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I feel loved when other people feel loved: Cultural congruence in beliefs on love is related to well-being

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Abstract

Cultural conformity in psychological constructs has been shown to play a critical role in people's health and well-being. The more people's individual beliefs about a construct aligns with the cultural norms, their cultural identity is more cultivated, leading to higher levels of well-being. Considering feeling loved in everyday contexts as a social construct that people indicate shared beliefs and cultural consensus for, in the current study, we explored congruency in cultural beliefs on love and its association with well-being in the United States. 495 participants in the United States evaluated everyday life scenarios in terms of whether they elicit loving feelings or not. We examined the correspondence between people's beliefs about what makes themselves (i.e., self) feel loved compared to what they think makes others feel loved and the cultural consensus on indicators of love. We then explored how individual differences in these correspondence measures are associated with people's well-being. We reported evidence for the lack as well as for the existence of these associations using Bayes Factors in the Bayesian statistical framework. Results indicated that both self-other and self-consensus agreements are meaningfully associated with individuals' well-being. Furthermore, when examining disagreements in self vs. other ratings of love, we found that one type of disagreement (believing other people feel loved in scenarios that I don't), is associated with lower levels of well-being. This meaningful relationship to well-being was not visible in the case where a person

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would report feeling loved in a scenario while believing that others would not. Implications for well-being interventions are further discussed.

Keywords
Bayes factor, Bayesian statistical framework, cultural congruence, Cultural Consensus Theory, everyday life, love, well-being

People evaluate situations and their own identities based on the shared norms of their culture (Lively & Heise, 2014). These intersubjective norms are usually formed by most members of a culture agreeing on certain values or opinions (Chiu et al., 2010). The overlap of one's own beliefs with the shared beliefs of the culture becomes important in forming identities. Studies have shown that the amount of overlap in individual emotional patterns and shared cultural beliefs is associated with health and well-being (i.e., emotional fit; De Leersnyder et al., 2015). The current study builds on the conceptualization of love as an emotion (Fredrickson, 2013, 2016) by studying emotional fit in the context of beliefs about love. In particular, we examine cultural congruence in beliefs on love, that is the overlap in people's own beliefs on love and the shared cultural beliefs about love. We also test whether individual differences in cultural congruence on love are related to psychological well-being.

Building on research that explored culturally embedded indicators of felt love in daily life (Heshmati et al., 2019, Oravecz et al., 2016), we introduce the idea of cultural congruence (grounded in the concept of emotional fit) into the study of love. First, we quantify the cultural congruence on love by assessing the overlap between what makes the individual feel loved with two other indices: what makes others feel loved, and the cultural consensus on love. Second, we test whether individual differences in the cultural congruence in love are systematically related to psychological well-being. With these inquiries, we hope to extend the current investigation of love from an individual or dyad-level experience to a more culturally embedded phenomenon, and explore whether the alignment and fit of beliefs on love with cultural norms could contribute to a happier and more connected life. This research lays the groundwork for exploring important questions on the role of cultural assimilation and well-being in the context of daily felt love.

Cultural assimilation and emotional fit

Within a cultural context there exists a plethora of symbolic resources such as schemas, theories, images, and icons shared among the members of a culture (Kitayama et al., 2010). These symbolic resources provide meaningful contexts that evoke certain beliefs and create a "theory of people." According to Heise and MacKinnon (2010), intersubjective norms and cultural identities develop first through individuals' interpersonal activities in the micro-sociological level. Once a cultural identity is built within a community, they then define situations and norms based on their community's "theory of people" in the macro-sociological level (Heise & MacKinnon, 2010). However, in any culture there are people who do not explicitly approve of or necessarily attain the beliefs

and values that are cultural norms, and this might be linked to lower levels of well-being (De Leersnyder et al., 2015).

The concept of *emotional fit* (Anderson et al., 2003; De Leersnyder et al., 2011) introduces a similar idea by stating that people's emotions tend to synchronize with those around them over time to foster social and cultural cohesion. People who live closely together and interact on a daily basis develop shared emotional patterns and are more emotionally synchronized. For example, in cultures centered on autonomy and individuality, people are prone to experience emotions reflective of self-worth and autonomy (e.g., pride, anger), as opposed to emotions related to social alignment and interdependence (e.g., closeness, embarrassment), showing their synchronization with the shared views of the culture (e.g., Anderson et al., 2003). On a broader scale, when people interact and engage in a society with a shared cultural context, they develop culture-specific emotional patterns. This might lead to emotional experiences that align with the cultural expectations more frequently and predominantly—due to the cultures' encouragement of those emotions—compared to the emotions that are not consistent to the underlying cultural practices (e.g., Kitayama et al., 2006; Markus & Kitayama, 1994; Mesquita, 2003; Mesquita & Leu, 2007).

Because of the dynamic nature of emotions and their role in helping people cope with the environment, the way emotions covary and assimilate in the context of social relations plays an important role in people's mental health and well-being (Heshmati et al., 2017; Sels et al., 2018). Considering love as an emotion (Fredrickson, 2016) and recognizing its importance in daily well-being (Heshmati et al., 2020; Oravecz et al., 2020) leads to questions such as whether having beliefs about love that conform to those of the society we interact with, care for, and experience interdependencies in our goals, behaviors and activities with, would help a person to more successfully cope with the demands of the environment and consequently to higher well-being.

Well-being and cultural congruence

In addition to substantiating the concept of emotional fit and cultural congruence in various societies, scientists have also investigated its association with individuals' well-being. With better assimilation of emotions to others in a social context and within a culture, individuals are able to better regulate their social interactions and processes to cope with changes in the environment. This is specifically adaptive for people because they can coordinate their thoughts and behaviors in response to an environmental threat, more easily facilitate discussion and interactions, and come together more closely by having their emotional experiences validated (Anderson et al., 2003).

When researchers investigated the consequences of emotional fit within cultures, they found that within each cultural context, subjective well-being was associated with experiencing the emotions that aligned with cultural beliefs; that is, with "the theory of people" (Heise & MacKinnon, 2010). For example, Kitayama and colleagues (2006) found that in Japan, experiencing more engaging emotions (e.g., friendly feelings and guilt) which were the dominant emotions experienced in that culture, is associated with increased well-being. On the other hand, for American people higher levels of well-being were linked with experiencing disengaging emotions (e.g., pride and anger), as these

emotions are more dominant in the American culture (Kitayama et al., 2006). In fact, emotional fit with culture has been demonstrated to play an integral role specifically in people's relational well-being (De Leersnyder et al., 2014), an association that is strengthened for situations related to social relationships rather than self-focused circumstances.

Self-Determination Theory (SDT; Deci & Ryan, 2000) further highlights the importance of assimilation with societal and cultural norms in terms of people's health and well-being. SDT posits that when people enter a new setting, certain beliefs and values are prescribed to them by the society. Although non-intrinsically motivated, there are processes by which people start internalizing and integrating those values and beliefs to become self-determined and for their behavior to match the new setting's norms and values. According to SDT, the internalization of society's norms and assimilation of its values and beliefs brings more autonomy for individuals, enhances their feelings of competence as their beliefs receive validation by the society's norms, and increases their sense of relatedness as they experience more belongingness in the society they live in (Deci & Ryan, 2008). Satisfaction of these psychological needs in turn is linked with various positive outcomes (Vansteenkiste et al., 2004). For example, improved health and well-being outcomes such as physical exercise (Chatzisarantis et al., 1997), maintenance of healthy weight (Williams et al., 1996), improved intimate relationships (Blais et al., 1990) and greater subjective well-being (Ryan et al., 1997) have been reported as positive outcomes of autonomy resulting from assimilation to societal norms. This improvement in well-being with higher internalization of cultural norms has also been demonstrated across diverse cultures (see, e.g. De Leersnyder et al., 2014; Kitayama et al., 2006).

Conceptions of love in daily life

The event of feeling love can occur for people in different situations in daily life. For example, a child can feel loved when their mother takes time to play with them; a person can feel loved when a neighbor brings cake to their door; a wife can feel loved when her husband kisses her; or one could feel loved when a pet licks their face. Although this feeling does not occur in the same context for everyone, people report a similar sensation corresponding to a surge of love: a rush of warmth accompanied by fascination and a desire to be close (Shaver et al., 1996). Fredrickson (2013, 2016) describes these momentary surges of love as a micro-moment of positivity resonance that occurs in daily experiences with those with whom we share positive emotions, have mutual care, and experience biobehavioral synchrony in our interpersonal connections—formally dubbed "love-the-emotion" (Fredrickson, 2013).

The notion of love has been examined through various lenses by relationship scientists—both from experts' points of view and from laypeople's perspective (Heshmati & Donaldson, 2020). Fehr (1988) adopted a *prototype approach* to conceptualize and define love from laypeople's perspective. Trust, caring, intimacy, and friendship—indicators of companionate love—were identified as central to love by laypeople, whereas features of passionate love such as sexual desire were considered non-prototypical and peripheral. Subsequently, to understand how these 68 features of love

align with other definitions of love, Aron and Westbay (1996) conducted a factor analysis on all the features. The features loaded on three factors that represented passion, intimacy, and commitment—the three components of Sternberg's triangular love (Sternberg, 1986)—with intimacy being rated the highest relevant feature followed by commitment and lastly passion. As an antithetical approach to this, the *essentialist approach* (Duda & Bergner, 2017; Hegi & Bergner, 2010) conceptualizes love using what is thought to be the one essential feature that people define as love, "investment in the wellbeing of the other."

Apart from research on definitional features of love, Buss (1988) used a prototype approach to understand the behavioral indicators of love. Findings revealed that people saw behaviors representing commitment as prototypical to love, in contrast to behaviors representing sexuality and passion, rated as the least prototypical acts of love. Another line of research by Shaver and colleagues (1987) took the same prototypical approach to extract laypeople's understanding of experiences of love by asking them to describe what experiences consist as loving. Shaver et al. (1987) concluded that experiences people described consisted of antecedents to love, responses to love, physiological reactions to love, and loving behaviors, to name a few. Fitness and Fletcher (1993) then implemented a similar prototype approach along with cognitive appraisal analysis on marital relationship contexts to understand what typical experiences are linked with partner-related love. Thinking about your partner, receiving support from them, and sharing good times with each other were examples of triggers for feelings of love in marital relationships which led to feelings of warmth and relaxation.

Following this line of research on understanding love, cultural consensus on daily love experiences was also studied to examine whether individuals within a specific culture agree on what makes people feel loved in everyday life (Ellis et al., 2020; Heshmati et al., 2019; Oravecz et al., 2016). This approach was built on the premise that cultures are made up of a group of people where there is substantive reason to believe that its members share common knowledge or beliefs of interest. With topics such as love, where there is no objective truth to be scientifically verified as a "correct" answer, Cultural Consensus Theory (CCT; Batchelder & Romney, 1988; Batchelder et al., 2018) is well suited for examining shared beliefs among members of culture. CCT builds on quantifying the consensus knowledge for each individual, as well as deriving what the cultural consensus is on a content domain. The derived cultural consensus represents the shared agreement on what makes people feel loved while cognitive individual differences in decision making styles (i.e., knowledge on the consensus and guessing biases) are accounted for. Using this approach, Heshmati and colleagues (2019) asked participants living in the United States to respond True/False to the question "Most people feel loved when . . . " followed by 60 daily scenarios that had the potential to make people feel loved (Felt Love Questionnaire). These scenarios included both romantic and non-romantic contexts. These items were generated by focus groups and were aligned with current theories and studies on love (Feeney, 2004; Fredrickson, 2013; Gable et al., 2004; Hendrick & Hendrick, 2006; Reis et al., 2004). A set of items with a negative connotation (controlling/possessiveness theme) were included to balance the positive scenarios on loving actions. Items appeared in a random order. Findings indicated that people in the US indeed share an agreement on what makes people feel loved and what

does not. In particular, receiving support in needs and goals in addition to connecting with pets and children are among the highest agreed-upon scenarios as loving; while controlling behaviors were agreed upon as non-loving scenarios.

The current study

Following this line of research, the current study uses archival data and results from Heshmati et al. (2019), as well as data not yet analyzed from the same study, to examine whether cultural congruence in beliefs about everyday life experiences of love are associated with well-being. Specific to the current study, we examined whether people's well-being is associated with cultural congruency of beliefs on love. We operationalized well-being through the PERMA framework (Donaldson et al., 2020; Seligman, 2011, 2018). The PERMA model explains well-being by incorporating both hedonic and eudaimonic aspects of well-being through five distinct elements—Positive emotions, Engagement, Relationships, Meaning, and Accomplishment.

Cultural congruency of beliefs on love was calculated using three indices: a) one's beliefs about when *others* feel loved, b) the *cultural consensus* on feeling loved, and c) one's own perception of when they themselves feel loved (from now on referred to as "*self*"). With respect to when *others* feel loved (a), participants evaluated whether most people would feel loved in 60 daily love experience scenarios (see details in Heshmati et al., 2019). These responses therefore indicated one's beliefs about when *others* feel loved. These data were also used in Heshmati et al. (2019) to calculate the shared agreement, that is the *cultural consensus* on feeling loved (b) (see list of consensus answers in Heshmati et al., 2019). Unique to the current study were responses used to derive the *self* perspective (c). To indicate one's own perception of when they feel loved, participants responded to items that began with "I feel loved when . . . " followed by 60 daily love scenarios, by indicating whether each statement was true, false, or they were uncertain (i.e., don't know).

Using these three indices, we quantified cultural congruency by two scores: overlap between "*self*" and "*others*" perspectives and the overlap between "*self*" and "*consensus*" perspectives. We calculated the amount of overlap by comparing each participant's answers across the scenarios and summing the number of times they agreed ("self-other" and "self-consensus"; see details in Method section).

The first aim of the current study was to examine associations between the two congruency scores on love beliefs ("self-other" and "self-consensus") and well-being. We hypothesized that individuals with higher overlap in "self-other" or "self-consensus" beliefs on love would report higher well-being as measured by the five PERMA elements. This is also in line with SDT that suggests when people identify with an activity's value and integrate it into their sense of self (autonomous motivation), they exhibit greater well-being (Deci & Ryan, 2000) while also meeting their psychological need for competence by mastering their environment and their need for relatedness by feeling belonging and connection to the society in which they live in. With greater internalization of cultural norms, greater increase in both hedonic and eudaimonic indicators of well-being are observed in various cultural settings (Chirkov et al., 2003).

The second aim of this study was to explore the nature of self-other disagreements by breaking them down into two meaningful subparts in terms of individual differences in (1) the number of scenarios in which one would perceive love, while believing that others would not ("True for self, False for others") and (2) the number of scenarios in which one would not perceive love, while believing that others would ("False for self, True for others"). By looking at self-other disagreements broken down this way, we aim to learn about how prone people are to (a) perceiving others capable of feeling loved in scenarios when they do not ("False for self, True for others") and (b) perceiving others as not capable of feeling loved in scenarios where they do ("True for self, False for others"). Learning the direction in which these discrepancies manifest and whether they relate to well-being can provide foundations for the development of well-being interventions.

Method

Participants

General study settings are identical to the one described in Heshmati et al. (2019). Selected details are provided here for convenience. A sample of 500 adults (M age = 51 years, SD = 15.70, range = 18–93), of which 250 were men, all residing in the United States, were recruited with approval from the Institutional Review Board at the Pennsylvania State University (protocol # STUDY00000987). From the initial 500 participants, five participants were eliminated from the analysis due to responding "Don't Know" to all of the questions of the survey, resulting in a final sample size of N = 495. Out of the remaining 495 participants, 80% (n = 397) of the participants described themselves as White; 10% (n = 49) of the participants described themselves as Black; and 10% (n = 49) as other races. Fifty-six percent (n = 275) of the participants reported being married, cohabiting, or being in stable relationships; 22% (n = 108) reported being single or single but dating; 22% (n = 109) reported being divorced, widowed, or separated; and the three remaining participants preferred not to answer.

Procedures

Data analyzed in this study (described in detail below) consisted of responses to 60 one-sentence scenarios framed in the other perspective (archival data used also in Heshmati et al., 2019), the cultural consensus results from Heshmati et al. (2019), responses to the 60 love scenarios from the self-perspective, and responses to items measuring different elements of well-being based on the PERMA model. The participants took approximately 20 minutes to complete the full survey.

Measures

Felt love questionnaire. The Felt Love Questionnaire (Heshmati et al., 2019) consists of 60 one-sentence everyday life scenarios with topics centered around potential loving signals. It comprises seven categories: (1) trust and acceptance (e.g., "when somebody confides with them"); (2) support in needs and goals (e.g., "someone celebrates their accomplishments"); (3) symbolic/physical expressions, e.g. ("they get gifts"); (4)

sharing time with others (e.g., "they spend time with their friends"); (5) other possible sources of love (e.g., religion, pets, nature, patriotism, gratitude, politeness, etc.); (6) controlling behavior from others (e.g., "someone wants to know where they are at all times"); and (7) neutral/control items for testing differentiation (e.g., "they eat their favorite food").

The current study consisted of answers to each of the 60 everyday life scenarios based on the participants' beliefs about *the self.* Each item began with the prompt "I feel loved when . . . " followed by a daily scenario, for example: "I feel loved when someone celebrates my accomplishments." To minimize participant burden, participants were asked to make a decision about these scenarios by selecting True, False, or Don't Know. To avoid hesitation, instructions also noted that because these questions are based on opinions, there are no right or wrong answers.

We also used archival data from Heshmati et al. (2019) with the same participants' responses to these items from the "*others*" perspective where each item began with the prompt "Most people feel loved when . . . " followed by a daily scenario. Moreover, we used the cultural consensus estimates for these 60 items, derived in the Heshmati et al. (2019). The cultural consensus estimates were derived using a cognitive psychometric model based in the Cultural Consensus Theory framework—we refer to this model-inferred other perspective as the "consensus." Practically speaking, these estimates were based on weighting people's ratings of "what makes others feel loved" by their cultural competence and cognitive bias tendencies. Because the consensus answers are based on the responses of all people and psychometric modeling, they provide a model-based understanding on how the individual and the cultural beliefs overlap. Data from the current study as well as the archival data and the consensus labels are summarized in Table 1.

Agreement and disagreement scores. To quantify the amount of overlap between beliefs related to "self" and "other," and beliefs related to "self" and "cultural consensus," we derived four types of scores. First, we quantified the number of times people matched between beliefs for *self* and *cultural consensus*, labeled (1) "self-consensus agreement" for simplicity. Since this indicator involved CCT modeling for deriving the cultural consensus, it can be seen as a model-based indicator of congruency. Second, we calculated the number of times people matched in their responses to felt love items when the questions were asked about their *self*-perspective compared to when they were asked about the *others*' perspective, and derived a score for each person. We labeled this comparison (2) "self-other agreement" for simplicity. Since calculating this indicator used raw response data, we can see it as a more data-driven quantification of congruency.

Additionally, we explored the disagreements on *self* vs. *other* ratings by focusing on the patterns of disagreement in participants' selection of True or False responses for themselves, compared to others. Specifically, we made disagreement scores based on how many times a respondent selected False responses for *self* but True for *others* which we labeled (3) "False for self, True for others disagreement." We then did the same for when the participants selected True responses for *self* but False responses for *others* for each scenario and labeled it (4) "True for self, False for others disagreement."

Table 1. Summary of all felt love scenarios and corresponding estimates from the current study and archival data.

			Current Study		*Archival Data*		
			I feel loved when . . .		Most people feel loved when . . .		
Category	Item #	Everyday Scenario	% True (Self)	% False (Self)	% True (Other)	% False (Other)	Consensus label
B	22	Someone cares for them when they are sick.	0.91	0.05	0.92	0.05	True
B	41	Someone shows compassion toward them in difficult times.	0.91	0.07	0.96	0.02	True
B	1	Someone supports them without expecting anything in return.	0.89	0.08	0.91	0.07	True
C	38	Someone tells them: "I love you."	0.89	0.06	0.92	0.05	True
A	29	They are made to feel special.	0.88	0.08	0.93	0.05	True
C	34	A child snuggles up to them.	0.88	0.07	0.95	0.03	True
D	43	They spend quality time with someone.	0.88	0.08	0.93	0.03	True
D	30	They spend time with their family (e.g., holidays, vacation).	0.86	0.10	0.88	0.06	True
B	39	Someone calls just to check in on them.	0.86	0.10	0.88	0.09	True
B	10	Someone is there just to listen.	0.85	0.10	0.85	0.10	True
B	32	Someone does something nice for them unexpectedly.	0.85	0.12	0.85	0.11	True
C	4	They are hugged.	0.84	0.11	0.84	0.11	True
E	11	They feel appreciated.	0.84	0.13	0.89	0.08	True
B	33	Someone is supportive of their life goals.	0.82	0.13	0.87	0.10	True
C	50	They are holding hands.	0.82	0.11	0.80	0.11	True
B	2	They feel accepted.	0.81	0.14	0.85	0.12	True
A	44	They feel completely comfortable around someone.	0.81	0.15	0.91	0.06	True
C	53	When someone sends them signs of affection (e.g., slight smile, loving glance).	0.81	0.13	0.87	0.08	True
A	23	Someone forgives them for something they did wrong.	0.80	0.13	0.80	0.13	True
C	59	Someone kisses them.	0.80	0.11	0.81	0.11	True
B	51	They experience an act of kindness.	0.79	0.16	0.82	0.14	True

(continued)

Table 1. (continued)

			Current Study		*Archival Data*		
			I feel loved when . . .		Most people feel loved when . . .		
Category	Item #	Everyday Scenario	% True (Self)	% False (Self)	% True (Other)	% False (Other)	Consensus label
A	13	Someone understands them.	0.78	0.16	0.82	0.12	True
A	60	They feel someone has no expectations and they can be themselves.	0.78	0.16	0.77	0.15	True
C	15	They receive gifts (card, flowers etc.).	0.77	0.17	0.82	0.12	True
B	17	Someone helps them out.	0.76	0.17	0.75	0.19	True
C	21	They make love.	0.76	0.13	0.82	0.11	True
B	42	Someone celebrates their accomplishments.	0.75	0.19	0.86	0.10	True
E	24	Their pets are happy to see them.	0.73	0.03	0.93	0.04	True
A	49	They can share their opinions without being judged.	0.73	0.21	0.83	0.09	True
E	58	They are recipients of gratitude.	0.72	0.22	0.72	0.20	True
E	6	They feel connected to God.	0.71	0.20	0.78	0.11	True
B	56	Something nice happens to them unexpectedly.	0.71	0.23	0.66	0.25	True
B	18	Someone follows up to ask how a problem turned out.	0.69	0.22	0.68	0.24	True
D	52	They have fun with their friends.	0.69	0.24	0.68	0.24	True
D	16	They spend time with their child(ren).	0.66	0.03	0.90	0.04	True
D	35	They are included in activities.	0.66	0.25	0.69	0.23	True
A	5	Somebody confides in them.	0.64	0.26	0.59	0.29	True
B	3	They make up after a fight.	0.63	0.23	0.70	0.18	True
C	36	They receive a compliment.	0.62	0.31	0.64	0.28	True
D	40	They are around people, having fun.	0.62	0.30	0.63	0.27	True
B	55	A group recognizes their contribution.	0.55	0.36	0.56	0.32	True
E	54	they feel close to nature.	0.54	0.38	0.50	0.34	True
D	12	They feel part of a team.	0.53	0.36	0.59	0.27	True
C	14	someone is sexually attracted to them.	0.51	0.34	0.54	0.33	True
A	31	Someone can immediately tell what is on their mind.	0.51	0.36	0.56	0.29	True

(continued)

Table 1. (continued)

			Current Study		*Archival Data*		
			I feel loved when . . .		Most people feel loved when . . .		
Category	Item #	Everyday Scenario	% True (Self)	% False (Self)	% True (Other)	% False (Other)	Consensus label
C	48	Someone is polite to them.	0.47	0.42	0.56	0.33	True
G	8	The sun is shining.	0.45	0.44	0.38	0.46	True
E	25	They attend a religious ceremony.	0.45	0.40	0.46	0.35	True
F	37	Someone insists to spend all of their time with them.	0.41	0.47	0.45	0.46	False
E	45	They hear or sing their country's national anthem.	0.41	0.44	0.45	0.35	True
G	46	They eat their favorite food.	0.40	0.51	0.45	0.40	True
C	20	They get a compliment from a stranger.	0.38	0.51	0.36	0.48	True
B	19	Someone gives them positive feedback on the internet (e.g., a Facebook like, a retweet, etc.).	0.37	0.52	0.41	0.42	True
G	27	They solve a difficult problem.	0.35	0.53	0.33	0.52	False
F	57	Someone tries to change their behavior to be healthier.	0.34	0.51	0.40	0.43	False
F	28	Someone else wants to know where they are at all times.	0.27	0.62	0.26	0.63	False
F	9	Someone tells them what is best for them.	0.26	0.61	0.28	0.61	False
F	47	Someone is possessive about them.	0.24	0.67	0.31	0.59	False
D	26	They attend sporting events of their favorite team.	0.17	0.69	0.22	0.61	False
E	7	They play sports.	0.13	0.74	0.17	0.67	False

Note. This table summarizes data from the current study (columns 4–5) and archival data (columns 6–8) used in Heshmati et al. (2019). The archival data from Heshmati et al. (2019) used the prompt "Most people feel loved when . . . " in the 60-item Felt Love Questionnaire where people's responses were based what would make *others* feel loved. The new data used in the current study began the Felt Love Questionnaire with the prompt "I feel loved when . . . " to capture what people believe makes *themselves* feel loved. Categories to which scenarios belong to include: A) Trust and acceptance, B) Support in needs and goals, C) Symbolic/physical expressions, D) Sharing time with others, E) Other possible sources of love, F) Controlling behavior from others, and G) Control scenarios with a neutral connotation in terms of loving signals.

Well-Being items. To capture well-being, we used scales aiming to capture the five elements defined in the PERMA framework (Seligman, 2011). The items corresponded to the five PERMA dimensions: Positive emotions, Engagement, Relationship, Meaning, and Accomplishment. Positive emotions capture feelings of happiness like joy and

contentment. Engagement represents being in a state of flow or immersion into a task or activity. Meaning captures having a greater purpose in life and feeling that one's life is valuable. Relationships refers to positive social connections that make a person feel supported and cared for. Accomplishment includes having a sense of achievement by having goals and ambition in life. This theory posits that these five elements have true value in and of themselves, (e.g., people pursue them each for their own sake), that each element can be measured independently, and that all of the elements contribute to individuals' overall well-being. In order to measure each of the PERMA elements, we used items from scales that were already established in each of these domains. For example, in order to measure the element of Positive emotions we used the Scale of Positive and Negative Experiences (Diener et al., 2009), for Engagement we used the Flow Short Scale (Rheinberg et al., 2003), for Relationships we used the Positive Relationships Scale from PERMA profiler (Butler & Kern, 2016), for Meaning we used the Meaning in Life Questionnaire (Steger et al., 2006), and for Accomplishment we used items adapted from the Psychological Well-Being Scales (Ryff & Keyes, 1995), NEF's National Accounts of Well-Being (Michaelson et al., 2009), and Missing Dimensions of Poverty (Samman, 2007). The supplemental material summarizes all items and their corresponding scales. The internal consistency, quantified with Cronbach's α, was high for all the subscales (Positive emotions: $\alpha = .93$, Engagement: $\alpha = .92$, Relationship: $\alpha = .85$, Meaning: $\alpha = .84$, Accomplishment:$\alpha = .86$).

Data analysis

Hypothesis testing via Bayes factor. We explored how the quantitative summaries of the self-other and self-consensus agreements correlate and quantified the evidence in favor or against these correlations in terms of Bayes Factors (BF; Ly et al., 2015). The Bayes Factor is a tool for hypothesis testing in the Bayesian statistical framework. Bayes Factor quantifies evidence in favor or against a null or an alternative hypothesis, based on the data and a prior setting needed for specifying the alternative hypothesis. More specifically, the null hypothesis in our analysis is no correlation and the alternative hypothesis is that correlation exists (no directionality assumption). In the classical null hypothesis significance testing framework, we could only reject or fail to reject the null hypothesis of "no correlation." Bayes Factor provides the ability to interpret the weight of evidence in the data in favor or against a correlation or no correlation.

The Bayes Factor is measured on a continuous scale, expressing the ratio of evidence between null and alternative hypothesis (or vice versa, by taking the reciprocal). To summarize BF in terms of discrete categories for interpretation of evidence strength, a classification scheme was proposed by Jeffreys (1961; shown in Table 2). According to this classification, a Bayes Factor—either articulated in terms of in favor of the null (lack of correlation in our case), that is BF_{01}, or in favor of the alternative hypothesis (existence of correlation), that is BF_{10}[1]—below 3 shows anecdotal or no evidence for one hypothesis over the other; BF between 3 and 10 shows moderate evidence; BF greater than 10 shows strong evidence; BF greater than 30 shows very strong evidence; BF greater than 100 shows extreme evidence. Bayes Factors in the current analysis were

Table 2. Evidential strength categories for Bayes factor.

Bayes Factor BF_{10}	Interpretation
>100	Extreme evidence for H_{10}
30–100	Very Strong evidence for H_{10}
10–30	Strong evidence for H_{10}
3–10	Moderate evidence for H_{10}
1–3	Anecdotal evidence for H_{10}
1	No evidence
1/3–1	Anecdotal evidence for H_{01}
1/10–1/3	Moderate evidence for H_{01}
1/30–1/10	Strong evidence for H_{01}
1/100–1/30	Very Strong evidence for H_{01}
<1/100	Extreme evidence for H_{01}

calculated in JASP[2] (version 0.7.5; JASP Team, 2016), which is a free and open-source statistical software package. The JASP output file, containing the analyzed data and results with the settings of the analysis, as well as the raw data with the data processing scripts are available as an online supplement on the project's Open Science Framework page.[3]

Results

Everyday life scenarios of love

First, we identified the everyday life scenarios in which more people showed agreements in their responses between the *self* perspective and the *other* perspective. This comparison highlighted that most people's self-other *agreements* occurred in scenarios for which the American cultural consensus on those scenarios was "loving." For example, most people believed that both the self and other people would feel loved when "someone cares for them when they are sick" (91%) or "someone supports them without expecting anything in return" (90%) or "a child snuggles up to them" (89%). Most of these scenarios with high overlaps were either centered on the "support in needs and goals" theme or were "symbolic/physical gestures."

We also identified the scenarios for which most people showed disagreements in their beliefs on love for *self* and *other*; these items were mostly the items that the cultural consensus indicated was "non-loving." The average number of people showing disagreements across the scenarios was 73.59 or 6.73% (SD = 28.56). Items with the highest number of disagreements included: "they attend sporting events of their favorite team" (21%), "they attend a religious ceremony" (21%), or "someone tries to change their behavior to be healthier" (24%), which people felt were loving indicators for *the self* but not for *others* ("True for self, False for others" disagreement). On the other hand, more people judged that *others* might feel loved by scenarios such as "when someone is possessive about them" (28%), or "someone insists on spending all of their time with them" (23%), but they themselves wouldn't ("False for self, True for others" disagreement). These results imply that people's beliefs about themselves are more aligned with

Table 3. Pearson correlation coefficients of well-being with agreement and disagreement scores.

	Self-consensus agreement	Self-other agreement	True for self, False for others disagreement	False for self, True for others disagreement
Positive Emotion	0.272****	0.225****	−0.119	−0.151**
Engagement	0.165***	0.096	0.002▲▲	−0.118
Positive Relationship	0.360****	0.325****	−0.125	−0.319****
Meaning	0.308****	0.285****	−0.128*	−0.216****
Accomplishment	0.260****	0.246****	−0.119	−0.190****

Note: The asterisk(s) next to the coefficients indicate the degree of strength of evidence in favor of the existence of a correlation based on the Bayes Factor (BF): *BF_{10}: 3–10 (moderate), **BF_{10}: 10–30 (strong), ***BF_{10}: 30–100 (very strong), ****BF_{10} > 100 (extreme). The triangle(s) next to the coefficients indicate the degree of strength of evidence in favor of the null hypothesis (non-existence of a correlation) based on the Bayes Factor (BF): ▲BF_{01}: 3–10 (moderate), ▲▲BF_{01}: 10–30 (strong).

their beliefs about others on indicators of love as opposed to non-loving indicators. More importantly, the scenarios with the most agreements fall within the "support in needs and goals" category. On the other hand, the scenarios with the most disagreement fall either within the "controlling behavior" category or the neutral items.

Agreements on indicators of love and well-being

Table 3 displays selected Bayesian Pearson correlation coefficients calculated in JASP among the agreement and disagreement scores described above and the five well-being measures. We selected the correlation coefficient for which there was evidence in favor or against correlation (full report of the analysis is provided online as a JASP file on the project's OSF page [https://osf.io/g6mqe/?view_only=b54bd0e176844f8ca7769634c22b0159.]).

Self-consensus agreement. We explored the degree to which participants' responses to felt love items from the self-perspective matched with the general consensus on indicators of felt love (self-consensus agreement) and its association with indicators of well-being. Results are shown in the first column of Table 3. Our findings indicated that people were more likely to have matching beliefs between what makes them feel loved (self) and the cultural consensus on indicators of felt love (consensus) if they scored high on the following indicators of well-being: Positive emotions ($r = 0.27$, $BF_{10} > 100$), Engagement ($r = 0.17$, $BF_{10} = 49.62$), Positive Relationship ($r = 0.36$, $BF_{10} > 100$), Meaning ($r = 0.31$, $BF_{10} > 100$), and Accomplishment ($r = 0.26$, $BF_{10} > 100$).

Self-other agreement. Results showed that there is a correlation between "self-other agreement" and positive emotions ($r = 0.23$), with a corresponding $BF_{10} > 100$, indicating extremely strong evidence for this correlation's existence. This means that there was substantial support in our data for the claim that people who experience higher rates

of positive emotions have more overlap between their *self* and *other* beliefs on indicators of love. As seen in Table 3, there was also positive correlation with substantial evidence between self-other agreement and Positive Relationship ($r = 0.33$, $BF_{10} > 100$), Meaning in life ($r = 0.29$, $BF_{10} > 100$), and Accomplishment ($r = 0.25$, $BF_{10} > 100$). Overall, the results showed that four PERMA well-being measures—having positive relationships, a meaningful life, feeling accomplished, and experiencing positive emotions—were positively related to correspondence between people's beliefs about indicators of love that make the *self* feel loved and indicators that make *others* feel loved. Engagement was the only well-being component that was not meaningfully associated with overlaps in beliefs on love for others compared to the self.

Disagreements on indicators of love and well-being. We broke down the self-other disagreement variable into two meaningful subparts. First, we wanted to see if there were meaningful individual differences associated with the number of settings in which a person would perceive love, while believing that others would not ("True for self, False for others" disagreement). Generally speaking, we did not find strong evidence supporting correlations between the "True for self, False for other" variable and well-being measures (Table 3, column 3), except some moderate evidence for Meaning: lower levels of disagreement was associated with higher Meaning ($r = -0.13$, BF_{10}: 3–10). However, there was strong evidence supporting the null hypothesis of no correlation between the "True for self, False for others" variable and Engagement ($r = 0.002$, $BF_{01} = 17.73$).

Second, we wanted to assess whether people who systematically differed in terms of everyday life settings in which they themselves would not perceive love, while believing that others would ("False for self, True for others" disagreement; higher values mean more discrepancy) would show differences in well-being. Generally speaking, the data showed evidence for associations between the "False for self, True for others" measure and the well-being variables (Table 3, column 4). More specifically, the results indicated that people with low levels of discrepancy tended to report having a more meaningful life ($r = -0.22$, $BF_{10} > 100$), felt more accomplished ($r = -0.19$, $BF_{10} > 100$), had higher positive relationships ($r = -0.32$, $BF_{10} > 100$), and positive emotions ($r = -0.15$, $BF_{10} = 16.32$) scores, with strong evidence for the latest and extreme evidence for the rest of the associations. These findings suggest that people who are less prone to perceive others capable of feeling loved in scenarios in which they themselves would not, report higher levels of well-being.

We also investigated the predictive power of the four congruency indicators for well-being by using Bayesian regression analysis. For every well-being measure, we used different combinations of the four congruency indicators and compared their out-of-sample prediction power[4] via comparing their corresponding Bayes Factors. Results indicated that from our current set of congruency indicators (1) Positive Emotions are most optimally predicted by self-consensus agreement ($R^2 = 0.07$, $BF = 30$); (2) Engagement is most optimally predicted by self-consensus agreement ($R^2 = 0.03$, $BF = 23$); (3) Positive Relationships are most optimally predicted by a combination of self-consensus agreement and "false for self, true for other" disagreement scores ($R^2 = 0.15$, $BF = 12$); (4) Meaning of life is most optimally predicted from self-other and

self-consensus agreements ($R^2 = 0.11$, BF = 20); and (5) Accomplishment is most optimally predicted from self-other agreement and self-consensus agreements($R^2 = 0.08$, BF = 14). Detailed result tables and a corresponding JASP file with analyses (also containing the data) are available as Online Supplement.

We further explored how well our congruency indicators perform in terms of predicting Positive Relationships. We included a predictor on relationship status (being in a relationship or not), and its interactions with the four congruency measures. The relationship variable was a binary variable distinguishing people who reported as being single (coded as 0) and others who were grouped as being in a relationship (coded as1). Specific relationship categories that were coded as "in a relationship" were: "Married," "Cohabiting," and "In stable relationship (but not married/cohabiting)." Categories that were coded as "single" were: "Single," "Widowed," "Divorced," "Separated," and "Single but dating." We found that the most optimal model (in terms of out-of-sample predictive power) now included not only the predictors of "self-consensus agreement" and "False for self, True for others disagreement" scores as in the analysis described above, but also interaction effects with relationship status on self-other agreement and "False for self, True for others" disagreement scores (with being in a relationship predicting higher Relationship scores) and the predictive power increased ($R^2 = 0.25$, BF = 170). This suggests that relationship status is a reliable moderator of congruency.

Discussion

Scientific studies of love have spanned a wide variety of approaches in both the relationship sciences (e.g., prototype, essentialist, taxonomy approaches) and emotion science (affective perspective). More recently, through a cultural consensus theory approach, Heshmati and colleagues (2019) examined the cultural consensus on indicators of love in daily life, showing evidence that people in the U.S. shared an agreement on what makes most people feel loved and what daily scenarios are non-loving. Yet, there has been a gap in our knowledge on whether overlaps in people's individual beliefs about love and the cultural consensus around love is associated with their psychological well-being. Therefore, the current study introduced cultural congruence to capture this overlap into the study of love for the purpose of understanding love as a culturally embedded phenomenon.

To this end, in the current study, we first examined the level of congruence in intersubjective cultural norms of love with beliefs about love for the self. We then explored how this cultural congruence on beliefs on love related to people's well-being. How much people internalize the cultural ideas about love was quantified by two measures: the overlap between (1) what makes people feel loved and what they think makes others feel loved (self-other agreement) and (2) what makes people feel loved and the cultural consensus (self-consensus agreement). We performed correlation analysis in the Bayesian framework to gain information on how much evidence there is in favor or against the relationship between cultural congruence on love and well-being in terms of correlations and corresponding Bayes Factors.

In examining the congruence on people's beliefs about love for others compared to their beliefs for themselves, we found that indicators of love that showed the most

overlap were centered on themes such as "support in needs and goals" and aspects of "symbolic/physical gestures." Support and care for others—as one of the indicators of compassionate love as opposed to romantic and passionate love (Berscheid, 2010)—along with indicators of companionate love were indicated as central features of love by laypeople in Fehr and colleagues' prototype studies (Fehr, 1988; Fehr & Russell, 1984, 1991). Showing support and care for others is also in line with the "essential" feature of love, investment in the well-being of the other, as part of the essentialist approach to the meaning of love (Duda & Bergner, 2017; Hegi & Bergner, 2010). Moreover, the scenarios centered on "symbolic/physical gestures" fit with loving behaviors identified as *experiences* of love by laypeople extracted through the prototypical approach by Shaver and colleagues (Shaver et al., 1987). To summarize, our finding suggests that the components of love that have previously been shown to be essential and central features of love are the aspects of love that people display cultural congruency, conveying that people tend to be more in agreement with the cultural norms around these central features. Moreover, it is the less central aspects of love on which people displayed disagreements in their beliefs for themselves and others in the current study.

Next, we examined the association between cultural congruence on love and people's well-being, using the PERMA model of well-being (Seligman, 2011). PERMA identifies five components—Positive emotions, Engagement, Relationships, Meaning, and Accomplishment—that are theorized as the building blocks of well-being. As hypothesized, we found that all five well-being components were related to people's "self-consensus" agreement on indicators of love. In other words, having positive relationships, experiencing positive emotions, having a meaningful life, feeling accomplished in life, and experiencing engagement (often referred to as flow) in daily activities is related to how much people's perception of loving signals for themselves match culturally shared beliefs. This finding supports the concept of emotional fit between self and cultural surrounding and its correlation with well-being (De Leersnyder et al., 2014). The reasoning behind this may be because people with higher subjective well-being are those who conform to the cultural expectations of the society and show high internalization of cultural norms (Chirkov et al., 2003; Deci & Ryan, 2000) and hence, they feel loved by the same indicators that the cultural belief about indicators of felt love are; that is to say that they are one with their cultural society. Furthermore, one's identification with an embedded social value and integrating it into their sense of self—in this case displaying overlapping beliefs on love with the cultural beliefs—might lead to satisfaction of basic psychological needs of competence, autonomy, and relatedness which generate greater well-being (SDT; Deci & Ryan, 2000).

Similarly, "self-other" agreements on felt love and well-being components were meaningfully associated. The only PERMA component that was not meaningfully associated with self-other agreements was Engagement, which might stem from a limitation of the measure—Engagement items were not general but referred to the current day. It would be interesting for future research to use another method of measuring engagement to explore this relationship further.

Next, we examined self-other *disagreements* on indicators of love and how they related to well-being components. Namely, we looked at the patterns of disagreement in participants' selection of True or False responses for themselves, compared to other.

First, we found that showing more disagreement in responses by responding to a scenario with "True for self, False for others" was not associated with well-being components. In other words, there were no meaningful individual differences in the number of scenarios in which a person would perceive feeling loved while believing that others would not. However, discrepancies in responses displayed by choosing "False for self, True for others," or in other words, believing that other people would feel loved in scenarios when the respondent would not, was associated with well-being components. More specifically, people who showed lower levels of this type of disagreement ("False for self, True for others") displayed having a more meaningful life, feeling more accomplished, having positive relationships, and experiencing more positive emotions. People have a fundamental need to belong, and feelings of exclusion might result in "social pain" (Novembre et al., 2015)—a threat to their social relationships and their attachment system (Bowlby, 1982; Hazan & Shaver, 1994). Thus, when people acknowledge that the society to which they belong has certain norms around love, in order to feel included in the society, they are inclined to want the same norms for themselves—in this case wanting to feel loved by the same indicators that they think others in their cultural group would feel loved. This notion of social inclusion is in part aligned with the concept of Fear of Missing Out (FoMO), "a pervasive apprehension that others might be having rewarding experiences from which one is absent" (Przybylski et al., 2013, p. 1841). With FoMO comes a desire to be similar to others and be a part of what they are engaged in (e.g., usage of social media in youth). Hence, in the context of norms and beliefs on indicators of love, people may also experience FoMO when they realize that what makes others feel loved is not what makes them feel loved (captured by our "False for self, True for others" disagreement), and might be linked with lower levels of well-being, consistent with our findings. However, when one can experience loving feelings even when others do not (captured by our "True for self, False for others" disagreement), the same FoMO mechanisms are not in play, leading to an asymmetry in terms of links with well-being.

Additionally, we conducted regression analyses to examine the predictive relationship of cultural congruence in beliefs on love and the five well-being indicators. All in all, we concluded the predictive power was relatively small. Although the overlap between beliefs about the self and the cultural consensus were predictive of all five PERMA elements, this congruence in beliefs on love was most predictive for Relationships and Meaning components. These stronger associations may be expected as love—particularly experienced in everyday life—has been related to higher levels of perceived support and care and higher relationship satisfaction (Graham, 2011), as well as being a source of meaning and purpose in people's lives (O'Donnell et al., 2014). Moreover, we found being in a relationship or not moderates the association between cultural congruency on beliefs on love and the Relationships component of well-being. In other words, people who were in a relationship were more likely to experience higher levels of positive relationships when their own beliefs on love overlapped with the cultural consensus on love. This finding is in line with the results in Heshmati et al. (2019) which demonstrated that people who were in a relationship had higher ability to know the consensus on love, hence the higher likelihood of this knowledge being associated with positive outcomes in their relationships.

Learning about these discrepancies and their relation to well-being can provide foundations for the development of well-being interventions in the future. For instance, future research might examine whether emotional fit and FoMO are a mediator of self-other alignments in beliefs on love in relation to well-being. Practitioners can then use this finding to target and resolve those self-beliefs that are not aligned with the cultural beliefs and beliefs about others to cultivate emotional fit and alleviate social pain.

The current study had the following limitations: First, self-other and self-consensus overlaps of beliefs on loving signals were only examined in relation to well-being. Future studies could extend this investigation to other individual differences such as exploring associations with attachment styles and communal orientations. Second, our measurement of the engagement component of well-being was limited in the sense that it only asks about how engaged individuals were the day they took the survey, whereas other elements of well-being were measured in a more general sense. We used the engagement items in this format because it is difficult to ask individuals about their sense of engagement in general, given that engagement can be better assessed with experience sampling design (i.e., multiple repeated measurement in everyday life context, e.g. Csikszentmihályi, 1996). Third, because the sample was from the United States, the external validity of the findings is limited, and cross-cultural investigations would be useful in future studies.

Conclusion

This study aimed to elucidate links between cultural congruency in beliefs on love and psychological well-being. For this, we introduced two novel indicators of congruency in the context of love in daily life: a model-based indicator that contrasted beliefs related to self with the cultural consensus (based on CCT modeling) and a more data-driven indicator that contrasted beliefs related to self with beliefs related to others. Results showed that both indicators related meaningfully to different aspects of psychological well-being. Specifically, we found that people whose own beliefs on love had higher overlap with their beliefs about others as well as the cultural consensus, also reported higher positive emotions, positive relationships, meaning in life, and accomplishment in daily life. This association was even stronger for people who were in a romantic relationship versus those who were single. On the other hand, when people displayed discrepancies in their own beliefs and the cultural consensus, particularly when they believed that other people would feel loved in scenarios when they themselves would not, lower levels of well-being were reported.

To our knowledge, this study was the first to examine cultural congruency in beliefs on love and relate it to psychological well-being. By exploring different ways that cultural congruency in beliefs on love can be conceptualized—agreements and disagreements in self versus other beliefs as well as self versus cultural consensus—we were able to test these different conceptualizations of cultural congruency on love in relation to psychological well-being in adults in the United States.

Future studies might test the direction of these associations in interventions where individuals are made aware of cultural norms—specifically cultural norms of loving feelings—while monitoring their well-being in this process. Furthermore, future research

can examine possible causal directions or mediation models that explore the relationship between, perceptions of love, and daily well-being and how one might predict the other. Moreover, as discussed elsewhere (e.g., Heshmati et al., 2019), future studies should pursue a cross-cultural examination of beliefs on love and its relation to well-being as these cross-cultural differences have been seen in differential emotional patterns between cultures such as American and Asian cultures (e.g., European Americans have a tendency toward pride and anger while East Asians have a tendency toward closeness and embarrassment; Boiger et al., 2013; Kitayama et al., 2006; Markus & Kitayama, 1994). Due to lack of past research on love as an everyday experience and the cultural consensus on what makes people feel loved, we hope that our findings will generate hypotheses for future research on love.

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Open research statement

As part of IARR's encouragement of open research practices, the author(s) have provided the following information: This research was not pre-registered. The data used in the research are available. The data can be obtained at: https://osf.io/g6mqe/?view_only=b54bd0e176844f8ca7769634c22b0159. The materials used in the research are available. The materials can be obtained at: https://osf.io/g6mqe/?view_only=b54bd0e176844f8ca7769634c22b0159.

Notes

1. Note that these are reciprocal, that is BF10 = 1/ BF01.
2. The JASP software can be downloaded from this website: https://jasp-stats.org/download/.
3. Supplemental files are available on the Open Science Framework: https://osf.io/g6mqe/? view_only=b54bd0e176844f8ca7769634c22b0159.
4. We chose to evaluate out-of-sample prediction power in an attempt to quantify generalizability of predictive power to new data sets. The more traditional "in-sample" prediction power (which is always higher than out-of-sample), via including all available predictors, would only quantify the fit to the current data, which would carry the risk of overfitting. This means that we eliminated from this model those predictors that we conclude to have a regression weight of zero, and that only contribute noise to the prediction.

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