In 1958, Piaget laid the foundation for lifespan developmental cognition by proposing four cognitive stages that take place throughout human development, beginning in infancy. The four stages include: sensorimotor, preoperational, concrete operational, and formal operational. He proposed that the stage of formal operational cognition is the final stage in adult cognitive thought. However, in more recent research, findings have shown that formal operational thought is not the end of cognitive development for all adults (Kallio, 2011). As an extension to the four existing stages of cognition, researchers have outlined a fifth stage labeled postformal thought (Cartwright, Galupo, Tyree, & Jennings, 2009; Kallio, 2011; Sinnott & Johnson, 1997).

Postformal thought begins during emerging adulthood, a time after adolescence but before young adults have a stable career and family (Berger, 2014; Galupo, Cartwright, & Savage, 2010; Morton et al., 2000). It is a progression from the previous stage of formal thought, which emerges in adolescence (Kallio, 2011; Sinnott, 2014; Sinnott, Hilton, Wood, Spanos, & Topel, 2015). Because postformal thought is a newly identified stage of cognition, a precise definition has yet to be well-established. However, researchers have described the type of thinking characteristic of postformal thought as a type of complex cognition involving recognition of paradoxes and multiple perspectives, which research suggests benefits intrapersonal and interpersonal functioning. The current study aimed to examine postformal thought in the context of romantic relationships, while specifically examining if postformal thought moderates the inverse relationship between partner blame and marital satisfaction. It was hypothesized that participants with enhanced postformal thought would project less blame onto their spouse, and thus have increased marital satisfaction. In a sample of 109 participants, findings supported past research in that blame toward one's partner was negatively correlated with marital satisfaction on both the Causal, $r(107) = -0.21$, $p = 0.03$, and Responsibility, $r(107) = -0.24$, $p = 0.01$, Relationship Attribution subscales and the Marital Attitude Scale, $r(107) = 0.38$, $p < 0.001$. However, contrary to the hypothesis, postformal thought was associated with increased partner blame on both the Causal ($r = 0.35, p < 0.001$) and Responsibility ($r = 0.26, p = 0.007$) Relationship Attribution subscales, as well as the Marital Attitude Scale, $r(107) = -0.25$, $p = 0.001$. The current study adds to the body of literature which has asserted that the more one blames a partner, the more dissatisfied one is with a relationship—a relevant finding for clinical work. Implications of a negative relationship between postformal thought and marital satisfaction are discussed, and this relationship may underscore the limitations of postformal thought as a relatively new and at times poorly conceptualized concept.
thought in numerous ways. According to Sinnott (2014), formal operational logic involves believing that one correct answer always exists—for example, in a mathematical equation or in logical reasoning problems. Postformal thought, however, is more complex because it involves recognizing less concrete truths, views ambiguity and paradox as being a part of the nature of life, and produces multiple solutions to a problem through recognizing the possibility that there may be many causes to a problem (Sinnott, 2014). Postformal thinking integrates objective and subjective thought, as opposed to merely thinking objectively as in formal operational thought (Cartwright et al., 2009; Galupo et al., 2010; Morton et al., 2000).

In addition, postformal thought is said to be synonymous with dialectical thinking, defined as the acceptance of contradiction and the nonabsolute nature of knowledge (Bai, Harms, Han, & Cheng, 2015; Kallio, 2011); for example, rivals can also be business partners (such as when Microsoft kept Apple from going bankrupt by investing in the company). The cognitive processes in this stage allow postformal thinkers to implement more tolerance of others’ points of view, yet maintain ability to synthesize views in order to settle on one solution (Sinnott, 2014). Thus, postformal thought is more practical, flexible, and dialectical than formal operational thought (Berger, 2014).

Unlike the first four stages of cognition, however, the conceptualization of postformal thinking is less robust. In an analysis of Sinnott and Johnson’s (1997) Postformal Thought Scale, Cartwright et al. (2009) identified three factors. The first factor, Underlying Complexities, is the ability to see the complexities of a given problem or situation (Cartwright et al., 2009; Morton et al., 2000; Sinnott & Johnson, 1997); for example, seeing paradoxes such as the recognition that providing a stimulant can actually calm a child (Sinnott & Johnson, 1997). Items 1–3 of Sinnott and Johnson’s (1997) scale measured this factor. The second factor, Subjective Choice, as measured by Sinnott and Johnson’s (1997) Items 4–6, involves the recognition that there may be many ways to define a life experience (e.g., someone who has suffered a horrific attack may define themselves as both a survivor and a victim) or to solve a problem (e.g., using the new Common Core or the more traditional ways of solving math problems), and that one must subjectively choose a particular one of these choices. Thus, one comes to recognize that one’s own thinking is subjective.

The third factor, Multiple Elements, is the capacity to contemplate multiple elements (e.g., several causes, several solutions, and/or goals) of a given situation or problem, as measured by Sinnott’s (1997) Items 7–10. For example, the problem of unrest in the Middle East has multiple causes and is unlikely to be solved by one simple solution. Although Sinnott and Johnson’s (1997) scale is the predominant measure of postformal thought, there is a problem in defining a term by its measures. Of some concern, Cartwright et al. (2009) and Galupo et al. (2010) found the scale to be only moderately reliable ($\alpha = .63$). Yet the scale’s validity as a measure of complex thought stands more firmly, as it moderately correlated to the Need for Cognition scale, as well as to Sinnott’s problem-based reasoning cognitive tasks (Cartwright et al., 2009; Sinnott & Johnson, 1997).

In terms of how one acquires postformal thought, scholars believe that adult cognition can be developed or changed through experiences. Subjective, personal experiences often allow for opportunities where multiple perspectives can be contemplated—such as in interpersonal relationships requiring conflict resolution or negotiation (Cartwright et al., 2009). Experiences such as these produce cognitive changes in adulthood (Cartwright et al., 2009). Research findings suggest that having “cross-category” friendships (differing in race, sexual orientation, age, or social class) contributes significantly to enhancement of postformal thinking (Galupo et al., 2010). Thus, postformal thought is not only displayed in social situations but can be acquired and enhanced through them.

Because postformal thought is a newly identified stage of cognition, there is much to learn about its implications. Although some research has been conducted relating postformal concepts to other cognitive aspects and measures, much less research has evaluated postformal thinking in relation to noncognitive constructs including social behavior, personality, and intrapersonal functioning (Griffin et al., 2009). The limited amount of research includes research on related complex cognitions and romantic relationship functioning, but only Sinnott (2014) directly discussed postformal thinking in romantic relationships. The current study aimed to further examine the complex cognitions of postformal thought in the context of romantic relationships, while specifically looking at the association between postformal thought and marital satisfaction as impacted by the social behavior of blame projection.
Postformal Thought and Intrapersonal Functioning

Research has related postformal thought to several beneficial aspects of intrapersonal functioning. Postformal thinking, as measured by Sinnott and Johnson’s (1997) scale, was correlated with two personality traits of Costa and McCrae’s NEO Five Factor Model: Openness to Experience and Conscientiousness (Griffin et al., 2009). Additionally, research has found a positive correlation between dialectical thinking and an individual’s coping flexibility, defined as the ability to formulate flexible strategies under the demands of unpredictable circumstances (Cheng, 2009). As previously mentioned, dialectical thinking is synonymous with postformal thought and involves the pursuit of knowledge and truth through thoughtful synthesis of opposing viewpoints. Considering this correlation, Cheng explained the proposed link between dialectical thinking and coping flexibility using Basschehe’s 1984 model of patterned movement of thoughts. The model involves an individual proposing a thesis, recognizing its contradiction or antithesis, and synthesizing the two positions into one holistic proposition. The synthesis is not the same as a compromise; it incorporates both the thesis and antithesis into a more transformative conclusion (Berger, 2014). Applied to coping flexibility, individuals faced with a stress-inciting event may enact this dialectical thesis-antithesis pattern of thought and accept that every coping strategy has its own strengths and weaknesses depending mostly on the situation at hand. They then can synthesize the strategies into a “meta-strategy” that is flexible and thus of the postformal nature (Cheng, 2009). Thus, personality traits and coping behaviors related to postformal thinking appear to be positive and beneficial to an individual’s personal well-being. The current research explores whether positive effects also extend to interpersonal—specifically marital—well-being.

Postformal Thought and Interpersonal Relationships

In addition to intrapersonal functioning, postformal thought, as measured by Sinnott and Johnson’s (1997) scale, has also been related to positive aspects of interpersonal functioning in relationships and friendships. For example, postformal thought has been positively related to favorable attitudes toward lesbians and gay men (Griffin et al., 2009) and having a greater number of cross-category friendships (differing in race, sexual orientation, age, or social class; Galupo et al., 2010). Close, as opposed to casual, cross-category friendships foster motivation to be cognizant of differing perspectives (Galupo et al., 2010).

Postformal thinking has not only been related to friendships but also to workplace relationships. Morton and colleagues (2000) assessed the postformal quality of physician-patient interaction as predicted by postformal thought. The physicians with the highest level of postformal thought, here measured by tolerance of ambiguity (Budner, 1962) and cognitive empathy (Davis, 1980, 1983), had higher ratings of clinical performance in patient satisfaction, responsiveness to patients, and effective taking of health history. Thus, postformal thinking was related to efficiency in physicians’ jobs due to positive interactions with their patients. Similarly, leaders in the workplace who used dialectical thinking and enacted a cooperative approach to conflict management (as opposed to a competitive one) fostered higher “in-role performance” and employee creativity (Bai et al., 2015). This cooperative approach enacted the postformal properties of tolerance of ambiguity, inconsistencies, and contradictions. Although it has not previously been tested, the associations of workplace and social relationships with postformal thought suggest that similar associations would be present in the context of marital relationships.

Postformal Thought and Romantic Relationships

Because romantic relationships have not been studied in relation to postformal thought specifically, it is noteworthy to look more broadly at how romantic relationships are related to complex cognition in general (with postformal thought being a specific type of complex cognition). In looking at cognitive complexity and marital interactions in newlyweds, Karney and Gauer (2010) found that the more complexly a spouse reported a given problem in marriage, the less that spouse used negative behaviors such as blaming, rejecting, criticizing, avoiding responsibility, and hostility when taking part in problem resolution. Karney and Gauer (2010) defined complex cognition by higher levels of differentiation (perceiving more categories or kinds of information from analyzing a given event or person) and integration (connecting or synthesizing different qualities and characteristics). Similarly, Tyndall and Lichtenberg (1985) suggested that couples who exhibited higher cognitive flexibility by a high tolerance for ambiguity showed more adaptable interpersonal strategies in their
relationship when confronted with a change of circumstances.

Additionally, researchers have found a positive correlation between another complex cognitive process, evaluative integration, and both relationship well-being and positive illusions toward one’s partner (Murray & Holmes, 1999), as well as less blame (Showers & Kevlyn, 1999). Evaluative integration in relationships involves downplaying the faults or unsatisfactory qualities of a partner by linking those faults to greater virtues of that partner (Murray & Holmes, 1999). Thus, this construct is similar to the integration of subjectivity and objectivity and the recognition of multiple truths enacted during postformal thinking. While there is little empirical data on postformal thought in non-cognitive constructs, these associations between prosocial relationship behaviors and complex ways of thinking suggest that prosocial behaviors, such as reduced blame, should similarly relate to postformal thought, and thus correlate with satisfaction in marriage.

Very limited research has been conducted directly relating postformal thought and romantic relationship functioning. Preliminary studies assessing postformal thought and its relation to fundamental relationship skills and satisfaction have found that postformal thought was significantly positively correlated with reported relationship satisfaction, but not correlated with routine maintenance and adjustment (Sinnott, 2014). However, the preliminary nature of this research was necessarily limited by the sample, which consisted of solely undergraduate students, a vast majority of whom were women. In addition, the required relationship longevity was just three months, and arguably not long enough for a fully developed relationship pattern to have emerged.

The Current Study
In reviewing the research on complex cognition, it appears that postformal thinking is consistently related to enactment of consistent prosocial behaviors: flexibility to tolerate opposing views with ease, and without criticism or blame. Commons and Ross’s (2008) theoretical model supports this concept whereby they claim that those who move through stages of postformal thought find the interpersonal benefit of reduction of blame in relationships. There is a large body of research supporting the association between blame and decreased relationship satisfaction, highlighting the tendency of distressed couples to see negative events as the responsibility of their ill-intentioned partner and as globally impactful on their relationship (see Bradbury & Fincham, 1990, for a complete review of the literature). The strong relationship between reduced blame and increased relationship satisfaction makes it a complex cognitive process of particular interest to study.

Although Showers and Kevlyn (1999) found that evaluative integration, a type of complex cognition similar to postformal thought, is related to less partner blame, no empirical work to date has been conducted to directly test Commons and Ross’s (2008) claim that the larger concept of postformal thinking is related to reduced blaming in relationships. Thus, the current study examined whether enhanced postformal thinking is related to a reduction in partner blame and thus contributes to increased relationship satisfaction. We hypothesized that those who have enhanced postformal thought would project less blame onto their romantic partner and thus have increased relationship satisfaction. This hypothesis included three components: (a) postformal thought would be positively correlated with marital satisfaction, (b) postformal thought would be negatively correlated with partner blame, or negative partner attribution, and (c) postformal thought would moderate the inverse relationship between partner blame and relationship satisfaction. Examining this interaction between postformal thought and partner blame can provide new information about this newly identified stage of cognition as well as valuable applications to improve the quality of intimate relationships.

Method
Participants
We recruited participants online through Amazon Mechanical Turk. Out of 170 participants recruited, 109 met the inclusion criteria for a response rate of 64%. Participants (66 women, 43 men) were all married and ranged in age from 22 to 66 years ($M = 39.5$, $SD = 10.8$). On average, participants were married for 12.4 years ($SD = 9.0$) and had been in the current relationship with their spouse for an average of 15 years ($SD = 9.6$). See Table 1 for complete demographic characteristic data for the sample.

The inclusion criteria for this study consisted of being over the age of 18, having completed at least 10 years of education (to ensure comprehension of questionnaires), and being married a minimum of four years. We based the length of marriage criteria on research suggesting that newlyweds tend to
experience a pattern of satisfaction decline within the first four years of marriage, after which a more normalized gradient of satisfaction appears across couples (Karney & Bradbury, 1997; Kurdek, 1998).

Measures

Demographic questionnaire. A demographic questionnaire assessed the following variables: gender, age, ethnicity, socioeconomic status, highest level of education received, length of years in current relationship, and if married, the number of years. Since same-sex marriage was not nationally recognized until 2015, it would not be legally possible for most same-sex couples to meet the study’s requirement of four years of marriage. Thus, sexual orientation and gender of one’s partner were not assessed on the demographic questionnaire.

Postformal thought. Individuals’ levels of postformal thinking were assessed with the Postformal Thought Scale (Sinnott & Johnson, 1997). This scale assesses dimensions of complex thought including metatheory shift, problem definition, process/product shift, parameter setting, pragmatism, multiple solutions, multiple goals, multiple methods, and paradox. The 10-item questionnaire asks participants to respond using a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). All items are summed for a total score ranging between 10 and 70, with higher scores indicating a greater level of postformal thought. Items include statements such as, “I can see the hidden logic in others’ solutions to problems, even if I do not agree with their solutions” and “I tend to look for several causes behind any event.” The measure has moderately reliable internal consistency (α = .63; Cartwright et al., 2009; Galupo et al., 2010). Internal consistency for the current sample was acceptable (α = .81).

Marital satisfaction. Marital satisfaction was measured using the Quality of Marriage Index, a 6-item questionnaire, developed by Norton (1983). Participants respond to the first five items based on how strongly they agree with statements using a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). Items evaluate global satisfaction of one’s marriage and spouse with statements such as, “My relationship with my partner is very stable.” The sixth item uses a 10-point Likert-type scale to measure a global degree of satisfaction in the marriage, ranging from 1 (extremely low) to 10 (extremely high). Ratings across all items are summed with a possible range of 6 to 45, where higher scores demonstrate greater marital satisfaction. Previous studies have established internal consistency for the measure to be high with Cronbach’s α ranging from .94 to .96 (Barry & Kochanska, 2010; Graham, Diebels, & Barnow, 2011). The measure also has high validity because it correlates significantly with the Dyadic Adjustment Scale for both women (r = .90) and men (r = .89; Heyman, Sayers, & Bellack, 1994). Internal consistency for the current sample was strong (α = .97).

Blame projection measures. There were two assessments of blame.

Relation attribution measure. To assess partner blame, two measures were used. The first measure was the Relationship Attribution
Measure, a 24-item scale that assesses the extent to which an individual attributes common negative events of a marriage to their spouse (Fincham & Bradbury, 1992). The scale measures two types of partner attribution: (a) Causal Attribution, which refers to the explanation the spouse makes for the negative event, and (b) Responsibility-Blame Attribution, which refers to the extent one feels that a partner is accountable for negative events. The questionnaire presents four hypothetical negative partner behaviors such as “Your spouse criticizes something you say.” Each hypothetical behavior is followed by six statements, three assessing Causal Attribution (Locus, the extent to which cause rests in the partner; Globality, the extent to which it effects other areas of the marriage; and Stability, the extent to which the cause is likely to change) and three assessing Responsibility-Blame Attribution (Intent, the intentionality of the act; Motivation, the motivation for the act; and Overall Blameworthiness, the extent to which the partner deserves blame for the act). Participants are asked to rate the extent to which each dimension would explain the hypothetical behavior on a 6-point scale ranging from 1 (strongly disagree) to 6 (strongly agree). Separate composite scores are obtained for Causal Attribution (Locus, Globality, Stability) and Responsibility-Blame Attribution (Intent, Motivation, Blameworthiness), as well as a Total Relationship Attribution Scale (the two subscales combined). The possible scores for the subscales ranged from 12 to 72 while possible composite scores ranged from 24 to 144, with higher scores indicating greater extent of negative attribution. Internal consistency was established for composite scores of Causal Attribution for women (α = .84) and men (α = .86) and Responsibility-Blame Attribution for women (α = .89) and men (α = .84), as well as for Total Relationship Attribution for women (α = .91) and men (α = .91), thus asserting that the measure is reliable (Fincham & Bradbury, 1992). Internal consistency for the entire sample was acceptable (α = .77) for the Causal Attribution subscale, strong (α = .90) for the Responsibility-Blame subscale, and strong (α = .91) for the Total Relationship Attribution Scale.

Marital attitude survey. The second measure used to assess partner blame was the Marital Attitude Scale, which assesses dysfunctional attributions within married couples (Pretzer, Epstein, & Fleming, 1991). The questionnaire assesses overall marital attitudes using six subscales; however, only two subscales were selected for the current study as an additional measure of projected blame. The subscales measuring attribution of causality to spouses’ behavior, as well as attribution of causality to spouses’ personality, were selected from this scale because they measure the extent to which spouses see the source of their marital problems as found within their partner. Each subscale consists of four items. Therefore, participants responded to eight items total. Sample items included “If my partner did things differently, we’d get along better” and “I don’t think my problems with my partner are because of the type of person he/she is.” Participants were asked the extent to which they agreed with the items using a 5-point Likert scale ranging from 1 (strongly agree) to 5 (strongly disagree). Possible scores range from 8 to 40. Low scores indicate that the participant endorsed the attribution being measured (greater amount of blame), and high scores indicate that the participant did not report engaging in this attribution (less blame) (Pretzer et al., 1991). Internal consistency reliability for the measure was acceptable both for spouses’ behavior (α = .72) and spouses’ personality (α = .66). For the current study, the two subscales were combined into one Marital Attitudes Scale due to the higher internal consistency observed when the two subscales were combined (α = .97). As further justification for combining the two subscales, previous research has demonstrated that the two subscales are significantly positively correlated for women (r = .65, p < .001) and men (r = .55, p < .001) (Pretzer et al., 1991).

Research Design
The study used four self-report surveys. These examined correlational relationships between postformal thought, marital satisfaction, and partner blame.

Procedure
Participants were recruited through an online crowd-sourcing marketplace for human intelligence tasks, called Amazon Mechanical Turk, and completed all measures online. Each participant first completed an informed consent form. Those who met the criteria for participation completed the demographic questionnaire and then four self-report measures in the following order: (a) Quality of Marriage Index, (b) Relationship Attribution Measure, (c) Marital Attitude Scale, and (d) Postformal Thought Scale. Participants who completed the study received compensation of $0.50 through the Amazon Mechanical Turk payment system. Once the study was finished, all participants received a
Results

Blame, Marital Satisfaction, and Postformal Thought

A Spearman’s Rho test was conducted to examine the relationships between marital satisfaction, postformal thought, and partner blame due to nonnormality of the distributions of responses. Results are displayed in Table 2. Scores on the Quality of Marriage Index were not significantly correlated to Postformal Thought, \( \rho(107) = -.08, p = .40 \). However, the Quality of Marriage Index was significantly negatively correlated with the Total Relationship Attribution scale, \( \rho(107) = -.25, p = .01 \), as well as both the Causal Attribution, \( \rho(107) = -.21, p = .03 \), and Responsibility-Blame Attribution subscales, \( \rho(107) = -.24, p = .01 \). These correlations indicate that marital satisfaction was associated with less partner blame—specifically blame involving causal and responsibility attributions. Likewise, the Quality of Marriage Index was significantly positively correlated with the Marital Attitude Scale, \( \rho(107) = .38, p < .001 \), also indicating that marital satisfaction was associated with less blame, specifically of their partner’s behavior and personality.

A Pearson Product-Moment Correlation was used to examine the relationship between the Postformal Thought Scale, partner blame scores, and marital attitude scores (see Table 2). The Postformal Thought Scale was significantly positively correlated with both the Causal Attribution subscale \( (r = .35, p < .001) \) and the Responsibility-Blame subscale \( (r = .26, p = .007) \), as well as the Total Relationship Attribution score \( (r = .32, p = .001) \). In addition, the Marital Attitude Scale showed similar patterns because it was significantly negatively correlated to the Postformal Thought Scale, \( r(107) = -.33, p = .001 \). This finding indicates that the more one reports thinking postformally, the more one tends to blame their spouse with negative attribution styles.

As expected, the two measures of blame, Total Relationship Attribution and the Marital Attitude Scale, were significantly negatively correlated with each other, \( r = -.50, p < .001 \). These correlations indicate that the measures were capturing similar behaviors and attitudes of attribution for the participants in this data set.

Spearman’s Rho tests and Pearson Product-Moment Correlations were used to control for gender in all correlations between marital satisfaction, postformal thought, and partner blame. No significant relationships to gender were observed.

Prediction of Marital Satisfaction

A Hierarchical Multiple Regression was used to assess whether postformal thought would moderate the relationship between partner blame and marital satisfaction. Because the correlation between postformal thought and marital satisfaction while controlling for gender was not significant, gender was not included in the model. Due to the high intercorrelation between Total Relationship Attribution and the Marital Attitude Scale, as well as concern about multicollinearity, scores on the two blame measures were combined into one variable (Blame score) for the hierarchical multiple regression by subtracting Marital Attitude Scale scores (where lower scores indicated more blame) from Total Relationship Attribution (where higher scores indicated more blame). Blame score was entered in Stage 1, followed by Blame and Postformal Thought Scale scores in Stage 2 in order to predict if postformal thought adds any information above and beyond what blame indicates about marital satisfaction as measured by the Quality of Marriage Index. The regression revealed that at Stage

| TABLE 2 |
| Correlations Between the Measures |
| | 1. | 2. | 3. | 4. | 5. | 6. |
| 1. Quality of Marriage Index | - |
| 2. Postformal Thought Scale | -.08 | - |
| 3. Total Relationship Attribution | -.25** | .32** | - |
| 4. Causal Attribution | -.21* | .35** | .91** | - |
| 5. Responsibility-Blame Attribution | -.24** | .26 | .96** | .75** | - |
| 6. Marital Attitude Scale | .38** | -.33** | -.50** | -.50** | -.45** | - |

Note: *p < .05, **p < .01.

<p>| TABLE 3 |
| Prediction of Quality of Marriage Index in Hierarchical Multiple Regression |</p>
<table>
<thead>
<tr>
<th>Variable</th>
<th>( B(SE) )</th>
<th>t</th>
<th>( \beta )</th>
<th>p</th>
<th>( R^2 )</th>
<th>( \Delta R^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blame</td>
<td>-.15 (.03)</td>
<td>-5.17</td>
<td>-.48</td>
<td>&lt;.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blame</td>
<td>-.17 (.03)</td>
<td>-5.63</td>
<td>-.51</td>
<td>&lt;.001</td>
<td>.48</td>
<td>.23</td>
</tr>
<tr>
<td>Postformal Thought</td>
<td>.19 (.09)</td>
<td>2.04</td>
<td>.19</td>
<td>.04</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1, Blame contributed significantly to the model, $F(1, 107) = 26.73, p < .001$, and accounted for 20% of the variance ($R^2 = .20$) in marital satisfaction. Adding postformal thought at Stage 2 explained an additional 3% of the variance ($R^2 = .23$), $F(2, 106) = 15.83, p < .001$ (see Table 3), suggesting that Blame was the most important predictor of marital satisfaction.

**Supplemental Analyses**

**Gender differences.** The current study used $t$ tests to examine gender differences on the Postformal Thought Scale, the Total Relationship Attribution Scale (as well as the Causal Attribution and Responsibility-Blame subscales), and the Marital Attitude Scale. Results are displayed in Table 4. A significant gender difference was observed for the Postformal Thought Scale, $t(107) = -3.48, p = .01, d = .67$, with women scoring significantly higher ($M = 53.48, SD = 6.58$) than men ($M = 48.58, SD = 8.03$). Additionally, a significant gender difference was observed for the Total Relationship Attribution Scale, $t(107) = -3.44, p = .01, d = .68$, with women reporting significantly greater mean levels of blame ($M = 87.41, SD = 19.51$) than men ($M = 74.58, SD = 18.46$). Similarly, gender differences were observed in both the Causal attribution subscale ($M_W = 46.00, SD = 8.64, M_M = 39.81, SD = 7.78$), $t(107) = -3.80, p < .001, d = .36$, and the Responsibility Blame subscale ($M_W = 34.72, SD = 11.56, M_M = 23.32, SD = 46.00$), $t(107) = -2.80, p = .006, d = .27$. On the Marital Attitude Scale, because lower scores indicate greater extent of blame, women also reported greater mean levels of blame ($M = 23.32, SD = 5.37$) than men ($M = 26.40, SD = 3.65$), and a significant gender difference for this measure was observed, $t(107) = 3.29, p = .001, d = .67$

A Mann-Whitney U test was used to examine gender differences for the Quality of Marriage Index due to its high level of negative skew at -1.88. The test revealed no significant gender differences ($p = .62$), although men did have slightly higher levels of satisfaction ($Mdn = 56.85$) than women ($Mdn = 53.80$).

**Education and postformal thought.** A one-way Analysis of Variance was used to examine whether there were differences in levels of postformal thought across different levels of education of participants. The sample sizes across groups with different levels of education varied greatly, so groups with a frequency of less than four participants were excluded from this analysis to avoid error in the homogeneity of variance assumption. Significant education level differences were observed for participants’ levels of postformal thought, $F(4, 99) = 2.66, p = .04$, with a moderate effect size ($\eta^2 = .08$). Post-hoc analyses using the Tukey HSD test demonstrated a significant difference in postformal thought scores between those whose highest level of education was high school ($M = 46.22, SD = 7.24$) compared to those who had a bachelor’s degree ($M = 55.55, SD = 8.21$), $p = .05$.

**Discussion**

The purpose of the current study was to examine if postformal thought moderated the inverse relationship between partner blame and marital satisfaction. The first hypothesis asserted that postformal thought would be positively correlated with marital satisfaction.

**Postformal Thought and Marital Satisfaction**

This first hypothesis was not supported, indicating that there was no relationship between this type of complex cognition and one’s self-reported marital satisfaction. Past research that has examined the relationship between these two variables has been inconsistent with some studies displaying a positive correlation and some displaying no correlation (Sinnott, 2014). A possible explanation for the lack of correlation between postformal thought and marital satisfaction in the current study could be that cognitive processes are not as salient to complex and highly emotionally involved relationships such as marriages. Instead, aspects such as emotions and behaviors may play a larger role than cognition does in influencing one’s sentiments toward their romantic relationship. Perhaps cognitive processes do not override emotional components of marriages that are related to satisfaction. Thus, it is more likely that postformal thought could affect platonic friendships and workplace relationships.

### Table 4

<table>
<thead>
<tr>
<th>Measure</th>
<th>Men</th>
<th>Women</th>
<th>t</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postformal Thought Scale</td>
<td>48.58</td>
<td>53.48</td>
<td>-3.48</td>
<td>107</td>
</tr>
<tr>
<td>Total Relationship Attribution Measure</td>
<td>74.53</td>
<td>87.41</td>
<td>-3.44</td>
<td>107</td>
</tr>
<tr>
<td>Causal Attribution</td>
<td>39.81</td>
<td>46.00</td>
<td>-3.80</td>
<td>107</td>
</tr>
<tr>
<td>Responsibility-Blame</td>
<td>34.72</td>
<td>41.41</td>
<td>-2.80</td>
<td>107</td>
</tr>
<tr>
<td>Marital Attitude Scale</td>
<td>26.40</td>
<td>23.32</td>
<td>3.29</td>
<td>107</td>
</tr>
</tbody>
</table>

*Note. $p < .05$. ** $p < .01$. *** $p < .001$.*
The lack of correlation between postformal thought and marital satisfaction may also be influenced by the manner in which postformal thought was measured in the current study. As noted earlier, the Postformal Thought Scale has only moderate internal consistency, and the very definition of postformal thought is still vague due to its relatively new addition as a stage of cognition. Participants in the current study completed a self-report questionnaire assessing their levels of postformal thought. However, because this type of cognition is especially complex and contextual in nature, a measure that incorporates active cognitive process in response to various scenarios, with completion of tasks and problem-solving activities, would more accurately capture the construct of postformal thinking. It is quite possible that a better measure of postformal thought would result in significant correlations. The issue of further developing a measure of postformal thought is an important one that needs to be addressed in future research in this field.

Importantly, the current study’s findings support past research that has shown that the more one blames a partner with negative attribution styles for events that take place within the relationship, the more one tends to report dissatisfaction with a relationship (Fincham & Bradbury, 1992; Pretzer et al., 1991). Specifically, findings from the current study suggest that certain types of blame are more highly related to dissatisfied partners than other types. These types of blame tend to (a) have a locus of control specifically resting in their partner, (b) affect multiple areas of the relationship, (c) are stable across time, and (d) involve seeing intent and motivation of a spouse for negative behaviors in a relationship. Additionally, the findings from the current study suggested that dissatisfied spouses tend to specifically blame their partners’ personalities and their partners’ behaviors for negative events that take place in the relationship. Thus, the current study added to the body of research that supports the association between partner blame and marital satisfaction, which is an especially relevant finding for clinical work. The finding that these results support established research in regard to blame and satisfaction suggests that the lack of correlations between postformal thought and marital satisfaction is not due to having an unusual participant sample or improper methods. Understanding the relationship between blame and marital dissatisfaction, as well as the types of blame involved in the relationship between these two variables, could aid clinicians in tracking patterns of blame and implementing strategies to reduce it, therefore reducing dysfunction in relationships.

**Postformal Thought and Partner Blame**

The second hypothesis stated that postformal thought would be inversely correlated with partner blame, or negative partner attribution. This hypothesis was not supported, and instead, increased report of postformal thinking was positively correlated with increased partner blaming. The current study was the first to examine postformal thought in relation to partner blame. Although the findings did not support the proposed hypotheses, they did expose a surprising pattern that suggests that the more people tend to report thinking postformally, the more they tend to blame their partner for events and conflicts that take place within the relationship. Considering past research, it seems illogical that postformal thought would be positively correlated with partner blaming. One plausible explanation for this finding is the limited nature with which partner blame was assessed in the current study. The measures of blame used in this study, for example, captured only one person’s perspective and tended toward polarized thinking with items such as, “Whatever problems we have are caused by the things my partner says and does” (Pretzer et al., 1991). Due to postformal thinkers’ tendency toward sophisticated understanding of their relationships, the measures’ lack of dimensionality and limited incorporation of complex two-way interactions might have not fully captured the thought process that a postformal thinker would enact when making attributions. Past research has stated that the complexity of a spouse’s perceptions affects the salience, interpretation, and accessibility of any specific perception (Kareny & Gauer, 2010). Thus, a more dynamic measure such as a live, in-person assessment of dialog from relationship partners about an issue of conflict in their relationship might allow complex thinkers to display how they synthesize perceptions of blame. Further, as previously discussed, use of a more dynamic postformal thought measure would likely allow for a more sophisticated analysis of these behaviors and thought processes. The postformal measure, being self-report, only captures what participants say about their thought processes. However, due to the fact that high scorers on this postformal measure also scored higher on blame measures, this may indicate that they have less sophisticated understanding of their relationships. Thus, taken together, the conceptual vagueness of the postformal reasoning
concept may in fact capture those who are not able to reason about complexities—the same people who are more likely to blame their partners for problems in their relationships.

Aside from effects of the measures used in the current study, a possible alternative explanation for the positive correlation between postformal thought and blame could involve postformal thinkers’ attentive thought processes. Because postformal thinkers are aware of multiple perspectives between themselves and others, perhaps they are more aware of the blaming that takes place within their relationship, and thus report higher levels of blame on the questionnaire. It is likely that postformal thinkers’ awareness of how their subjective personal experience differs in comparison with others would allow them to also be more aware that they blame their spouse.

The third hypothesis stated that postformal thought would moderate the relationship between partner blame and marital satisfaction. Results from the hierarchical multiple regression used to examine this relationship revealed that this hypothesis was not supported. However, the model was significant, indicating that, although postformal thought and partner blame are related, postformal thought does not add anything to the relationship between blame and marital satisfaction. This finding is most likely a reflection of the lack of relationship between postformal thought and marital satisfaction.

Gender Differences and Education Levels
The current study revealed noteworthy gender differences. Women tended to blame their partners to a greater extent than men, which is consistent with past research that suggests this effect may be due to women’s tendency to pay close attention to subtle details of interpersonal interactions, whereas men tend to be more responsive to the overall sentiment of the interaction (Durtschi, Fincham, Cui, Lorenz, & Conger, 2011). Looking more specifically at this gender difference, the facets of the blame measures that women especially tended to score higher on concerned matters of blaming their spouse’s personality, as well as reporting that their blame has global effects in the relationship, endorsing items on the Relationship Attribution Measure such as, “The reason my spouse is spending less time with me is something that affects other areas of our marriage.” Perhaps there is a tendency for women to sense that there are widespread effects of blame on their relationship, which contributes to their overall higher mean scores. With regard to postformal thought and its relationship to various demographic characteristics, women were more likely to think more postformally than men. Past studies on postformal thought have not reported such gender differences (Galupo et al., 2010). This finding is a novel implication to add to the still-developing body of research on postformal thought. The study’s finding concerning the pattern of postformal thought increasing with higher levels of education was consistent with past research, which explains that cognitive growth is related to higher education (Berger, 2014).

Limitations and Directions for Future Research
In addition to the previously mentioned limitations in measuring postformal thought and partner blame, the current study examined blame behaviors strictly among married individuals and did not account for other interpersonal relationships. Because marriages, in particular, are highly complex relationships, there may be many factors that confound with blame and satisfaction. Aspects such as child raising, financial dependence, and sharing of households are just several examples of situations that can complicate marital attitudes.

Most intriguingly, future research could further examine why postformal thought was correlated to partner blame. Perhaps a replication of a similar study on postformal thought and blame could validate or refute the current study’s findings. Research would benefit from different measures of postformal thought and blame such as in-person observation or interviews. A noted limitation of the current study is the use of self-report questionnaires, and further, these questionnaires were not administered in a random order. Future research could improve possible order effects. Additionally, in an effort to examine mechanisms associated with partner blaming, future research could explore a less cognitive psychological process and a more emotional process such as emotional intelligence.

Finally, future research could examine whether the concept of conflict resolution within romantic relationships is associated with postformal thought. Because previous research has highlighted how postformal thinking has been related to coping flexibility and effective conflict management, perhaps postformal thought would manifest less as a thought process such as blame and more as a behavior such as conflict resolution (Bai et al., 2015; Cheng, 2009).
References


https://doi.org/10.1037/0033-2909.107.1.3


https://doi.org/10.1111/j.1745-9186.1970.tb00303.x


https://doi.org/10.1007/s10804-009-9055-1


https://doi.org/10.1111/j.1745-9169.2008.00555.x


https://doi.org/10.1080/0260402080230139


https://doi.org/10.1007/s10804-009-9056-0


https://doi.org/10.1037/0893-3200.8.4.432


https://doi.org/10.1111/j.1467-6811.2010.00271.x


https://doi.org/10.1037/0893-3200.12.4.494


https://doi.org/10.2307/3513032


https://doi.org/10.1037/0022-3514.76.6.958


https://doi.org/10.1007/s10804-015-9222-5


https://doi.org/10.1023/A:1009542239631


https://doi.org/10.1037/000240

Author Note. Kendall Jory, Pepperdine University; Janet Trammell, © https://orcid.org/0000-0002-0304-6974, Pepperdine University; and Cindy Miller-Perrin, © https://orcid.org/0000-0002-0993-8037, Pepperdine University. Special thanks to Psi Chi Journal reviewers for their support. Correspondence concerning this article should be addressed to Kendall Jory, 15 W Poplar Ave, San Mateo, CA, 94402. E-mail: kendall.jory@pepperdine.edu
Find your career.

Eight graduate degree programs and four certificates in Educational Psychology

**PhD in Educational Psychology**  
Engage in the science of learning. Prepare for a career where you can use your knowledge of human learning and development to help shape the school environment and public policy. Core program areas include learning, motivation, and research design.

**MS or MA in Educational Psychology**  
Broaden your ability to apply psychological principles to a variety of professional contexts or prepare for your future doctorate in social science.

**MS in Quantitative Psychology**  
Do you like numbers, statistics, and social science? Prepare for a career in research, assessment, and data analysis. Develop proficiency in advanced statistical techniques, measurement theory, and data analytics.

**PhD in School Psychology** (five-year program)  
Prepare for a career as a licensed psychologist. Gain competencies in health service psychology to work in schools, private practice, or hospital settings. Accredited by the American Psychological Association (APA)** and approved by the National Association of School Psychologists (NASP). Scientist-practitioner model with advocacy elements. Specializations available.

**MA/EdS in School Psychology** (three-year program)  
Be immersed in community engaged, real-world field experiences and intervention opportunities in our scientist-practitioner-advocate program. Leads to licensure as a school psychologist. Approved by NASP and the National Council for Accreditation of Teacher Education (NCATE).

**MA in School Counseling** (two-year program)  
Be a leader and advocate for educational equity for all students in PK–12 schools. Leads to licensure as a school counselor. Accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP) and nationally recognized by The Education Trust as a Transforming School Counseling program.

**Certificates**  
High Ability/Gifted Studies,* Human Development and Learning,* Identity and Leadership Development for Counselors,* Neuropsychology*

Graduate assistantships and tuition waivers are available.

bsu.edu/edpsy

*Online programs are available.  
**Questions related to the PhD in school psychology’s accreditation status should be directed to the Office of Program Consultation and Accreditation, American Psychological Association, 750 First St. NE, Washington, D.C. 20002; (202) 336-5979; apaaccred@apa.org; or apa.org/ed/accreditation.

Ball State University practices equal opportunity in education and employment and is strongly and actively committed to diversity within its community. Ball State wants its programs and services to be accessible to all people. For information about access and accommodations, please call the Office of Disability Services at 765-285-5393; go through Relay Indiana for deaf or hard-of-hearing individuals (relayindiana.com or 877-448-8772); or visit bsu.edu/disabilityservices. 582418-18 mc
Applying for Graduate School in Experimental Psychology?

Consider Cleveland State University’s Experimental Research Program

Program Highlights

• Rigorous scientific research training program
• Hands on laboratory experience
• Direct mentoring from productive research faculty
• Affordable tuition with remittances available
• Travel funds for presentation at scientific conferences
• Preparation for doctoral programs and/or careers in academia or health sciences

Learn more at csuohio.edu/gradpsych

The Department of Psychology also has graduate programs in Industrial-Organizational Research, Clinical Psychology, School Psychology, and Adult Development and Aging.

CSU’s vibrant urban campus is located in downtown Cleveland. Our 18 faculty in the Department of Psychology just moved to the newly renovated Union Building, next to historic Playhouse Square.

CLEVELAND STATE UNIVERSITY
Are All Eligible People Encouraged to Join Your Local Chapter?

Psi Chi values people with diverse perspectives and a broad representation of social identities and cultural backgrounds! This year, we are launching Our Diversity Matters Membership Drive to help chapters identify potential members who are sometimes overlooked.

"Experiencing the full range of human diversity enhances individuals’ world views, empathy, and skills. A powerful way to grow from diversity is to seek it in our daily lives."

Melanie M. Domenech Rodríguez, PhD
Psi Chi President

Learn more and how to get involved at https://www.psichi.org/resource/resmgr/pdfs/2018_diversitymattersdrive.pdf

Gain Valuable Research Experience With Psi Chi!

Students and faculty are invited to visit Psi Chi’s free Conducting Research online resource at www.psichi.org/?page=ConductingResearch. Here are three ways to get involved:

Join a Collaborative Research Project
www.psichi.org/?page=Res_Opps
With Psi Chi’s Network for International Collaborative Exchange (NICE), you can join the CROWD and answer a common research question with researchers internationally. You can also CONNECT with a network of researchers open to collaboration.

Recruit Online Participants for Your Studies
www.psichi.org/?page=study_links
Psi Chi is dedicated to helping members find participants to their online research studies. Submit a title and a brief description of your online studies to our Post a Study Tool. We regularly encourage our members to participate in all listed studies.

Explore Our Research Measures Database
www.psichi.org/?page=researchlinksdesc
This database links to various websites featuring research measures, tools, and instruments. You can search for relevant materials by category or keyword. If you know of additional resources that could be added, please contact research.director@psichi.org
“MY JOB IS NOT JUST TO TEACH, BUT ALSO TO HELP STUDENTS SEE THEIR INNER STRENGTHS.”

At the College of Clinical Psychology at Argosy University, we believe in a practitioner-scholar model of training. Our programs offer a rigorous curriculum grounded in theory and research, while also offering real-world experience. What’s more, all our PsyD programs have received accreditation from the American Psychological Association (APA), certifying that they meet the industry’s standards.

Learn more at clinical.argosy.edu/psi

Arizona School of Professional Psychology at Argosy University
American School of Professional Psychology at Argosy University | Southern California
American School of Professional Psychology at Argosy University | San Francisco Bay Area
Florida School of Professional Psychology at Argosy University
Georgia School of Professional Psychology at Argosy University
Hawaii School of Professional Psychology at Argosy University
Illinois School of Professional Psychology at Argosy University | Chicago
Illinois School of Professional Psychology at Argosy University | Schaumburg
Minnesota School of Professional Psychology at Argosy University
American School of Professional Psychology at Argosy University | Northern Virginia

DR. NAHID AZIZ

Associate Professor at the American School of Professional Psychology at Argosy University | Northern Virginia

Dr. Aziz is committed to mentorship, training, and addressing issues relevant to the ethnic and racial diversity.

---

Argosy University is accredited by the WASC Senior College and University Commission (605 Grand Avenue, Suite 105, San Mateo, CA 94401, www.wasc.org). Programs, credential levels, technology, and scheduling options are subject to change. Not all online programs are available to residents of all U.S. states. Administrative office: Argosy University, 601 South Lewis Street, Orange, CA 92668 ©2018 Argosy University. All rights reserved. Our email address is materialsreview@argosy.edu

COPYRIGHT 2018 BY PSI CHI, THE INTERNATIONAL HONOR SOCIETY IN PSYCHOLOGY (VOL. 23, NO. 4/ISSN 2325-7342)
Publish Your Research in *Psi Chi Journal*

Undergraduate, graduate, and faculty submissions are welcome year round. Only the first author is required to be a Psi Chi member. All submissions are free. Reasons to submit include

- a unique, doctoral-level, peer-review process
- indexing in PsycINFO, EBSCO, and Crossref databases
- free access of all articles at psichi.org
- our efficient online submissions portal

View Submission Guidelines and submit your research at [www.psichi.org/?page=JN_Submissions](http://www.psichi.org/?page=JN_Submissions)

---

Become a Journal Reviewer

Doctoral-level faculty in psychology and related fields who are passionate about educating others on conducting and reporting quality empirical research are invited to become reviewers for *Psi Chi Journal*. Our editorial team is uniquely dedicated to mentorship and promoting professional development of our authors—Please join us!

To become a reviewer, visit [www.psichi.org/page/JN_BecomeAReviewer](http://www.psichi.org/page/JN_BecomeAReviewer)

---

Resources for Student Research

Looking for solid examples of student manuscripts and educational editorials about conducting psychological research? Download as many free articles to share in your classrooms as you would like.

Search past issues, or articles by subject area or author at [www.psichi.org/?journal_past](http://www.psichi.org/?journal_past)

---

Add Our Journal to Your Library

Ask your librarian to store *Psi Chi Journal* issues in a database at your local institution. Librarians may also e-mail to request notifications when new issues are released.

Contact PsiChiJournal@psichi.org for more information.