2000). While an estimated 2.9 million intimate partner assaults are committed against men each year, women's rates of injury (41.6% vs. 20%) and death are far greater (Tjaden & Thoennes, 1998). Because women are disproportionately the victims of IPV and experience severe negative health outcomes associated with the violence, our work has focused on helping women plan for safety and reduce exposure to repeat IPV.

One of the most widely recommended interventions for abused women is safety planning (Campbell & Glass, 2009; Dutton, 2004, 2005). In planning for safety, women must consider complex individual and community factors such as custody of children, social

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support, access to affordable safe housing, employment with a living wage, feelings for partner as well as the severity of the violence (Dutton, 2004, 2005). There appears to be no standard intervention to help women prioritize these complex and multiple factors in planning for safety. Previous research has demonstrated that abused women's safety decisions for their families and themselves are not linear and may change over the course of the relationship (Dienemann, Campbell, Landenburger, & Curry, 2002; Dienemann, Campbell, Wiederhorn, Laughon, & Jordan, 2003). Women who are planning to leave or have already left an abusive relationship may need different safety strategies from women who are planning to stay in the relationship. To be effective, personalized and woman-centered (i.e., conducted collaboratively with the IPV victims) safety planning should inform the woman about safety planning, help her prioritize for safety (e.g., children, resources, confidentiality), and reduce the risk for lethal violence (Davies & Lyon, 1998).

Women in an abusive relationship and faced with safety planning are often in a state of decisional conflict. The decisions are often high-stakes—perhaps even life or death. The decisions may also be uninformed, with women uncertain about the best course of action for their safety or unclear of their priorities or values in their safety decisions. According to the decisional conflict model, when a person becomes informed about alternatives, sets priorities for the decision, feels supported in the process, becomes certain about the decision, overall conflict drops and decisions are made (not delayed; O'Connor, 1995, 1999, 2006).

This article describes the two-phase study to develop (Phase 1) and evaluate (Phase 2) the first computerized safety decision aid (to our knowledge) with victims of IPV ($n = 90$) for impact on their decisional conflict. The safety decision aid was designed based on the decisional conflict model described above. It provides feedback about risk for lethal violence, options for safety, assistance with setting priorities for safety, and a safety plan personalized to the user.

Method

Phase 1

Development of a computerized safety decision aid—To develop the computerized safety decision aid, the research team reviewed current evidence regarding safety planning with victims of IPV, risk factors for lethal violence, and individual and community factors that a woman may be considering when trying to take actions to increase safety in a violent relationship (Campbell & Glass, 2009; Dutton, 2004, 2005). We then used our experience in the area of IPV and decision aids to develop the content of the safety decision aid using validated measures of safety behaviors, decisional conflict, and risk factors for lethal violence. Furthermore, the team used the previous work of the coauthor (KE) to develop a module to help women set priorities for safety and to create a user-friendly interface. Lastly, the team worked with experts in the field to develop safety plans based on the priorities of woman victims of IPV. For example, women using the decision aid were able to access action steps for obtaining a restraining order against the abusive partner, planning to stay in the relationship, and/or learn about protecting young children.

The computerized safety decision aid began by asking women basic demographic questions (e.g., age, education, race/ethnicity, relationship with abuser, children under the age of 18 years living in the home, employment, and living situation). Participants were then asked to report on the safety-seeking behaviors and resources they had already accessed. For example, participants were asked to indicate to whom they had disclosed the IPV (i.e., friend, family, neighbor, coworker, supervisor, spiritual/religious advisor, police, doctor/ nurse, therapist, domestic violence advocate, or other) and among these who was most helpful. The decision aid also included a checklist of safety behaviors developed by

McFarlane and colleagues (2004). This checklist included actions such as hiding money or important papers for a quick escape, discussing a safety plan with children if applicable, and/or removing a gun or other weapon from the home. Finally, the participant was asked if she had a safe place to go if needed and if she had someone she could ask for an emergency loan of US$100 if she needed to leave quickly for her safety.

The participants also completed a low-literacy version of the Decisional Conflict Scale (DCS; O'Connor 1995, 1999, 2006) to assess their decision making process before and after using the safety decision aid. The DCS consists of 12 items, with each question having three response options (*yes*, *no*, and *unsure*; Table 1). Examples of the DCS questions are "Do you know the good points of remaining in the relationship?"; "Do you know the good points of ending the relationship?"; "Do you know the bad points of remaining in the relationship?"; Do you know the bad points of ending the relationship?" In addition, the DCS asks the participant, "Do you have enough support to make a choice about your safety?" and "Are you making choices about your safety without pressure from others?" The DCS provides a total score as well as scores for four subscales (Feeling Informed, Feeling Clear About Safety Priorities, Being Certain About a Safety Decision, and Feeling Supported in Their Safety Efforts), with higher scores on the DCS indicating a greater degree of decisional conflict.

The computerized safety decision aid included an activity that helped the women set priorities for safety as it related to their abusive relationship. These factors were determined through discussions with survivors, advocates, and experts. Specifically, the survivor made a series of pairwise comparisons using a sliding bar (Figure 1) to determine the relative importance of each item such as comparing the importance of "my child's well-being" to "keeping my privacy." In this figure, the sliding bar is pushed toward "my child's well-being" (79%), suggesting that this factor was 4 times more important than "keeping my privacy" (21%). The factors a woman considered included the well-being of her children (when applicable), her need for affordable housing, child care and employment, feelings for her partner, desire for confidentiality and privacy about her relationship, and personal safety. The results of the pairwise comparisons were then combined mathematically to generate preference weights (Eden et al., 2009). Each participant received a summary of her priorities. In Figure 2, the sample feedback reveals that the child's well-being and the woman's own safety were the top priorities. All participants were given the option to change their priorities during their use of the safety decision aid.

If the woman had children, she was triaged in the program to include well-being of children in the priority-setting activity. If the participant had no children, the pairwise comparisons included trade-offs related to need for resources, desire for confidentiality and privacy, feelings toward partner, and personal safety.

Once participants set their safety priorities, they completed the Danger Assessment (DA). The DA is a widely used and validated clinical and research instrument that was designed to assist abused women in assessing their danger of being murdered (or seriously injured) by their intimate or ex-intimate partner (Campbell, 2005). The DA consists of 20 dichotomous (yes/no) self-report items that asks women to report on well-established risk factors for near lethal and lethal IPV. These include a history of IPV in the relationship, the abuser's use or threat of use of a weapon, threats to kill, attempted strangulation, controlling behavior, jealousy, and forced sex, among others (Campbell et al., 2002, Glass et al., 2008).

There are two ways of scoring the DA. Users can simply count the number of "yes" responses for a raw score, with a higher number indicating that more of the risk factors for lethal violence are present in the relationship or use a validated weighted scoring algorithm

that provides levels of danger (Campbell, 2005; Campbell, Webster, & Glass, 2009). The team decided to use the DA weighted scoring for the safety decision aid because of the significant research conducted to validate the weighted score (Campbell et al., 2009). Once a woman completed the 20 items on the DA, she received a score between 0 and 38. The score was then converted to a level of danger such as (a) variable danger (a score of 0–8), (b) increased danger (a score of 9–13), (c) severe danger (a score of 14–17), or (d) extreme danger (a score of 18 and above; Campbell et al., 2009). The participant was provided with a score and specific messages about her danger level (see sample feedback in Figure 3).

After completing the demographics, safety-seeking behaviors, DCS, priorities for safety, and the DA, the woman received detailed and personalized messages about her priorities and level of dangerousness. The woman was then given an option to change her answers to reprioritize for safety after receiving the feedback. Finally, the safety decision aid also provided the user with contact information for local advocates as well as the option to print out and keep a summary of her results and personalized safety plan if she determined it was safe to have a written record.

Content validity of the safety decision aid—Once the research team completed the content of the safety decision aid, it was reviewed by five national experts in IPV for face validity. These experts made recommendations for additions and deletions in content, wording, and ease of use. After the decision aid was refined, 12 local IPV advocates who provided services to women and children through women's shelters, women's crisis lines, restraining order offices, and support groups completed the computerized safety decision aid and participated in a focus group session to provide additional feedback on the content and planned use with survivors.

Summary of focus group session with 12 advocates—The majority of advocates commented that the computerized safety decision aid allowed women to be "more honest" when answering the sensitive questions than they might be in talking with a person. The safety decision aid provided a sense of privacy not always found in talking with even the most supportive person. The advocates suggested that the safety decision aid should include more specific information in the safety plan related to children, emotional and spiritual health, legal options, and community resources. The advocates reported that the pictures and the decision aid were set up in a way to move the user from indecision to decision. However, the advocates recommended that a woman should have access to a skilled advocate either by phone or in person when she received her DA feedback, as she may not be prepared to receive the information that she is "in danger." The advocates finished the session by suggesting that the safety decision aid be available in the restraining order room of the legal system, child welfare offices, support groups settings, health care settings like the Emergency Department, and shelters.

After making the revisions as suggested by the advocates, the research team hired a translator to create a Spanish version of the safety decision aid. We then had a second translator translate the text back to English to ensure the accuracy of the text and intent. We also contracted with local domestic violence advocates to provide audio in English and Spanish for the safety decision aid, thus allowing English- and Spanish-speaking women with low literacy to have access to the safety decision aid.

Phase 2

In Phase 2 of the study, we evaluated the impact of the computerized safety decision aid on abused women's decisional conflict.

Sample and setting—Ninety women were recruited primarily in partnership with domestic violence shelters or domestic violence support groups in a three-county metropolitan Pacific Northwest area.

Women were eligible if they spoke English or Spanish, were 18 years of age or older, and reported physical and/or sexual violence within a relationship in the previous year. The time period was determined after discussions with advocates and survivors of IPV—as many women report ongoing threats of violence and stalking by an abusive ex-partner long after the relationship ends.

Procedures—Community partners provided fliers to women in shelters or support groups as well as time and space at the agency for the research assistants to set up and make the safety decision aid available for women who wished to participate. Women were also recruited via a posting on the university study participation Web site and on Craigslist for Portland, Oregon.

Women who were interested in participation contacted the study office by telephone. A trained research assistant screened potential participants for eligibility, performed informed consent over the telephone, and arranged a convenient and safe time and date to complete the safety decision aid. A bilingual, bicultural research assistant was available for Spanish-speaking women. All study contacts were conducted in accordance with established safety protocols for working with abused women (Parker, Ulrich, & Nursing Consortium on Violence and Abuse, 1990). The institutional review boards of the Oregon Health & Science University and the Johns Hopkins University approved the study.

Women were met individually in any place that was safe and convenient (e.g., domestic violence shelter, community agency, their home, a coffee shop, the research office); participation required about 1 hr of their time. Participants received US$20 compensation for their time and travel.

Each participant had access to a laptop computer and headphones to listen to the audio narration and completed the decision aid at her own pace. Research assistants were available on-site if the participants had questions, needed assistance with the computer, became upset, and/or required a referral. Following completion of the computerized safety decision aid, research assistants debriefed with participants, obtained their feedback, and provided them with a printout of their safety plans if the participant felt it was safe to leave with a written report.

Results

Demographics

The average age of the 90 participants was 34 years but ranged from 17 to 63 years old (see Table 2). Of the 90 women, 30 (33%) classified themselves as Latina. Twenty-four of the Latina participants reported primarily speaking and reading in Spanish and used the Spanish version of the decision aid. Of the remaining 60 participants, 64% identified as White, 17% as African American, 13% as American Indian, and 2% as Asian American (see Table 2). Eighty women (89%) reported having children under the age of 18 years, and 37 of these 80 (46%) reported that these children currently lived with them. Many of the participants were living in shelters or other temporary living situations; therefore, they reported that their children were staying with relatives, friends, or the biological father, and in some cases, the children were in the social service system through foster care. Twenty-eight percent of the women had completed high school or received a GED. Twenty-eight percent of the women had attended some college and 19% had a college degree. Only 7 of the 90 women still

resided with the abuser and 33 of 88 women (37%) reported working either full-time or part-time.

DA

The mean score on the DA for all women was 18.14 (scores ranged from 0 to 34) suggesting that the majority of women had been in extreme danger in their relationship within the past year. In fact, 8% of the women had scores suggesting "variable danger"; 23% were at "increased danger"; 11% were in "severe danger"; and 58% had DA scores that suggested "extreme danger" in the past year.

Safety-seeking behaviors

Out of the nine possible safety-seeking behaviors, women reported doing an average of 5.0 behaviors (*SD* = 1.56). However, the women ranged from reporting no safety activities to doing all nine. Ninety-one percent of the women reported discussing their abuse with someone. They most likely shared their concerns with a friend (64%), family member (49%), spiritual or religious advisor (34%), school staff (28%), or health care provider (26%). Fewer women discussed the violence with police (23%) or a domestic violence shelter advocate (20%). Of the 32 women reporting that their abusers threatened or used a weapon against them, 13 (40%) had removed the weapon (e.g., knife, iron bar) from the home. Of the 13 women reporting that their abuser threatened them with a gun, 10 (77%) had removed the gun from the home. Three quarters (76%) of the women kept important papers hidden (most often with a different family member) from their abuser. Sixty percent had made a safety plan, and 76% included a plan to leave the relationship. Although 60% discussed the plan with someone, they discussed the plan primarily with an informal source such as a friend or family member. Fewer women discussed their safety plans with formal sources, such as a local shelter advocate (14%), therapist (12%), doctor or nurse (7%).

DCS

Women answered 12 questions that were combined to create the scales related to certainty about their safety plan, knowledge of options, support for the decision, clarity of values or priorities, and total conflict about the safety decision. Each participant completed the DCS before and after completing the safety decision aid. For this scale, lower numbers are indicative of less conflict and a better decision process (O'Connor, 1995). After using the safety decision aid, the women felt more supported in their decision (baseline score 39.44 improved to 31.3, *p* = .012; see Figure 4). The women reported less total decisional conflict (baseline score 39.35 improved to 33.01, *p* = .014). The total decisional conflict measure is an averaged scale of the four subscales and the best measure of improvement in the decision-making process. Scores of 25 or lower on total decision conflict are associated with individuals who make decisions; scores of 37 or greater are associated with those who delay the decisions (O'Connor, 2006). The other three subscales (i.e., Certainty, Knowledge, and Clear Values) trended in the expected direction but did not show statistically significant improvement (*p* ≥ .05).

Safety priorities

As described above, the participants completed a series of pairwise comparisons that were combined mathematically to generate priority weights. Table 3 contains the average priority weights of the 76 women who had child welfare to consider in setting safety priorities. In this study, most women placed the highest priority on protecting their children, improving their own safety, and locating sufficient resources to provide for their families (Table 3). Priority weights can range from .0 to 1.0 for importance of the factor to the decision and the mean weights of all factors sum to 1.0. The priority weight was used to help guide the

women in personalizing the safety plan by seeking resources that most closely match their safety priorities in the decision. The large standard deviations (*SD* from .075 to .140) shown in this study demonstrate the need to individually evaluate priorities and not assume that all women with children have the same priorities in safety planning.

One of the quality control measures in this safety decision aid is a measure of internal consistency for the priority-weighting component. If women are consistent in setting priorities for safety (in making the pairwise comparisons among the safety factors), they will have low internal inconsistency (≥.10) and the priority weights are considered accurate (Eden et al., 2009). The mean inconsistency level was .097 (*n* = 89), which was within the recommended guideline. In previous studies using this same technique, we have demonstrated the rigor of this method to produce accurate priorities (Eden et al., 2009).

Discussion

The study demonstrated that a computerized safety decision aid improved the decision process as demonstrated by reduced decisional conflict after only one use in a racially and ethnically diverse sample of abused women.

Consistent with previous research (Campbell & Lewandowski, 1997), most women with children placed the highest priority on protecting their children; however, women also prioritized improving their own safety and locating sufficient resources to provide for their families. The safety priority-setting activity in the decision aid is unique, as it was used to personalize the action plan by developing strategies and resources for safety that most closely matched each woman's safety priorities in the decision. Practitioners and advocates cannot assume that all abused women have the same priorities and needs in safety planning. Thus advocates and practitioners could use this tool to assist women in setting safety priorities and then to provide support in response to their needs. These study data may be some of the first to quantify women's priorities in safety planning.

The majority of women reported extreme danger in their relationship within the past year as scored by the DA. The DA is typically used as a collaborative exercise between a domestic violence advocate, health care professional, and/or criminal justice practitioner and the abused woman herself (Campbell, 2005, Campbell & Glass, 2009). In previous research, only about half (45%) of proxy informants for victims of intimate partner femicide (murder of women) and slightly more than half (54%) of victims of near lethal violence accurately determined their risk of lethal violence in an abusive intimate relationship (Campbell, 2005, Campbell et al., 2009). The DA can provide powerful information for abused women and practitioners, such as health care providers as they navigate the criminal justice, advocacy, social welfare, substance abuse, batterer intervention, and/or health care systems seeking safety. As pointed out by Dutton and Kropp (2000), the use of the DA or any risk assessment method is an important step in the process of safety planning, thus important to include in the safety decision aid. Use of the DA can be helpful in substantiating the abused woman's and/or the practitioner's perception of risk of lethal violence in the relationship for use in systems such as criminal justice and advocacy services. Abused women's perception of risk of intimate partner femicide and severe violence by her partner or ex-partner should always be ascertained and taken into account in any safety-planning endeavor. The DA can help a woman come to a more realistic appraisal of her risk as well as improve the predictive accuracy of those who are trying to help her (Campbell et al., 2009).

The majority of women in this study reported that they had taken multiple steps to increase their safety and their family's safety. The women shared their experiences with a diverse group of sources, both informal and formal. However, only 60% reported having made a

safety plan and 76% included a plan to leave the relationship. Previous research has demonstrated that leaving an abusive partner is a very dangerous time for victims and a critical time for aggressive safety planning (Campbell et al., 2002; Campbell et al., 2009). Although the majority (60%) discussed the plan with someone, they discussed the plan primarily with an informal source such as a friend or family member. Fewer women discussed their safety plans with formal sources, such as local shelter advocates. Therefore providing the computerized safety decision aid in diverse settings such as welfare offices, Head Start programs, community agencies, and libraries is one step to increasing access to safety planning and to provide information about local resources and advocates. Providing access through the Internet may also increase abused women's opportunities for developing a safety plan that is personalized to their priorities and level of danger.

Limitations and future work

This sample of abused women had already sought services related to the abuse; therefore, they were likely to have been further along in their safety decision process than abused women who had not yet sought resources to address the IPV. In fact, more than 90% of these participants reported they had left the abusive relationship in the past year. These women reported that they felt supported by the safety decision aid as it provided them with information related to dangerousness that supported their instincts that the violence was increasing in severity and frequency over the past year. Furthermore, the women reported an overall lower decisional conflict than before they used the decision aid. With these survivors, we might not expect the women to feel more informed, certain about safety planning, or clear about values related to safety as most had already left the abusive relationship.

The safety decision aid was conceived and designed for abused women who are much earlier in their safety decision process, and thus it may have a larger impact in the decision process for these women. In prior decision aid development, this team has learned to first take a decision aid to users who have already made decisions to gain full understanding of the emotional response to it. The next step is to take the decision aid to the target audience (women still in unsafe relationships) and to prospectively compare the use of the decision aid against standard safety planning practice for improvements in the safety decision-making process, increased safety steps, and ultimately, reduction of violence.

In addition, the sample did not include women who were abused by a female partner. We have now revised the safety decision aid and it now includes the Danger Assessment–Revised, a version of the DA that was developed from research conducted with female victims of same-sex IPV (Glass et al., 2008).

Conclusion

This intervention is one of the first to attempt to standardize components of the safety planning process, an important cornerstone of advocacy and violence prevention services. The computerized safety decision aid employs evidence-based measures, including the DA and DCSs. The input from the participants using these validated measures produces tailored messages to support their individualized safety plan.

Although this initial evaluation demonstrated that a single session with the computerized safety decision aid was beneficial to abused women, we expect that the benefit may be greater for women who are in earlier stages of the safety decision process. Women may leave and return several times during an abusive relationship before ending the relationship; therefore, we believe an additional benefit of the safety decision aid is to provide women with ongoing access. The research team is currently developing a password-protected Web

site for women to access the safety decision aid online when safe and convenient so that they can update their safety behaviors, safety priorities, and risk factors for lethal violence, allowing them to develop a personalized safety plan based on updated information throughout their decision process.

Acknowledgments

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Biographies

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Nancy Perrin, PhD, is a senior investigator at The Center for Health Research, Kaiser Permanente, Northwest, Portland, Oregon. She is a methodologist and statistician with interests in longitudinal and multivariate data analyses.
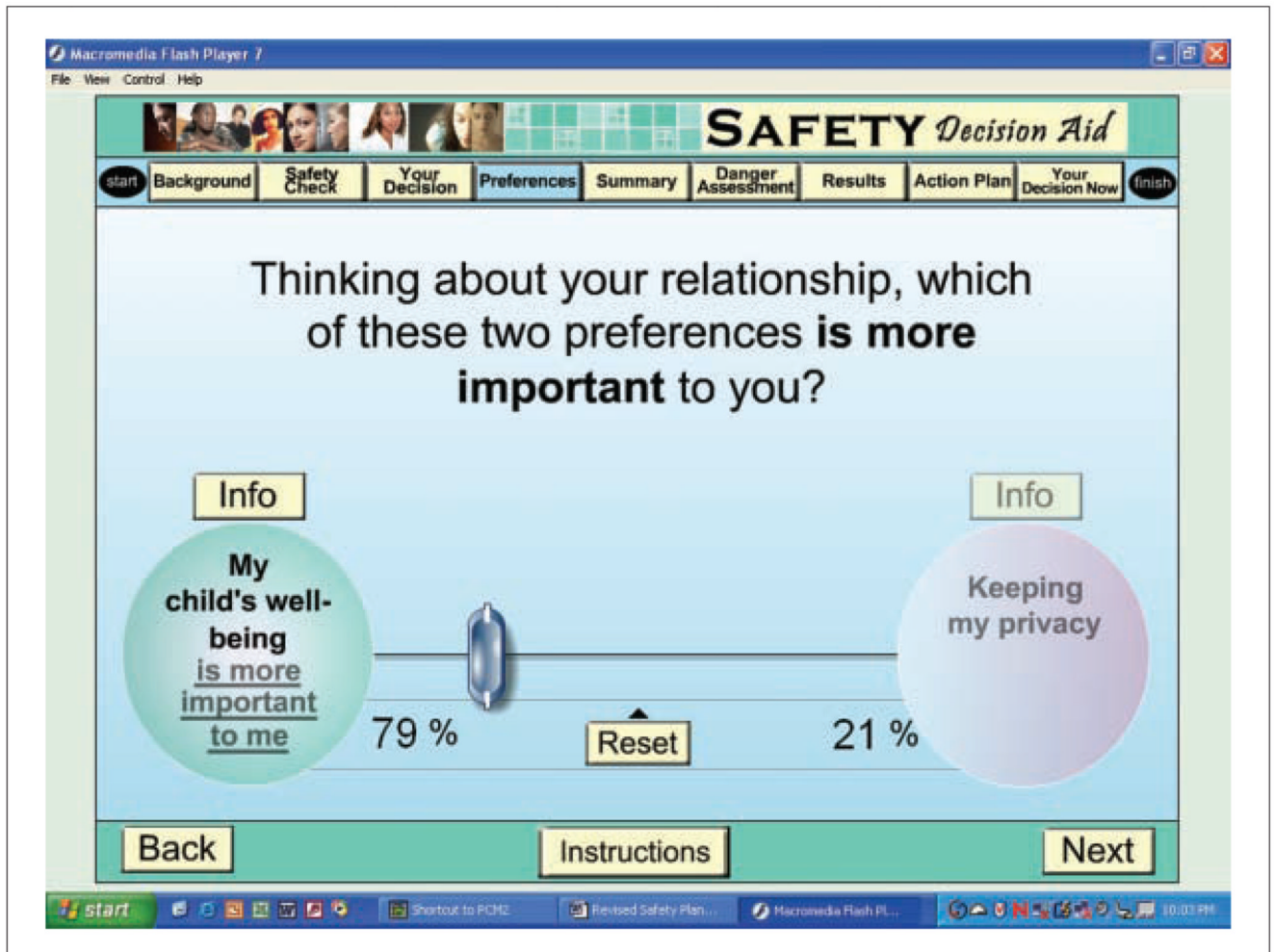
Figure 1.
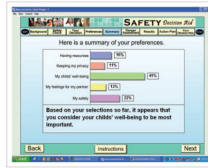Screen shot of a sample pairwise comparison

Figure 2.
Sample feedback of safety priorities

Figure 3.
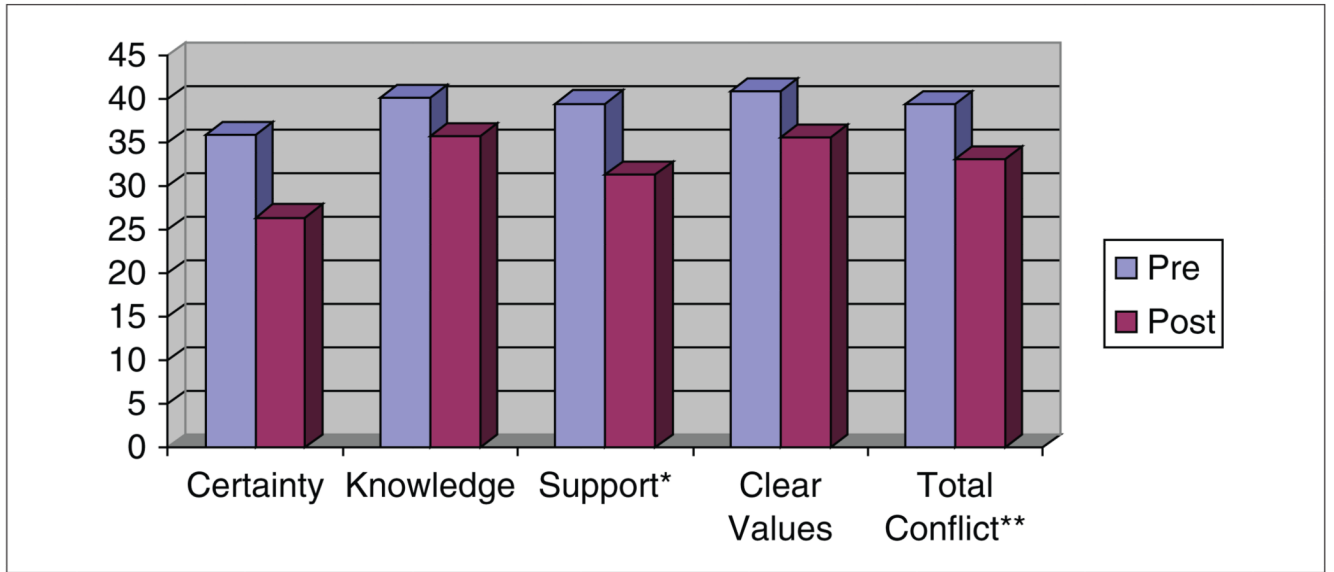Sample Danger Assessment score and level of danger

Figure 4.
Decisional conflict measured pre- and postsafety decision aid *p = .012. **p = .014.

Table 1

Measurement of the Decision Process (Decisional Conflict Scale)

Subscale	Statements
Feeling Informed	Do you know what your options for safety are?
Feeling Informed	Do you know the good points of remaining in the relationship?
Feeling Informed	Do you know the good points of ending the relationship?
Feeling Informed	Do you know the bad points of remaining in the relationship?
Feeling Informed	Do you know the bad points of ending the relationship?
Clear Values	Are you clear about which good points are most important to you?
Clear Values	Are you clear about which bad points are most important?
Support	Do you have enough support to make a choice about your safety?
Support	Do you have enough advice to make a choice about your safety?
Support	Are you making choices about your safety without pressure from others?
Certainty	Are you clear about the best choice for your safety?
Certainty	Do you feel sure about what option to choose for your safety?

Table 2

Characteristics of Participants (*n* = 90)

Age at participation (yrs), *M* ± *SD*	34 ± 11.5	17–63 yrs
Ethnicity and acculturation		
Latina	30 (33%)	
Mostly spoke Spanish	24 (27%)	
Not born in the United States	26 (29%)	
Race (for non-Latina, *n* = 60)		
White	38 (64%)	
African American	10 (17%)	
Native American/Alaskan	8 (13%)	
Asian	1 (2%)	
Other	1 (2%)	
Didn't specify	1 (2%)	
Married		
Yes	18 (20%)	
Years of marriage, Mean	11	1–23 yrs
Divorced		
Yes	15 (17%)	
Years since divorce, Mean	9	1–28 yrs
Separated		
Yes	26 (29%)	
Years since separation, Mean	2	0–4 yrs
Currently reside with abuser		
Yes	7 (8%)	
Have children		
Yes	80 (89%)	
Education		
Some school	9 (10%)	
GED/HS diploma	25 (28%)	
Some college	25 (28%)	
College degree	17 (19%)	
Postbaccalaureate	6 (7%)	
Didn't specify (6 of 8 Latina)	8 (9%)	
Currently enrolled in school		
Full-time	9 (10%)	
Part-time	25 (28%)	
Currently employed		
Full-time	16 (18%)	
Part-time	17 (19%)	

Table 3

Women's Priorities in Safety Planning (for the 76 Women Who Had Children to Consider)

Decision Factor	Minimum	Maximum	*M*	*SD*
Children's welfare	0.072	0.676	0.392	0.140
Personal safety	0.050	0.569	0.237	0.102
Resources	0.030	0.416	0.172	0.071
Privacy	0.024	0.412	0.113	0.080
Feelings for partner	0.022	0.361	0.087	0.075