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Violate My Beliefs? – Then You’re to Blame! Belief Content as an Explanation for Causal Attribution Biases

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Abstract

We examined the extent to which the content of beliefs about appropriate behavior in social situations influences blame attributions for negative outcomes in relationship situations. Young, middle-aged and older adults indicated their level of agreement to a set of traditional and non-traditional beliefs. Five months later, we assessed the degree to which these same individuals blamed traditional and nontraditional characters who violated their beliefs in twelve social conflict situations. Older adults held more traditional beliefs regarding appropriate relationship behaviors (e.g., the acceptability of pre-marital sex). Individual differences in the content of one’s beliefs were needed to understand age-related patterns in blame attributions; for example, adherence to traditional beliefs about appropriate relationship behaviors led to higher responsibility and blame attributions towards characters behaving in ways that were inconsistent with these beliefs. Structural regression models showed that beliefs fully mediated the effects of working memory and need for closure on causal attributions, and partially mediated the effects of age and religiosity on attributions. Personal identification with the characters had additional, independent effects on attributions. Findings are discussed from the theoretical perspective of a belief-based explanation of social judgment biases.

Keywords

aging; attitudes; beliefs; causal attributions

Research on social cognition and aging has shown that older adults tend to rely on heuristic processing when making social judgments, increasing their susceptibility to social judgment biases (Chen & Blanchard-Fields, 2000; Hess, McGee, Woodburn & Bolstad, 1998; Klaczynski & Robinson, 2000). For example, older adults form impressions that are biased toward an explicitly presented primed construct (Hess et al., 1998), make errors in source attributions by relying on easily accessible stereotypic information (Mather, Johnson, & De

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Leonardis, 1999), and respond on the basis of habit rather than recollection in memory tasks (Jacoby, 1999). Older adults also rely more on dispositional inferences than younger adults when making causal attributions about negative relationship dilemmas (Blanchard-Fields, 1994; Blanchard-Fields & Norris, 1994) and in correspondence bias paradigms (Blanchard-Fields & Horhota, 2005; Follett & Hess, 2002). In doing so, older adults give less emphasis to situational factors, including extenuating circumstances, that could have contributed to the outcome of the dilemma (Blanchard-Fields, 1994; Blanchard-Fields & Beatty, 2005; Blanchard-Fields, Chen, Schocke, & Hertzog, 1998; Blanchard-Fields & Horhota, 2005; Follett & Hess, 2002).

The purpose of the present study was to identify mechanisms that might explain age differences in dispositional inferences when making causal attributions. One plausible explanation is a decline in cognitive processing resources with age (Salthouse, 1991; Park & Schwarz, 2000). Aging-induced limitations in processing capacity may force older adults to rely on easily accessible dispositional information (Hess et al., 1998). The ability to make deliberative social judgments depends upon the cognitive demand accompanying attributional processing (Gilbert & Malone, 1995; Trope & Gaunt, 2000). Considering situational factors when making causal attributions requires more resource-demanding, deliberative processing, whereas dispositional inferences are relatively automatic and spontaneous. Older adults' lower levels of attentional and working-memory resources could cause them to rely more on automatic dispositional inferences.

Alternatively, age differences in causal attributions could also reflect motivated social cognitive processing (Hess, 2006; Hess, Leclerc, Swaim, Weatherbee, 2009; Hess, Germain, Swaim & Osowski, 2009; Jost, Glaser, Kruglanski, & Sulloway, 2003). Several social constructs, such as need for closure (Kruglanski & Webster, 1997; Webster & Kruglanski, 1994) and the related concept of need for structure (Neuberg & Newsom, 1993) reflect the desire to come rapidly to a firm conclusion on a given topic as opposed to tolerating uncertainty about the situation. Age differences have been observed in several aspects of this construct, including the preference for coming to a rapid judgment on the basis of evaluating a minimum of information (e.g., Blanchard-Fields, Hertzog, Stein, and Pak, 2001; Hess, 2001). Need for closure has been associated with tendencies to engage in social stereotyping (Kruglanski & Freund, 1983), primacy effects in impression formation (Webster & Kruglanski, 1994), and the correspondence bias in attitude attribution (Webster, 1993). For older adults, the tendency to make rapid dispositional attributions may be partially motivated by a focus on conserving diminishing cognitive resources (Hess, 2006; Hess, Emery & Neupert, 2010; Hess, Leclerc, Swaim & Weatherbee, 2009). In this sense, both reduced processing resources and motivated social information processing could play a role, with reduced resources being one of the influences on older adults' increased need for closure.

What other variables might serve as sources of such motivations regarding social information processing? One set of influences involves acculturation into social groups, such as religious organizations or political groups, that vary in adherence to different sets of values, attitudes, and beliefs. Recent studies indicate that such groups also have a stronger propensity for closure regarding the truth and applicability of those values, attitudes, and beliefs (e.g., Brandt & Reyna, 2010; Jost et al., 2007; Matthews, Levin, & Sidanius, 2009). Older adults are, on average, more likely to belong to formal religions and engage in religious practices than the current cohorts of younger adults (Schwadel, 2011). Religiosity predicts need for closure and adherence to traditional family values in older adults (e.g., Blanchard-Fields et al, 2001) and it has been found to predict dispositional attributions in a correspondence bias paradigm that involved an essay about prayer in schools (Horhota & Blanchard-Fields, 2006). Hence religiosity represents one potential cause of age differences

in dispositional biases, with the likely mediator of such differences being the particular set of beliefs held by the individual.

Age differences in causal attributions are not observed for all types of hypothetical situations. Age differences have been found primarily in relationship situations resulting in a negative outcome (e.g., divorce) but do not appear in attributions for achievement situations or relationship situations with positive outcomes (Blanchard-Fields, 1999; Blanchard-Fields et al., 1998). Age differences in correspondence bias paradigms are reduced when individuals are motivated to process the information more deeply (Blanchard-Fields & Horhota, 2005). Furthermore, cultural differences in beliefs produce a smaller correspondence bias for older adults in Chinese cultures (Blanchard-Fields, Chen, Horhota & Wang, 2007). Therefore, older adults' greater propensity for heightened dispositional attributions is probably not merely a function of a generalized resource deficit or a general motivational tendency to avoid engaging in elaborative social inferencing (see Blanchard-Fields & Hertzog, 2000). A candidate explanation of age differences in causal attributions must in principle account for the moderating effect of social situation. A simple resource-deficit explanation does not predict such moderated age effects.

The founding hypothesis for this study was that situational specificity regarding the appearance of age differences in causal attributions can be explained by age differences in beliefs about appropriate behaviors in specific social contexts. When an individual is confronted with particular problem situations, the content of personally relevant social schemas (i.e., declarative propositions about acceptable and unacceptable behaviors in social situations that derive from social rules or norms) are activated and subsequently guides attributions made about the causes of the problem (e.g., Bargh, 1997; Gilbert & Malone, 1995; Fazio, Sanbonmatsu, Powell, & Kardes, 1986). The particular social schemas held by an individual are determined by values and practices in their larger culture, but in their local subculture as well (e.g., religious groups, political parties, and other social circles). Individuals vary in the extent to which they are schematic for particular beliefs, with the term schematicity referring to the speed at which such beliefs become accessible when triggered by a relevant situation (Fazio, 1995; Krosnick & Petty, 1995; van Harreveld, van der Pligt, de Vries & Andreas, 2000).

Accordingly, we argue that social situations vary in the extent to which the events will trigger the retrieval of social schemas regarding how a character should behave in those situations (Blanchard-Fields, 1996; Blanchard-Fields & Hertzog, 2000; Chen & Blanchard-Fields, 1997). For example, Blanchard-Fields et al. (1998) found that individuals who focused their attention on a particular character in a problem situation (i.e., stated that the character violated an important social rule) tended to focus blame on that character despite the influence of other characters and situational factors. Similarly, Chen and Blanchard-Fields (1997) found that older adults' dispositional inferences were related to post-hoc justifications that reflected characters' adherence or violation to raters' values and beliefs.

The present study evaluated age differences in the content of relevant social beliefs and values that could account for age differences in causal attributions. Instead of relying on the analysis of post-hoc justifications for causal attributions, as in our earlier work, we independently measured agreement with statements that had been written to capture social schemas concerning appropriate behaviors in the relationship situations described in our social vignettes. Further, we organized these statements according to whether they were consistent or inconsistent with traditional values and beliefs (Blanchard-Fields, et al., 2001).

Traditional values are defined as social norms and rules for relationship behaviors that have been widely and consistently accepted in the targeted culture (in our case, the United States)

over an extended historical period. Adherence to traditional values and beliefs carries with it specific totems and taboos (prescriptions and proscriptions) about appropriate behaviors in relationships. In the case of romantic relationships, traditional values and expectations in American culture involve the institution of marriage and the nature of permissible romantic and sexual behaviors during the idealized process of courtship, engagement, and marriage. We hypothesized that endorsement of social schemas consistent with traditional values would predict causal attributions towards vignette characters behaving in ways that are consistent or inconsistent with traditional norms and values. For example, if one believes in the sanctity of marriage and that divorce is a taboo to be avoided at all costs, then an individual initiating a divorce proceeding will be judged more harshly than one trying to preserve the marriage, even in the face of marital dysfunction. Likewise, viewed from the lens of traditional values, individuals engaging in premarital sexual intercourse will be judged more harshly if the relationship ends without culminating in marriage than individuals who abstained from premarital sex, as dictated by traditional mores, prior to a relationship's dissolution.

Older adults' greater endorsement of traditional beliefs may render them more likely to make dispositional attributions about characters whose relationship behaviors violate those beliefs. Although older adults may have sufficient cognitive capacity to engage in elaborative cognitive processes when making causal attributions, they may not do so when strongly-held beliefs about appropriate behaviors are violated by a character in a social situation. Conversely, individuals adhering to nontraditional social schemas should be predisposed towards higher dispositional attributions about characters who behave in ways that validate traditional social rules. Our principal hypothesis, then, is that individuals' endorsement of traditional and nontraditional social schemas will predict the dispositional attributions that they make about characters' behavior in social situations with negative outcomes. In particular, if a character violates an individual's social schemas, the individual should be more likely to blame the character for the negative outcome.

We also measured individual differences in cognitive resources, styles of social information processing, religiosity, and gender role orientation that could influence causal attributions in social scenarios. We hypothesized that these variables would correlate with the degree to which individuals endorsed traditional and nontraditional social schemas. A relevant question, then, was whether variables such as working memory capacity and need for closure would predict causal attributions, especially when controlling for relevant social schemas. Our hypothesis was that any effects of these two variables would be fully mediated by social schemas, eliminating any direct effect of them on causal attributions. Such a finding would argue against the reduced resource and foreclosed thinking style explanations for age differences in dispositional attributions. Instead, working memory capacity and need for closure would either be (1) distal influences on the proximal influence of social schemas or (2) causally spurious attributes that correlate with adherence to traditional beliefs about acceptable relationship behaviors.

Method

Participants

Three-hundred and eighteen individuals (aged 18–83, $M = 46.53$, $SD = 20.61$) were recruited from the metropolitan Atlanta area. Young participants were students at a southeastern university and received extra class credit for participation. Middle-aged and older participants were community dwelling and monetarily compensated. Demographic information is summarized in Table 1.

Measures

Two cognitive ability measures were included. Working memory was measured using the Operation span task developed by Engle, Nations, and Cantor (1990) and verbal ability was measured using the Shipley Vocabulary Test (Shipley, 1986).

Cognitive Style of information processing was assessed using the Need for Closure Scale (NFCS; Webster & Kruglanski, 1994) and the Intolerance for Ambiguity Test (IAT) (Budner, 1962). The NFCS assesses the aversion towards ambiguity and need for firm answers to questions whereas the IAT assesses the tendency to perceive ambiguous situations as undesirable.

Social background variables included the Traditional Family Ideology Scale (TFIS; Levinson & Huffman, 1955), the Bem Sex Role Inventory (BSRI; Bem, 1974), and the Springfield Religiosity Scale (Koenig, Smiley, & Gonzales, 1988). The TFIS assesses family values along an autocratic-democratic continuum. Two subscales of the Bem Sex Role Inventory, Interpersonal sensitivity and Instrumentality, were used to assess self-perceptions of masculine and feminine personality traits (Blanchard-Fields, Suhrer-Russel, & Hertzog, 1994). Two subscales of the Springfield Religiosity Scale, Ritual Practice and Faith in God/theology, were used to survey participants' religious beliefs. Further descriptions of the above individual difference measures can be found in Blanchard-Fields et al. (2001).

Warm up Reaction Time Tasks

Three computerized warm up tasks were aurally presented over head phones. First, auditory familiarization asked participants to adjust the volume on their headphones until they felt they could hear clearly. Category verification presented participants with a category name (e.g. Fruit) followed by a noun after a one second delay. Participants verified whether the noun (e.g. APPLE) was a member of the category, fruit. Finally, fact verification asked participants to agree or disagree with a set of common and well-known facts, some of which were true and others of which were false. The purpose of these tasks was to insure adequate hearing levels for the main task and to train adults in the use of our apparatus.

Vignettes and Attribution Task

Twelve vignettes involving everyday social dilemmas within the romantic relationship and family (typically, parent-child relationships) domains were adapted from previous research (Blanchard-Fields, et. al., 1998; Blanchard-Fields & Beatty, 2005). Each vignette consisted of two characters, one representing traditional values and the other representing nontraditional values, embroiled in an interpersonal conflict (see Appendix for examples). The contexts covered such issues as relationship breakups, decisions to marry, parent-child conflicts about moving and autonomy, and caring for an older parent. The relationship and parent-child vignettes were presented in a randomized order to participants.

After reading each vignette, participants immediately answered attribution questions for each character that appeared in the vignette. Although a larger attribution rating questionnaire was presented to the participants (see Blanchard-Fields et al., 1998), we focus in this paper on the two evaluative dispositional attributions that were included in the questionnaire. The *responsibility* item, "How much do you think the character is responsible for the outcome?", and the *blame* item, "How much do you think the character is to blame for the outcome?" were highly correlated, with Pearson's *r* ranging from .64 (for traditional characters in family situations) to .71 (for nontraditional characters in family situations). Therefore the responsibility and blame items were averaged into a single responsibility and blame (RB) attribution rating. Participants also evaluated *personal identification* with each

character with a single item that read, “To what degree do you identify with the character in this situation?” Each question was rated on a 7-point Likert scale, with 1 indicating not at all and 7 indicating a great deal.

Schema Verification Task

Social schemas were identified in three ways. First, each vignette was written so that a key social schema (i.e., proscription or prescription regarding social behavior such as “One should not cohabitate before marriage”) was violated by one of the characters. Second, a schema elicitation task patterned after Graesser and Clark (1985) was used to identify additional social beliefs about the situations represented in the vignettes on an independent cross-sectional sample (see Blanchard-Fields & Hertzog, 2000 for details). Social schemas included social beliefs and values (e.g., “Ignore pressure from friends when making any decision about a romantic relationship”) as well as tacit knowledge about relationships (e.g., “You don’t understand someone until you have lived with them”). Finally, we independently generated social belief statements that at face value were relevant to the vignettes’ content. These three methods provided us with 212 content-specific social schema and tacit knowledge statements that are evoked by the situations represented in the vignettes. Examples of the schema statements are provided in the Appendix. It should be noted that several schema statements were applicable across multiple vignettes.

A male and a female experimenter read the 212 schema and tacit knowledge statements along with 46 filler fact neutral statements (e.g. In the U.S. in 1994, there were approximately 4 million births and 2.3 million deaths) which were recorded and digitized for computer presentation. Respondents were assigned at random to hear a male or female voice, and presentation order of the statements was fully randomized. After listening to each statement, participants were asked to agree or disagree as rapidly as possible with the schema or fact neutral statements by pressing one of two buttons on a computer keyboard. For each vignette, participants’ agreement or disagreement to the relevant social schema statements defined the content of their belief system regarding that situation. Response latency was recorded as a measure of belief schematicity.

Procedure

The study took place in two phases each five to six months apart. In the first session, participants completed a demographics questionnaire, the cognitive ability measures, the cognitive style measures, the social background measures, followed by the computerized warm up and schema verification tasks. In the second session, participants completed the attribution task. A majority ($n = 224$) of the original sample of 318 participants returned to complete the second session. Analyses comparing participants who returned versus those who did not showed no meaningful differences between the two groups.

Results

Our main hypothesis was that age differences in social schemas would account for the age differences in attributions. To address this hypothesis, we first had to create scales from the schema verification task capturing these beliefs and then confirm that age differences emerged in these scales. Next, we examined age differences in dispositional attributions. Finally, we estimated a model predicting attributions for traditional and nontraditional characters on the basis of relevant social beliefs, such as religiosity, schema endorsement, traditional values, and cognitive variables.

Schema Verification Task

We first conducted preliminary factor analyses of the binary (agree/disagree) responses from the schema verification task. All relevant items for each domain were first analyzed in an exploratory factor analysis, using unweighted least-squares extraction and promax rotation. Scree tests suggested four factors in the family domain and five factors in the romance domain. We then deleted items with communalities below .10 and assigned items to factors based on the exploratory factor solution. In the event that an item loading was split across multiple factors, we evaluated each item and assigned the item to a single factor based on the face validity of the item. Finally, we conducted a confirmatory factor analysis to finalize the factor solution.

Based on the item factor analysis, we computed 9 scale scores from the schema verification task agree/disagree responses by summing items (after reverse scoring of negatively weighted items). Table 2 describes the nine scales. On average, individuals were missing 1.5 item responses out of 212 possible responses due to a variety of factors (usually caused by anticipatory responding prior to the end of the auditory schema stimulus). We substituted the sample item mean for these responses before scale computation. Considering the binary response format and limited numbers of items per scale, the internal consistency (coefficient alpha) reliabilities for the scales were moderate in magnitude but acceptable.

Schematicity of responses—We attempted to produce indices of schematicity using several approaches to define responses for which an individual had exceptionally fast agree responses, relative to the distribution of all the individual's response times to schema verification statements. These efforts proved to be largely fruitless; fast responses were not consistent across the factors listed above and showed little evidence of correlation with other variables described below. In hindsight, the audio statements varied in when individuals could discern, on the basis of grammatical constraints, what the content of the schema would be. Moreover, whether such rapid identification would occur would depend on a number of factors, including the language abilities of the participant. Such effects may have introduced too much experimental error into the schematicity indices to produce reliable patterns of schematicity across statements within a relationship belief category. Hence we dropped the attempt to scale strength of beliefs in terms of response time to schema verification statements.

Age Differences in Relationship Beliefs

Our next step was to evaluate age differences in relationship beliefs as measured by the nine scale scores from the schema verification task. We divided the adults into young (aged 18–34, $M = 21.24$, $SD = 3.56$), middle-aged (aged 35–59, $M = 48.38$, $SD = 6.93$), and older groups (aged 60–83, $M = 69.58$, $SD = 5.16$). An Age by Gender (3×2) MANOVA analyzed the nine scales, using the complete sample of 318 persons. The multivariate main effects for Age, Wilk's $\Lambda = .53$, $F(18, 608) = 12.45$, $p < .001$, and Gender, Wilk's $\Lambda = .89$, $F(9, 304) = 4.19$, $p < .001$, were significant. The Age X Gender interaction was not statistically significant ($p = .309$).

To isolate univariate effects, we applied a sequential Bonferroni-adjustment for critical p -values of univariate F -tests with a family-wise error rate criterion of .10 (Benjamini & Hochberg, 1995). A summary of the univariate F -tests and effect sizes is provided in Table 3. The fitted marginal means are displayed in Figure 1. Robust age differences emerged on all scales ($p < .001$) except for Contemporary Couples ($p = .020$) and Tacit Knowledge ($p = .081$). Older adults were more traditional about relationship values than middle-aged and young adults and more traditional than young adults concerning intimacy. Young adults were lower on negative ideation about relationships and contemporary couple values than

middle-aged and older adults and lower than older adults regarding the consideration of others. In the family domain, older and middle-aged adults scored higher in endorsement of parental authority. In addition, young adults scored higher than the other age groups on children's rights.¹

In summary, the schema-verification task produced the hypothesized age differences in values and attitudes concerning relationships, diverging from the minimal age differences found on the TFIS scales by Blanchard-Fields et al. (2001). TFIS items are written in a dated style and focus on traditional views of dominance and power in relationships, such as the male as the center of the household authority and decision-making, which have shifted in American society over the last fifty years. The scales deriving from the schema-verification task appear to better capture current generational differences in traditional and nontraditional social schemas. This outcome supported the argument that age differences in belief content in the new scales could help explain age differences in causal attributions in relationship contexts.

Age and Differences in the Causal Attribution Task

Responsibility/blame ratings (RB)—Aggregated for all target characters, the correlation of age with the RB index was .26, $p < .01$, with older adults blaming targets more than other age groups. We also aggregated RB ratings for traditional and nontraditional characters, separately in the romance and family domains. An Age by Gender MANOVA revealed significant age differences, Wilk's $\Lambda = .897$, $F(8, 430) = 3.23$, $p < .001$, partial $\eta^2 = .060$. There was no main effect of Gender, $F < 1$, partial $\eta^2 = .01$, nor was there an Age X Gender interaction, Wilk's $\Lambda = .897$, $F(4, 215) = 3.23$, $p < .001$, partial $\eta^2 = .02$.

The age differences on all four univariate tests of age differences were statistically significant after sequential Bonferroni adjustment. The largest age effects were for attributions in the romance domain, $F(1, 218) = 12.64$, $p < .001$, partial $\eta^2 = .10$ and $F(1, 218) = 7.65$, $p < .001$, partial $\eta^2 = .07$, for nontraditional and traditional characters, respectively. The age differences for the family domain were significant, $F(1, 218) = 4.76$, $p = .009$, partial $\eta^2 = .04$ and $F(1, 218) = 3.88$, $p = .022$, partial $\eta^2 = .03$, for nontraditional and traditional characters, respectively. Age group marginal means are plotted in Figure 2. In all cases, older and middle-aged adults had reliably higher RB attributions than younger adults but older adults and middle-aged adults were not reliably different from one another. These age differences are consistent with earlier work by Blanchard-Fields and colleagues, generally (e.g., Blanchard-Fields et al., 1998), and specifically with the previous study examining causal attributions for these vignettes (Blanchard-Fields & Beatty, 2005).

Identification ratings—We also evaluated whether participants identified with traditional and non-traditional characters in the relationship vignettes. An Age by Gender MANOVA revealed significant gender differences, Wilk's $\Lambda = .932$, $F(4, 215) = 3.95$, $p = .004$, partial $\eta^2 = .07$ and age differences, Wilk's $\Lambda = .868$, $F(8, 430) = 3.95$, partial $\eta^2 = .07$, but there was no Age X Gender interaction, $F < 1$, partial $\eta^2 = .01$. Examination of the univariate tests showed significant differences only in identifying with traditional characters in family situations for both Gender, $F(1, 218) = 8.07$, $p = .009$, partial $\eta^2 = .03$, and Age, $F(2, 218) = 8.58$, $p < .001$, partial $\eta^2 = .06$. Older adults identified reliably more with traditional characters than younger adults ($M_{older} = 4.7$, $SE = 0.12$; $M_{young} = 4.0$, $SE = 0.14$), and

¹Gender differences were found for two romantic relationship scales. The first was Traditional Relationship Values, $F(1, 312) = 6.23$, $p = .013$, partial $\eta^2 = .02$. Men agreed more often with traditional statements than women ($M_{male} = .60$, $SE = .01$; $M_{female} = .54$, $SE = .01$). The second significant difference was for Contemporary Couples, $F(1, 312) = 6.14$, $p = .014$, partial $\eta^2 = .02$. Women agreed more often with contemporary values statements than men ($M_{male} = .81$, $SE = .01$, $M_{female} = .85$, $SE = .01$). In both cases, women were less traditional about romantic relationships than males.

neither group differed reliably from middle-aged adults ($M_{middle-aged} = 4.5$, $SE = 0.12$). Given that traditional characters in the family situations were typically parents with children, the age-graded patterns of identification were sensible.² Blanchard-Fields and Beatty (2005) did not previously observe age differences in personal identification with the vignette characters, but that study had a much smaller sample size and hence lower statistical power to detect significant effects.

Structural Equation Model for Attributions for Traditional/Nontraditional Characters

The larger question was whether age differences in causal attributions were mediated (see MacKinnon, 2008) by beliefs about appropriate relationship behaviors.

To address this issue, we estimated a model predicting RB attributions for traditional and nontraditional characters on the basis of relevant beliefs and other variables. Despite divergent age trends, the schema verification task scales that measured traditionalism and the TFIS scales were significantly correlated (mean $r = .40$). Confirmatory factor analysis of the nine schema verification scales and the TFIS scales showed that these measures could be used to define belief latent variables, provided that the divergent age trends for schema verification and TFIS scales were modeled through a TRAD Method factor (see Table 4) that had a negative relationship to chronological age. This factor was needed because TFIS scales correlated with schema measures but had little relationship to age; it can be thought of as capturing the obsolescence of the dated TFIS items that suppresses age differences in beliefs. The substantive factors were (a) traditionalist beliefs in both the romance (R-TRAD in the model) and family domains (F-TRAD in the model) and (b) tacit knowledge about relationship situations which is referred to in the model as Interpersonal Relationship Experience (IRE) to avoid confusion with the tacit knowledge schema scale). Note that nontraditional schema verification scales loaded negatively on the R-TRAD and F-TRAD factors.

Our structural equation model predicted blame attributions for traditional and nontraditional characters from belief constructs, based on the measurement model reported in Table 4.³ In addition to the beliefs latent variables defined in Table 4, the model also included the latent predictors of Need for Closure, Religiosity, Working Memory, Vocabulary, and Interpersonal Sensitivity, along with chronological age. Need for Closure and Religiosity were specified as latent variables measured by multiple scales (Closure: NCFS Predictability, NCFS Structure, IAT Tolerance for Ambiguity; Religiosity: Springfield Ritual Practice and Faith in God/theology subscales). The remaining variables were defined by a single test or scale.

Given that more participants completed the questionnaires and the schema verification task than completed the attribution task (Table 1), we employed Full-Information Maximum Likelihood estimation in LISREL 8.52 (Joreskog & Sorbom, 2003) to use all available data on all measures under missing-at-random assumptions (5.5% of the data points were missing). Our accepted model fit the data well, $\chi^2 = 422.00$, $df = 214$, Steiger's (1990) Root Mean Square Error of Approximation (RMSEA) = .055, which was not reliably different from the benchmark of .05 for a close fit ($p = .22$).

Table 4 reports the estimated factor loadings for all latent variables in the model. All latent variables were well-defined. Figure 3 depicts the standardized regression coefficients for the

²Women identified more with traditional characters in the family situations than men ($M_{female} = 4.6$, $SE = 0.1$, $M_{male} = 4.2$, $SE = 0.1$).

³The orthogonal TRAD method factor was included in subsequent models, but is omitted from reported results and interpretation of results to simplify the treatment of the modeling results.

accepted model. Standardized total effects for key predictor variables are provided in Table 5. The squared multiple correlations (SMCs; analogous to R^2 in multiple regression), indicating the proportion of variance in RB attributions accounted for by all predictors, were .16, .15, .26, and .13 for nontraditional family characters, traditional family characters, nontraditional romance characters, and traditional romance characters, respectively. The model had several key features and results regarding patterns of prediction of causal attributions.⁴

First, we formed a higher-order Traditionalism latent-variable from the Traditionalism-Romance and Traditionalism-Family latent variables. In both the romance and family domains, individuals who held traditional beliefs blamed nontraditional characters for negative relationship outcomes. Second, individuals who scored high on Interpersonal Relationship Experience blamed traditional characters for negative relationship outcomes in both domains.

Third, Religiosity had modest direct effects on RB attributions in the romance domain, and indirect effects mediated through the significant relationship of Religiosity to Traditionalism. The standardized total effect (sum of the standardized direct effect, as in Figure 3, and standardized indirect effects) of Religiosity on RB attributions for nontraditional romance characters was .29, with .10 being mediated by Traditionalism (the sole mediator for Religiosity).

Fourth, high Need for Closure was related to high Traditionalism and IRE. Furthermore, the two beliefs latent variables and Religiosity completely mediated the .20 and .21 total effect of Closure on family and romance RB attributions, respectively (there was no direct effect of Closure on attributions). Fifth, the vocabulary and working memory resource variables had limited predictive utility for RB attributions. Social schemas and beliefs were a far more potent predictor of causal attributions.

Sixth, age had significant effects on beliefs, and these effects mediated much (but not all) of the age-related variance in RB attributions. As hypothesized, older adults' tendency to attribute more blame to characters for negative outcomes was influenced by age differences in both Interpersonal Relationship Experience and Traditionalism.

Finally, the model estimated residual covariances among the four RB attribution variables (not depicted in Figure 3). These covariances were significantly different from zero, with a mean standardized residual correlation of .50. Apparently there was substantial variance shared among the attribution ratings that was not accounted for by the predictors. Some of this variance is likely due to method-related sources (i.e., behavior in using the attributions' Likert rating scale), but other influences on causal attributions probably remain to be identified.

We tested an alternative model in which Traditionalism-Romance predicted attributions for romance vignettes, and Traditionalism-Family predicted attributions for family vignettes (as opposed to the general, higher-order Traditionalism latent variable already reported). This model produced significant domain-specific regression coefficients, but did not fit the data substantially better than the more parsimonious model with a general traditionalism effect, $\chi^2 = 414.25$, $df = 213$, RMSEA = .055, $p(\text{close fit}) = .16$.

The structural regression model demonstrated the central importance of social schema content for causal attributions in social situations. Other variables already identified in the

⁴Additional information about the structural regression models' solutions is available from the corresponding author by request.

literature, including need for structure, had relatively weak direct effects, and exerted most of their influence on attributions indirectly through social schemas.

Model Including Personal Identification with Target Characters

We expanded the predictive model to include measures of rated identification with each target character in addition to the predictors used in our previous model. Given that Blanchard-Fields and Beatty (2005) found that personal identification with characters predicted RB attributions, the major question was whether effects of social schemas on RB attributions would be mediated by personal identification, or alternatively, whether including personal identification eliminates independent effects of social schemas on attributions.

Overall, the model fit well, $\chi^2 = 533.59$, $df = 296$, $RMSEA = .050$, $p(\text{close fit}) = .46$. Although this model is not directly comparable to the accepted model shown in Figure 2 given differences in the variables included, one can compare RMSEA indices to evaluate whether adding the identification variables degraded the fit of the model. Clearly it did not; in both cases, the RMSEA was approximately .05 and the associated test of close fit could not be rejected. Adding the personal identification variables to the model did not distort model fit.

In general, identification with traditional characters led to higher blame of nontraditional characters; identification with nontraditional characters led to reliably higher blame of traditional characters and to absolution of nontraditional characters. SMCs for attributions to nontraditional characters were essentially unchanged (.16 for family situations, .26 for romance situations); SMCs for traditional characters increased slightly to .15 and .13 for family and relationship domains, respectively. Although identification added some new predictive power in accounting for RB attributions, it only mediated a very small portion of the relationship of social schemas and beliefs to RB attributions. Likewise, personal identification did not mediate any additional age-related variance in RB attributions. Hence, adding personal identification accounted for additional variance in RB attributions but did not alter inferences about the importance of social schemas as predictors of RB attributions. In particular, the effects of social rules on causal attributions cannot be reduced merely to an individual's pattern of personal identification with a character in the vignette.

Discussion

Individual differences in the content of social schemas regarding appropriate relationship behaviors are needed to understand blame attributions for negative relationship situations. We found that constructs frequently invoked as explanations in social cognitive research, such as cognitive resources and need for closure, were not potent explanations of individual differences in blame attributions when analyzed concurrently with the content of beliefs and values. Consistent with previous work, the foreclosed processing style measured by need for closure was correlated with a traditional pattern of beliefs (Blanchard-Fields et al., 2001); however, need for closure was not the primary causal explanation of blame attributions. Similarly, age differences in need for closure and working memory could not explain age differences in blame attributions after accounting for beliefs and values (see Hess, 2006). Instead, age differences in social beliefs and values relevant to our vignette conflict situations mediated at least some of the age differences in causal attributions, most strongly in the family domain.

In essence, individuals who held traditional beliefs about romance and parenting were more likely to blame individuals whose behavior violated those beliefs, i.e., non-traditional characters. Conversely, individuals who held nontraditional beliefs (e.g., egalitarian views

on children's rights in a family) or people who were somewhat cynical about negative relationship experiences were more likely to blame traditional characters (e.g., parents). The fact that traditionalists blamed non-traditional characters accentuates the importance of considering the violation of an individual's beliefs and values. Although, personal identification with the characters only added a small amount of predictive power to the model, the findings are consistent with the idea that if a character's behavior violates an individual's beliefs that the individual will be less identified with the character and subsequently will blame the character more. With respect to the individuals who endorsed tacit knowledge regarding relationships it may have been that these participants were aschematic regarding "traditional values". Instead, they may have judged traditional characters in terms of their inability to consider other factors in the situation, i.e., the inability to think outside of the box.

Other researchers have criticized studies examining social judgment biases as having not fully considered the influence of the content-specific and spontaneous nature of responding (Funder, 1995; Mischel & Shoda, 1995; Seligman & Katz, 1996). In fact, Funder (1995) argued that it is a "fundamental evaluation mistake" to define an individual's evaluative judgment solely in terms of the cognitive processes by which it is made without considering the empirical evidence the individual has gathered from the social world that demonstrates its validity. We maintain that the content and activation of social schemas (e.g., beliefs and values) provide a compelling explanation for age differences in causal attributions. Similar to Fazio and colleagues (Fazio et al., 1986; Fazio & Williams, 1986), we suggest that the extent to which activated social schemas influence behavior depends on whether the behavior of the target character either conforms to or violates a person's social schemas. When reading and comprehending such vignettes, person and belief schemas may be activated and accompanied by a rapid experiential system response, tagging dispositional information related to blame with an emotional valence (Epstein, et al., 1992; Peters, Hess, Vastfjall, & Auman, 2007). When the strength of the emotional reaction is high, elaborative processing (e.g., evaluation of alternative factors influencing the outcome) will be inhibited and blame attributions may occur even when mitigating situational information is either explicitly or implicitly available. Although response latency as a measure of schematicity did not predict social attribution bias in this study, it may be the case that our measurement was simply not sensitive enough to detect differences.

The new set of traditional values statements in the schema verification task were successful in moving beyond the assessment of traditionalism as measured by the dated TFIS questionnaires. Unlike the latter measure, the new schema verification task statements revealed significant age differences in endorsement of traditional values statements (see Blanchard-Fields et al., 2001), and the scales derived from the new task proved useful in predicting RB attributions. This difference is probably a function of two differences between our schema verification task and the TFIS. First, as noted earlier, the TFIS' emphasis on authoritarian versus democratic values may not cover the dimensions of social schemas that are most relevant for capturing current age differences in traditional and nontraditional relationship beliefs. Second, we believe that the emphasis on responding quickly during the schema verification task may have encouraged people to respond on the basis of their initial reactions to schema statements, thereby minimizing response bias due to social desirability effects.

An interesting issue is how one should interpret age differences in endorsement of traditional values in relationship contexts, and, in turn what that reveals about the sources of age differences in causal attributions. Our view is that analytic processing that would reduce dispositional biases in causal attributions will be inhibited when a core belief of the rater (e.g., one should abstain from sexual intercourse before marriage) is implicitly or explicitly

violated by the behavior of the character (e.g., insisting on cohabitation before marriage). Thus, age differences in blame and/or dispositional attributions should arise when young and older adults differ in social schema content activated by each vignette. By this account, age differences in causal attributions that are accounted for by age differences in beliefs can be understood on the basis of generational differences in belief content rather than normative age-related decline in information processing capacity or efficiency. For the most part, theorizing about age differences in social cognition has involved hypotheses that emphasize negative developmental change such as loss of processing resources and the emergence of foreclosed information processing styles, which may have been influenced by a loss of processing resources. In our view, the present research highlights the potential importance of generational differences in social schemas that are likely to vary across historical periods. For example, beliefs about appropriate sexual behaviors for men and women have varied considerably in the past 100 years in the United States given historical events and trends such as the women's liberation movement, the widespread availability of birth control, and the HIV epidemic of the late 20th century.

The view that belief content is critical for explaining age differences in social cognition is also consistent with recent literature arguing that older adults are "social experts" and rely heavily on their past experiences to guide their judgments (Hess, 2006). In such accounts, it is not development per se but rather life experience that determines age differences in social information processing. Studies from this area suggest that older adults are more sensitive to diagnostic information (Hess, Osowski & Leclerc, 2005) and are strongly influenced by information that is personally relevant (Hess, Rosenberg & Waters, 2001; Hess et al., 2005). Older adults also are more likely to attend to trait-diagnostic information that they have labeled as having high importance (Hess & Auman, 2001).

Consistent with an emerging literature on religion and foreclosed styles of thought, our results indicated that religiosity is an important predictor of traditional beliefs regarding relationships. Moreover, much (but not all) of the total effect of religiosity on causal attributions was mediated by degree of endorsement of traditional beliefs. There are two important points to be made regarding religiosity in this study. First, it is certainly the case that religiosity is a source of many positive outcomes in older adults' lives. For example, commitment to spiritual practice appears to assist in coping with life's challenges and hassles (George, Ellison, and Larson, 2002) and is associated with lower rates of psychological depression in old age (Bosworth, Parks, McQuoid, Hays & Steffens, 2003). Religious practice often brings the individual into contact with important sources of social support through the affiliated religious community (Chatters, 2000). Religion and spirituality are conceived by some authors as critical resources that help to create resilience in the face of adversity, especially in old age, and lead to successful aging (Crowther, Parker, Achenbaum, Larimore & Koenig, 2002; Fry & Debats, 2010). Any balanced assessment of the role of religion and spirituality in the quality of life of older adults should consider such influences. Likewise, a balanced view of the effects of traditional beliefs on social cognition will ultimately require evaluating the processing benefits of strongly held beliefs for interpretation of persons and events.

Second, although we measured religiosity in this study, it is not necessarily the case that a spiritual orientation or strongly held religious beliefs and practices lead to value orthodoxy, traditionalism, and a foreclosed style of thought. Recent work emphasizes that certain schools of religious thought and practice, such as religious fundamentalism, are most closely associated with the tendency to manifest high levels of need for structure and need for closure (e.g., Brandt & Reyna, 2010; Jost et al., 2007). It is possible, then, that by focusing on religiosity, as opposed to the degree of value orthodoxy and fundamentalism that characterizes individuals' religious beliefs, we have underestimated the role of religion in

determining the traditional values and beliefs that affect causal attributions about relationships. Likewise, our social schemas may not have fully captured the content and strength of beliefs about relationship behaviors that derive from fundamentalist religious views. This hypothesis is plausible, given that we found that our structural regression model showed that religiosity had a residual direct effect on causal attributions, controlling for traditional and nontraditional social schemas. It could also be the case that a more exhaustive set of social schemas statements deriving from religious fundamentalism could fully account for religiosity effects on attributions observed in this study.

This work has a number of limitations. Given that it was conducted on a convenience sample in a major southern city in the United States, our results may not generalize to other regions of the country which may have, for example, different proportions of certain religious denominations and affiliations. Moreover, Atlanta itself is not particularly representative of the southern U.S., and hence one could expect that there would also be differences in relationship schemas in other parts of the South, for example, as a function of rural versus urban settings. Second, as noted earlier, we were unsuccessful in generating a reliable index of schematicity for the assessed beliefs, and it could well be the case that future research that successfully evaluates both belief content and schematicity will find different results. Third, we did not measure a diverse set of cognitive constructs with multiple measures. We only used single, albeit well-regarded, measures of working memory capacity and vocabulary. Structural regression models using multiple working memory indicators could correct for attenuation of the estimated regression effect of working memory on causal attributions due to measurement error in the Operation Span task. Hence our study may underestimate the degree to which age-related cognitive changes in fluid abilities affect age differences in causal attributions.

Finally, a major limitation of this study is that it is based on a cross-sectional sample. Inferences about statistical mediation in cross-sectional data are descriptively valid, but are not necessarily consistent with what would be found if the variables in question were evaluated using longitudinal data (Cole & Maxwell, 2007). In particular, attention to the reduction in age-related effect sizes in a variable (i.e., causal attributions) when controlling on another variable (i.e., social schemas about relationship behaviors) can be misleading because substantial reductions in age effects may be influenced more by similarities in magnitudes of cross-sectional age differences than by individual differences in developmental change (Hofer, Flaherty, & Hoffmann, 2006; Lindenberger, von Oertzen, Ghisletta, & Hertzog, 2011). We have been therefore been circumspect in our treatment of these results, emphasizing more the relationships of multiple variables to causal attributions than the reductions in age differences in causal attributions when controlling on other variables. Future tests of the hypothesis that social schemas influence age changes (or cohort differences) in causal attributions about relationship outcomes would clearly benefit from the evaluation of relevant longitudinal data.

In sum, this research shows that the nature of particular relationship situations evokes individual differences in beliefs and values that are associated with causal attribution judgments. We argue that an understanding of the social schemas evoked by these situations is needed to explain why adults of any age avoid engaging in elaborative reasoning about situational and transactional influences on problems in social relationships, instead being disposed to assign blame for negative outcomes to specific individuals.

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Appendix

Example Romantic Vignette

Allen had been dating Barbara for over a year. At Barbara's suggestion, they moved in together. Everyone kept asking when they were getting married. Allen found it extremely uncomfortable to live with Barbara and not be married to her. Even though Barbara disagreed, Allen kept bringing up the issue of marriage. Eventually, they broke up.

Related Schemas

- Proposing marriage is the honorable thing to do.
- Ignore pressure from friends when making any decision about a romantic relationship
- It's never good to force a "yes" out of a partner.
- You know better than your friends what is better for your relationship.
- Wanting a commitment for the future is natural and good.
- You don't need a commitment to feel secure in a relationship.
- Don't rush a decision to marry.
- Don't live together until you are married.
- You don't understand someone until you've lived with them.
- Living together first helps you decide whether to get married.
- Living together before marriage compromises one's moral values.
- Pressuring your partner for a commitment never works.

Example Family Vignette

Kelly was a sophomore at a large state university. After living a year in the dorm, she felt ready to move into her own apartment to have more privacy. Kelly's parents disagreed. They told her they didn't feel she was ready. They also did not want her living off campus because of the potential dangers. Kelly moved into an apartment anyway, resulting in a huge fight with her parents. Afterwards, her parents stopped helping Kelly pay her college expenses.

Related Schemas

- Parents should allow their college age child to live independently.

There is a certain point when parents need to let go of their children.
If your parents control the “purse strings” you should follow their rules.
Parents try to influence their adult children even when they shouldn’t.
A parent knows best when a child is ready to be on their own.
Parents never accept the loss of control over grown children’s lives.
Once a young adult makes a decision, parents shouldn’t interfere.
Parents are obligated to help their kids pay for a college education.
There’s no excuse for parents cutting financial support to a college student.
It’s dangerous for a college student to live in an off-campus apartment.
Female students are safer living in campus housing.
Fraternities and sororities aren’t conducive to good study habits.
Living in a dorm doesn’t promote studying.
Disobeying your parents is never acceptable.
Children resent tough love, but they end up better for it.

Figure 1.
Age differences in schema scale scores.

Figure 2. Age differences in responsibility-blame attributions for traditional and nontraditional characters within romance and family vignettes.

Figure 3.

Standardized structural equation model predicting responsibility-blame attributions for romance and family social situations. Figure shows structural regression coefficients involving latent variables (circles) or observed variables (squares). To enhance the legibility of the figure, no observed variables or factor loadings are shown for the latent variables (see text for further explanation). Abbreviations: BSRI-IS: Bem Sex Role Inventory, Interpersonal Sensitivity; Closure: Need for Closure; F-TRAD – Traditional Social Values, Family; IRE – Interpersonal Relationship Experience; OSPAN – Operation Span (Working Memory); RB F T: Responsibility-blame attributions, family, traditional target; RB F NT: Responsibility-blame attributions, family, nontraditional target; RB R T: Responsibility-blame attributions, romance, traditional target; RB R NT: Responsibility-blame attributions, romance, nontraditional target; RELIG – Religiosity; R-TRAD – Traditional Social Values, Romance; TRAD – Traditional Social Values; VOCAB – Shipley Vocabulary Scale.

Table 1

Participant Characteristics and Sample Size

	N	Young			Middle-Aged			Old		
		M	SD	N	M	SD	N	M	SD	N
Male/female (Total)	60/46			42/62			50/58			
Age	106	21.24	3.56	104	48.38	6.93	108	69.58	5.16	
Health	103	3.36	.64	104	3.29	.62	108	3.14	.65	
Vocabulary	103	31.38	3.24	104	32.69	4.53	108	34.37	4.34	
OSPAN	101	18.80	11.02	98	12.18	9.27	104	11.70	9.13	
Male/female (completed the attribution task)	37/27			33/46			38/43			

Note: Health responses were completed on a 5 point Likert scale with higher numbers indicating better health. For both the vocabulary measure and the OSPAN measure of working memory higher numbers indicate better performance.

Table 2

Example items and internal consistency values for the nine schema verification scales

Schema verification scale name	Example items	Coefficient Alpha
<u>Romantic Relationship Subscales</u>		
Negative relationship ideation	If you show someone you care, they start trying to run your life. Men are usually possessive of women and everything else. Beware of a woman with a ticking biological clock.	.84
Nontraditional intimacy values	You don't need a ring and a certificate to have a happy marriage. Don't have sex before marriage. (reverse coded) Living together first helps you decide whether to get married.	.80
Traditional relationship values	In order to be happy in a relationship you should be married. It works better if the man earns the money and the woman raises the children. A good wife loves, honors, and obeys.	.81
Consideration of others	Pressuring your partner for a commitment never works. You cannot tell your partner how to act towards other people. Ignore pressure from friends when making any decision about a romantic relationship.	.65
Contemporary couples	Life is too short to stay in an unhappy marriage. A spouse who insists on always being with you will eventually turn you off. A married woman doesn't have to take her husband's last name.	.52
<u>Family (Parent-Child) Subscales</u>		
Family conflict	Divorced spouses often poison their children's feelings for their ex-spouses. Grandparents often interfere with parents' rules and discipline. Parents too often remind a younger child of older children's successes.	.71
Parental authority	Children resent tough love but they end up better for it. Parents have the right to insist on major change for the good of the family. A parent needs to use every trick necessary to get the kids to do well in school.	.66
Children's rights	It is not right to uproot a teenage child from a familiar environment. Parents should treat all children equally. There's no excuse for parents cutting financial support to a college student.	.59
Tacit knowledge	For a teen, relating to friends is more important than relating to parents. There is a certain point when parents need to let go of their children. Children often strongly object to a parent's decision, but they eventually get used to it.	.54

Table 3

Summary of Univariate Tests of Age Differences in Relationship Beliefs

Schema Verification Scale	<i>F</i>	<i>df</i>	<i>df_{error}</i>	<i>p</i>	η^2
<u>Romance</u>					
Negative relationship ideation	33.544	2	312	< .001	.18
Nontraditional intimacy values	5.365	2	312	.005	.03
Traditional relationship values	34.513	2	312	< .001	.18
Consideration of others	9.105	2	312	< .001	.055
Contemporary couples	3.984	2	312	.02	.025
<u>Family</u>					
Family conflict	25.064	2	312	< .001	.138
Parental authority	7.782	2	312	.001	.048
Children's rights	7.229	2	312	.001	.044
Tacit knowledge	2.539	2	312	.081	.016

Table 4
Schema Verification Factor Analysis: Standardized Factor Loadings and Squared Multiple Correlations

Items	TFIS method	Factors			SMC
		Family traditionalism	Romance traditionalism	Interpersonal relationship experience	
TFIS- Parent-Child Roles	.31	.78			.70
TFIS – Husband-Wife Roles	.56		.74		.87
TFIS-General Male-Female Roles	.49		.63		.64
Negative Relationship Ideation			.27	.75	.72
Nontraditional Intimacy Values			-.65		.42
Traditional Relationship Values			.75	.26	.71
Contemporary Couples			-.54	.40	.36
Family Conflict				.76	.57
Parental Authority		.68			.46
Children's Rights		.34		.44	.34
Parent-Child Tacit Knowledge				.39	.15

Note. All other factor loadings fixed to 0. Abbreviations: SMC = Squared Multiple Correlation; TFIS = Traditional Family Ideology Scale.

Table 5

Standardized Total Effects for Model

Predicted Variables	Age	Vocabulary	OSPAN	Predictors				IRE	General trad
				BSRI-IS	Closure	Religiosity			
IRE	.49	-.07	-.06	.06	.26	-	-	-	-
General trad	.34	-.33	-.20	.25	.54	.32	-	-	-
RB romance nontrad	.27	-.14	-.08	.17	.21	.29	-.03	.31	
RB romance trad	.24	-.04	-.03	.06	.08	.11	.23	-.10	
RB family nontrad	.16	-.12	-.19	.09	.20	.12	-.03	.31	
RB family trad	.19	-.02	-.02	.15	.08	-	.30	-.01	

Note. IRE = Interpersonal Relationship Experience. RB = Responsibility/Blame Index. Nontrad = Nontraditional. Trad = Traditional. OSPAN = Operation Span BSRI-IS = Interpersonal Sensitivity subscale of the Bem Sex Role Inventory.