

WHICH SPOUSAL BEHAVIORS PREDICT MARITAL SATISFACTION WHEN COUPLES HAVE CHILDREN? A MULTI-LEVEL MODELING ANALYSIS IN FIVE CULTURES

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ABSTRACT

This study utilized Multilevel Modeling Analyses to explore predictors of marital satisfaction and to explore how those predictors might moderate any negative impact of children. The Marriage and Relationship Questionnaire (MARQ), which demonstrates cultural and gender invariance, has been used to explore predictors of marital satisfaction in different cultures. In earlier research using MARQ datasets from the U.S.A., U.K., Turkey, Russia and China (3,000 couples), regression analyses identified 13 predictors explaining from 62% to 74% of the variance in marital satisfaction. The current research took the six most powerful predictors (sexual fulfillment, kind spouse, humorous spouse, dependable spouse, having the same outlook, and having a physically attractive spouse) and number of children, and subjected those variables to a Multilevel Modeling Analysis. Results are discussed on the level of the individual and the dyad by culture. Cultural similarities and differences emerged; unique cultural patterns are discussed. Across cultures, all predictors were associated with marital satisfaction. The negative impact of children did not appear in every culture with alpha set at .01. Moderation analysis results suggest that, depending on culture, the negative impact of children is moderated by maintaining sufficient levels of sexual satisfaction, kindness, humor and dependability after children arrive.

Keywords: marital satisfaction, sexual satisfaction, children, MARQ, kindness, humor, dependability

INTRODUCTION

Marriage is virtually universal, and around the world, even where marriage rates are falling, still about 90 percent of men and women will marry eventually (Kiersz, 2017). We are aware of one exception, the Na people of China, in which women are ordinarily impregnated in casual affairs and the mother and her siblings raise the children (Hua, 2001). Even this exception draws our attention to the key function of marriage, successful reproduction. Among people who marry, the vast majority will have children. As Quale wrote, marriage relationships may be defined as “lasting, mutually helpful offspring-raising relationships” (Quale, 1988, p. xi). Given the functional importance of marriage, it is somewhat surprising that Psychology has not yet produced a comprehensive theory of marriage (White, 1990; Weisfeld et al., 2018a). Some researchers (e.g., Fisher, et al., 2009) have pointed out that, although we have made progress in understanding mate choice, we have made less progress in formulating a model of staying together in a long-term, committed marriage relationship.

Divorce, unfortunately, is also nearly universal, at least under some circumstances, such as the existence of infertility, abuse by the husband, or infidelity by the wife (Betzig, 1989). Rates of divorce vary widely by culture, of course. But, given that children are better off, by many developmental measures, if they are raised by both of their biological parents (Wilson & Daly, 2004; Geary, 2005), it is also of great practical importance to understand factors that contribute to parents’ remaining together, to raise their children.

Marital satisfaction is not the same as marital stability, but satisfaction with one’s spouse contributes to stability, and both lower the risk of divorce. In this paper we seek to identify behavioral factors (that is, behavioral tendencies that spouses assess in each other) that predict satisfaction with marriage. By using archival data (Weisfeld et al., 2018a) gathered on both members of the couple in five different cultures, we can identify person and couple characteristics that are associated with marital satisfaction in couples with children, living in different cultural environments.

Known predictors of marital satisfaction

Most marriage research from the mainstream social sciences is applied and not based on broad theories that would pertain to the whole species; notably, the reproductive function of marriage is often given short shrift. Rather, the focus is often on changing specific behaviors like communication or division of labor, within populations with special needs who come for family counseling (e.g., Girma Shifaw, 2022; Qori, et al., 2022). Notably, a recent review (Karney & Bradbury, 2020) asserted that behavioral training programs reap little benefit in terms of improving relationship satisfaction, especially in couples whose origins are not white and middle-class. A 35-nation study (Hilpert, et al., 2016) that looked at dyadic coping (assessed through Bodenmann’s 2008 Dyadic Coping Inventory which asks, for example, if one’s partner is empathetic in stressful times) found a modest positive relationship between dyadic coping and satisfaction, but the relationship was strongly affected by both culture and gender. Over the years in the U.S.A., social scientists have established that “marital satisfaction is correlated with similarity, wealth, education, health, sexual satisfaction, sexual fidelity, long courtship, kindness, and older age at marriage” (e.g., Brehm et al., 2002, as cited in Weisfeld, et al., 2018a); but researchers rarely offer a functional explanation linking these demographic and behavioral factors to relationship satisfaction. For example, it is logical that health, sexual satisfaction, and sexual fidelity would be functionally related to reproductive success and happiness in marriage.

In general, the tendency towards assortative mating suggests individuals are drawn towards similar individuals (Thiessen & Gregg, 1980); however, the different adaptive demands placed on males and females, like pregnancy and lactation in human mothering, have produced some

sex differences in mate choice criteria through the course of evolution (Botwin, et al., 1997). The Evolutionary Psychology literature on mate choice is extensive, and it has provided well-documented lists of universal mate choice preferences, with hypotheses about why sex differences are found (Buss, 1989; Buss, et al., 1990; Buss, 2016). A male usually seeks a woman who is physically attractive and young, and who would be sexually faithful to them should they pursue a long-term relationship. All these preferences are likely selected for in a species where female reproductive capacity is limited to thirty years or so, and where her ovulation is concealed and a husband is always threatened by paternity uncertainty.

Females, the more choosy sex (Darwin, 1871), endorse a long list of what they seek in a male: emotional dependability, strength, industriousness, kindness, good financial prospects, intelligence, humor, health, compatibility, etc. (Buss, 1989; Buss, et al., 1990; Buss, 2016). These qualities make good functional sense in a species with dependent young who require decades of subsistence support and protection (Friedl, 1975). Some of these characteristics have been identified as predictors of satisfaction for both sexes, both in initial mate choice, and in long-term committed relationships. For example, relationship satisfaction is related to age, economic status, and education (Dobrowolska, et al., 2020); also humor and kindness (Weisfeld, et al., 2011), physical attractiveness (Singh, 1993), and sexual satisfaction (Litzinger & Gordon, 2007). Married people have reported more satisfaction with a spouse who is pleasant and easygoing (Blum & Mehrabian, 2001); emotionally dependable and conscientious (Botwin, et al., 1997); and who is compatible, especially in terms of shared values and outlook (Botwin, et al., 1997; Deal, et al., 1992).

Effects of children on marital satisfaction

Many studies have reported a detrimental effect of children on marital satisfaction, and 97 studies were included in a meta-analysis by Twenge, Campbell, and Foster (2003). They concluded that parents had significantly lower marital satisfaction than nonparents did, and the more children a couple had, the lower their satisfaction with the marriage was. Effect sizes were small for women ($d = -.19$) and even smaller for men ($d = -.13$). Dillon and Beechler (2010) questioned whether the aforementioned meta-analysis might have missed studies of collectivist cultures. Individualism vs. collectivism is a significant continuum on which to view cultures, with important implications for family functioning, particularly the transition to parenthood. Broadly, individualistic cultures, found mainly in North America, Europe and Australia, underscore individual needs and rights, and the nuclear family is paramount; in contrast, collectivistic cultures, found mainly in Africa, Asia, and Latin America, focus on group needs, and extended families typically collaborate in raising children. Dillon and Beechler did a second meta-analysis, utilizing Twenge's methodology. They found 15 articles on collectivist cultures (only one of which had appeared in the Twenge analysis). In this second meta-analysis, the effect size for children shrank to $-.11$; thus, the effect of children accounted for less than 1% of the variance in satisfaction with the marriage. A study of British, American, and Turkish marriages (Wendorf, et al., 2011) also found that the influence of number of children was very small across these three cultures, accounting for less than five percent of the variance in each parent's marital satisfaction. Notably, the effect of number of children was statistically significant only for the American and British couples, not for the more collectivistic Turkish ones. In contrast, a recent international study involving participants from 33 countries (Kowal, et al., 2021) did find children to be a significant predictor of lower marital satisfaction. They wrote (p. 5): "In the final model, number of children predicted marital satisfaction ($B = -.030$, $p = 0.048$), but the effect was relatively small."

Thus, the findings on children are fairly consistent across culture and time of data collection, and the findings are consistently barely significant. Johns and Belsky (2008), discussing this pattern, whereby the arrival of children may cause marital satisfaction to fall

slightly, argued that many variables seem to impact this finding, depending on what researchers look for. Citing additional findings by O'Brien and Peyton (2002), they wrote, "...even though, on average, marital quality declines somewhat across the transition to parenthood, this central tendency masks notable variation in response to the arrival and rearing of a first child" (p. 73).

Moderators of the detrimental effects of children

Researchers have identified particular variables that may mediate or moderate the negative effect of children, including infant temperament (Schoppe-Sullivan et al., 2004), parental division of labor (Belsky & Hsieh, 1998), and violations of expectations (Chong & Mickelson, 2013). An unsystematic Google Scholar search done in 2018 (Weisfeld, et al., 2018b) looked for articles on marital satisfaction and eight predictor variables: children, money problems, getting along, kindness, compatibility, humor, physical attraction, and compatibility. A total of 1.3 million journal articles came up. Children by far got the most attention, at 58%; money problems came next, and kindness and humor and the other predictors received far less attention, even though it is known that those predictors are important in mate selection (Buss, 1989; 2016). As Buss wrote (1994 edition of his 2016 book, p. 181):

To preserve a marriage, couples should remain faithful; produce children together; have ample economic resources; be kind, generous, and understanding; and never refuse or neglect a mate sexually. These actions do not guarantee a successful marriage, but they increase the odds substantially.

In findings consistent with the predictions of Buss from 30 years ago, the current authors' preliminary data analyses, which utilized linear regressions (2018, 2019), found that, across five cultures, children seemed to account for less of the variance in marital satisfaction than was accounted for by parental variables such as sexual satisfaction, kindness and humor. One must ask whether those predictors continue to be important in marriage maintenance, and, indeed, whether they might mitigate the negative impact of having children.

Current study

The main goal of this paper is to see how particular spousal behaviors moderate the relationship between the presence of children and relationship satisfaction. The current study utilizes data gathered by means of the Marriage and Relationship Questionnaire (MARQ) designed by Russell and Wells (1993). Marital satisfaction is measured by the MARQ Love Scale, a nine-item scale described in more detail below. In addition, the study explores the impact of these six predictor variables: Sexual satisfaction, Humor, Kindness, Dependability, Attractive spouse, and Same outlook. The presence of children is also included as a predictor variable, given the need to understand the importance of children in the context of these other variables. We are aware that some researchers (e.g., Kowal, et al., 2021) consider children to be an external stressor and thereby possibly a different sort of predictor; nonetheless we see value in including children in these analyses.

The current study uses archival data (Weisfeld, et al., 2018a) from five different cultural groups: U.S.A., Great Britain, China, Turkey, and Russia. Cross-cultural data are especially valuable in the study of the family (see Henrich, et al., 2010); most of the studies cited above were conducted in the United States, with the notable exception of cross-cultural studies from the Buss groups and the Kowal/Sorokowski groups. Additionally, the data utilized here were collected on both members of the couple, allowing us to do some valuable testing of dyadic variables, in ways similar to the work cited above by Botwin and colleagues (1997).

METHODS

Participants

Data were gathered on married couples, beginning in England in the 1980's (Russell & Wells, 1993), and continuing in the USA, China, Turkey and Russia for the next 30 years (see Weisfeld, et al., 2018a, for a general presentation of findings). These cultures were selected for the research largely because of their diversity with respect to geography, climate, predominant religion, divorce rates, collectivism vs. individualism, economic system, prosperity, and history.

Notable differences among these cultures include the following: The USA and UK have a common cultural and historical connection, but there are relevant differences in valuing marriage and divorce (Perkins & Spates, 1986). When the original data were collected, Russia was in the throes of difficult economic times associated with the transition to a market economy, placing strains on marriages. China's one-child policy was strictly enforced at the time our data were gathered, and the one-child policy seems to have been accompanied by a rise in infidelity (Shen, 1996) and women's economic independence (Sun, 1991). Turkey is predominantly Muslim, and it was functioning as a thriving democracy at the time of data collection, although its democracy has struggled recently. Notably, nearly one-third of the Turkish couples were in arranged marriages.

Table 1: *MARQ Sample Demographics:* Demographics showing MARQ survey data for couples in the USA, China, Turkey, Russia and the UK. Ranges, standard deviations and other information available in Weisfeld, et al.(2018a).

	USA	China	Turkey	Russia	UK
Number of Couples	419	411	453	405	1,336
Husband's Mean Age	42	40	38	43	38
Wife's Mean Age	40	38	34	41	36
Mean Years of Marriage	15	12	11	16	14
Mean No.of Children	2.1	1.1	1.5	1.2	1.3
Mean No. of Marriages	1.2	1.1	1.1	1.2	1.1
LOVE Scale Score	4.54	3.46	4.09	3.82	4.31

Table 1 displays demographic data for the five archival samples. The US, Russian, and Turkish samples were collected by psychology students through the chain referral and modified snowball methods (Bailey, 1987). The UK sample was collected through a marketing company, recruitment by students, and an ad placed in a women's magazine. The UK sample was the original sample, and the longest-running; thus the sample size is larger than the others. The Chinese sample was obtained by sending questionnaires home with schoolchildren, with a 90% rate of compliance. It is important to note that all analyzed responses came from couples, and they were collected and coded as dyadic data. As Jackson and colleagues (2014) pointed out, data that include the linked responses of husbands and wives can yield results that are quite different from data gathered on random men and women who are not married to each other.

Here, confidentiality of responses was assured by having respondents place completed questionnaires in separate sealed envelopes that were then placed in a larger envelope to be returned in person or by post, allowing for linking of husband and wife responses. Results were very similar across the sampling methods, and a high level of agreement between spouses on most items was found, thereby providing validation for the measures. The figures across cultures are generally quite similar, allowing for some generalizations across cultures. There is some difference in the Love Scale scores, and that is likely due to response bias, particularly with regard to the Chinese sample (low bias) and the USA sample (high bias). (See Henrich, et al., 2010, for a discussion of cultural differences in response biases.) In all five countries, the relevant ethical review groups approved the survey instrument in translation and approved of data collection, in accordance with the 1964 Helsinki declaration and subsequent amendments.

Measure

MARQ instrument. Participants completed the 235-item Marriage and Relationships Questionnaire (MARQ; Russell & Wells, 1993), a multi-purpose assessment of husbands' and wives' perceptions about their relationship. Items were based on suggestions from married individuals in the UK with various cultural backgrounds. The MARQ was later translated for use in other countries, and back-translated for accuracy, under the supervision of local research collaborators. The MARQ has been found to be relatively free of social desirability effects, and to correlate well with other relationship measures, such as the Kansas Marital Satisfaction Scale (Schumm, et al., 1986) at .92 for wives and .87 for husbands (Russell & Wells, 1992). Four scales within the MARQ have demonstrated robust measurement invariance for husbands and wives across most of the countries included in previous analyses (Lucas, et al., 2008), the Love Scale, the Partnership Scale, the Problems with Partner Scale, and the Personal Problems Scale.

Love Scale. One of the most robust scales, the 9-item Love Scale, the outcome variable in the present study, was designed to “explore the extent of the respondent's emotional attachment to their partner” (Russell & Wells, 1993). The Love Scale includes the following items, with responses on a 5-point scale, ranging from “not at all” to “very much”: Do you enjoy your spouse's company? Are you happy? Do you find your spouse attractive? Do you enjoy doing things together? Do you enjoy cuddling your spouse? Do you respect your spouse? Are you proud of your spouse? Does your relationship have a romantic side? How much do you love your spouse?

Individual items. The MARQ also includes dozens of individual item questions related to various aspects of relationships. Six predictors known to be important for mate choice (Buss, 1989) were included in the analyses for this current paper. These predictors are responses to these individual questions from the MARQ: Do you find sexual fulfillment inside your marriage? Is your wife/husband kind to you? How often does your spouse make you laugh? Can you depend on your spouse in a crisis? Do you have the same outlook? Do you think your spouse is attractive to other people? Participants also provided details on age, gender, etc. for their children. Response options for these items were on a 5-point scale anchored with “not at all” and “very much” or some such appropriate wording and were recoded so that increasing numbers correspond with an increase in the frequency/strength of the variable. While predictors based on single questions are regarded as less robust than predictors based on scales, there is evidence from various disciplines, including business marketing, that the two types of predictors are equally valid (Bergkvist & Rossiter, 2007).

Data analysis

To examine the associations between relationship behaviors, number of children, and relationship satisfaction, we used a multilevel modeling approach. This approach allowed us to accommodate for dependencies in the data that resulted from its nested structure and examine

both within- and between- dyad variance (Bryk & Raudenbush, 1992). This was done in 2 parts. First, we examined our model in the sample as a whole. Then, we examined the model in each country individually to better understand how culture may influence the findings. In each case, the proportion of variance in relationship satisfaction attributable to differences among the dyads was computed using the intraclass correlation (ICC).

For all samples, Level 1 of our model contained variables at the level of the individual (relationship behaviors). To aid in interpretation, all Level 1 variables were dyad centered. Level 2 of the model contained variables at the level of the dyad (dyad means associated with centered Level 1 variables, the dyad's number of children, and the country in which the dyad resided). Although it could be argued that country should be modeled in Level 3 (individuals nested in dyads nested in countries), the cultures of the countries in which data were collected were of interest to the researchers and were not randomly drawn from the population of countries. Therefore, country was treated as a characteristic of the dyad and was modeled in Level 2. To aid in interpretation, all continuous Level 2 variables were sample centered across models and country was represented by a series of 4 dichotomously coded variables in the overall model. To examine whether relationship behaviors moderated the association between number of children and relationship satisfaction, cross level interactions between Level 1 relationship behaviors and number of children were examined. Given the large number of analyses conducted as part of these multilevel models, α was reduced to .01.

RESULTS

The intraclass correlation coefficient (ICC) was used to calculate the proportion of variance in relationship satisfaction occurring at Level 2 (the dyad level). The ICC for relationship satisfaction in the whole sample was .538, suggesting that 53.8% of the variance in relationship satisfaction was occurring at Level 2 (the dyad level) and 46.2% of the variance in relationship satisfaction was occurring at Level 1 (the person level). However, there was variability in ICC values across countries. Table 2 contains ICC values for Britain, China, Russia, Turkey, and the United States. Overall, the percentage of variance in relationship satisfaction occurring at Level 2 (the dyad level) differed substantially across countries and ranged from 16.2% (China) to 61.0% (United States).

Table 2: Intraclass Correlation Coefficients for British, Chinese, Russian, Turkey, and American Samples.

Country	ICC
Britain	.567
China	.162
Russia	.452
Turkey	.440
United States	.610

Table 3 contains the parameter estimates for the multilevel models. For the sample as a whole, all relationship behaviors at Level 1 and Level 2 were significantly associated with relationship satisfaction. In general, these relationships were positive. Thus, people and dyads that rated the sexual fulfillment, humor, dependability, same outlook, and attractiveness items higher than was usual for the dyad and sample respectively also reported higher relationship satisfaction. Interestingly, although dyads that had higher than usual ratings on the item my spouse is kind to me reported greater relationship satisfaction, individuals who rated the item my spouse was kind to me higher than was usual for the dyad reported less relationship satisfaction. See Table 3.

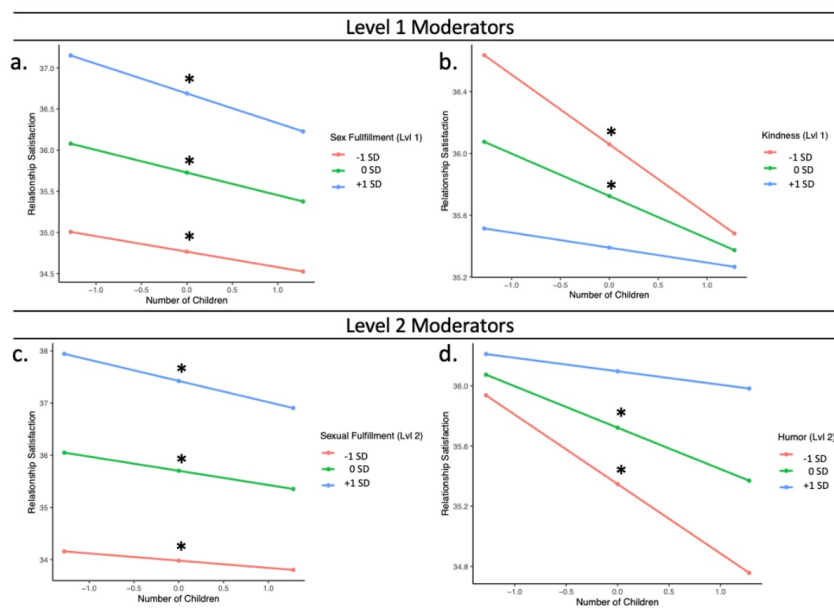
Table 3: Parameter Estimates for Multilevel Models.

	All		Britain		China		Russia		Turkey		USA	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Fixed Effects												
Intercept	37.20**	.18	35.49**	.10	31.39**	.67	34.66**	.21	37.14**	.21	38.28**	.22
Sexual Fulfillment (Lvl 1)	1.77**	.12	1.04**	.15	-2.99	1.70	1.08*	.37	1.80**	.38	1.71**	.38
Sexual Fulfillment (Lvl 2)	1.92**	.10	1.12**	.12	3.24	1.72	1.10**	.30	2.05**	.35	.93*	.28
Kindness (Lvl 1)	-.75**	.15	.05	.20	-1.19	1.44	-.63	.58	.09	.45	.70	.49
Kindness (Lvl 2)	.47**	.12	2.23**	.19	-3.06	1.80	-2.27**	.59	1.98**	.42	2.15**	.44
Humor (Lvl 1)	.41**	.12	.79**	.17	1.18	1.36	-.52	.31	.97	.40	.96*	.35
Humor (Lvl 2)	.46**	.12	1.10**	.17	.82	1.07	-1.21**	.30	1.29**	.35	2.31**	.42
Dependable (Lvl 1)	1.31**	.13	.84**	.16	3.28*	1.17	1.29**	.38	1.51*	.47	-.09	.45
Dependable (Lvl 2)	1.74**	.14	.38	.17	.86	1.27	1.26*	.43	1.50*	.46	.91	.49
Same Outlook (Lvl 1)	.75**	.12	.49*	.16	3.62	1.44	.39	.32	.38	.32	.06	.40
Same Outlook (Lvl 2)	1.43**	.12	.77**	.16	1.92	1.21	.80*	.25	.66	.30	1.76**	.38
Attractive (Lvl 1)	1.01**	.11	1.12**	.15	1.52	1.08	1.10*	.36	1.02**	.28	.75	.31
Attractive (Lvl 2)	1.23**	.11	1.02**	.15	.69	1.25	1.56**	.42	.77**	.27	.89*	.33
Number of Children	-.28**	.05	-.13*	.04	-.24	.63	-.27	.15	-.25	.11	.04	.08
Sexual Fulfillment (Lvl 1) x Number of Children	-.16*	.06	-.07	.07	5.16*	1.65	.07	.27	-.31	.18	-.09	.16
Sexual Fulfillment (Lvl 2) x Number of Children	-.15*	.05	.04	.05	-1.41	1.66	.10	.23	-.23	.18	-.00	.12
Kindness (Lvl 1) x Number of Children	.40**	.08	.25*	.09	.19	1.36	-.06	.42	.66*	.21	-.22	.19
Kindness (Lvl 2) x Number of Children	.08	.05	-.33**	.07	1.61	1.73	-.50	.44	-.06	.20	.16	.18
Humor (Lvl 1) x Number of Children	.09	.06	.06	.08	-1.47	1.30	-.04	.23	-.19	.21	-.01	.13
Humor (Lvl 2) x Number of Children	.23**	.06	.05	.07	.11	1.01	-.13	.21	-.02	.18	-.10	.17
Dependable (Lvl 1) x Number of Children	-.11	.07	-.05	.08	-1.90	1.12	-.19	.28	-.19	.25	.34	.17
Dependable (Lvl 2) x Number of Children	-.01	.07	.17	.08	.49	1.21	-.04	.31	.07	.23	.07	.18
Same Outlook (Lvl 1) x Number of Children	.04	.06	-.05	.07	-2.33	1.38	.26	.23	.42*	.15	.31	.16
Same Outlook (Lvl 2) x Number of Children	.02	.06	.13	.07	-.25	1.13	-.08	.18	.19	.15	-.12	.16
Attractive (Lvl 1) x Number of Children	.11	.06	.13	.07	-.65	1.02	.38	.26	-.01	.14	.13	.12
Attractive (Lvl 2) x Number of Children	.00	.05	.14	.06	-.25	1.21	-.33	.30	.07	.13	-.02	.13
Britain	-2.72**	.15										
China	-1.55**	.31										

Russia	-.62	.30				
Turkey	-.36	.20				
Random Effects						
Intercept SD	1.60	1.24	.62	1.06	1.04	1.23
Residual SD	2.98	2.45	3.44	3.04	3.24	2.83
Model Information						
LL	-15290.47	-6275.00	-2010.61	-2011.12	-2363.63	-2045.69
AIC	30644.94	12606.00	4077.21	4078.25	4783.26	4147.39
BIC	30858.15	12769.70	4205.93	4207.65	4916.65	4277.67
Number Observations	5812.00	2583.00	759.00	777.00	892.00	801.00
Number Groups	3035.00	1249.00	412.00	402.00	455.00	417.00

Note. *p<.01, **p<.001

Additionally, for the sample as a whole, number of children was negatively associated with relationship satisfaction. Thus, as the number of children a dyad had increased, the dyad's relationship satisfaction decreased. To better understand this relationship, we examined the moderating effects of relationship behaviors. Both Level 1 sexual fulfillment and kindness significantly moderated the relationship between number of children and relationship satisfaction. In particular, when a person feels more sexually fulfilled inside their marriage than is typical for the dyad, the negative relationship between number of children and relationship satisfaction becomes stronger (Figure 1a). Conversely, when a person reports that their spouse is more kind to them than is typical for the dyad, the negative relationship between number of children and relationship satisfaction is not significantly different from zero. Rather as kindness ratings decrease, the relationship between number of children and relationship satisfaction becomes more strongly negative (Figure 1b). Level 2 sexual fulfillment and humor also significantly moderated the relationship between number of children and relationship satisfaction. When dyads reported more sexual fulfillment than was typical in the sample, the negative relationship between number of children and relationship satisfaction became stronger (Figure 1c). Conversely, when dyads reported more humor than was typical in the sample, there was no relationship between number of children and relationship satisfaction. However, as humor ratings decreased, the relationship between number of children and relationship satisfaction became more strongly negative (Figure 1d).



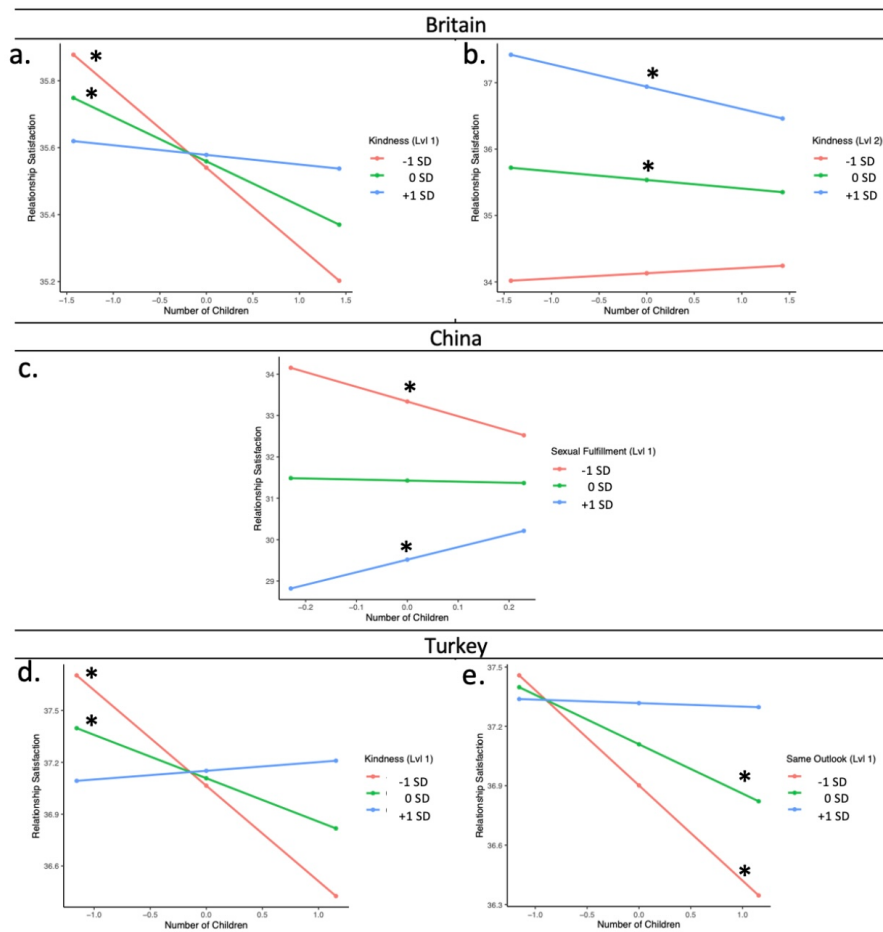
Note. * Indicates the slope is significantly different from 0.

Figure 1: Moderating effects of relationship behaviors in the whole sample

Patterns of results in individual countries

These findings varied by country. In the British sample, all relationship behaviors except Level 1 kindness and Level 2 dependability were positively related to relationship satisfaction. Number of children was negatively associated with relationship satisfaction and this relationship was significantly moderated by Level 1 and Level 2 kindness. At Level 1, there was no relationship between number of children and relationship satisfaction for people who rated the item my spouse was kind to me higher than was usual for the dyad. However, when people rated the item my spouse was kind to me lower than was usual in the dyad, the relationship between number of children and relationship satisfaction was more strongly negative (Figure

2a). At Level 2, there was a negative relationship between number of children and relationship satisfaction for couples with greater than usual kindness ratings. However, when couples indicated that they felt their spouse was kind to them less than was usual for the sample, there was no relationship between number of children and relationship satisfaction (Figure 2b).



Note. * Indicates the slope is significantly different from 0.

Figure 2: Moderating effects of relationship behaviors in the country specific samples

In the Chinese sample, the only relationship behavior significantly (and positively) related to relationship satisfaction was Level 1 dependability. Although there was not a significant association between number of children and relationship satisfaction, there was a significant interaction between number of children and Level 1 sexual fulfillment. In particular, when people reported feeling more sexually fulfilled in their marriage than was usual for the dyad, the relationship between number of children and relationship satisfaction was positive. However, when people reported feeling less sexually fulfilled in their marriage than was usual for the dyad, the relationship between number of children and relationship satisfaction was negative (Figure 2c).

In the Russian sample, most relationship behaviors were positively related to relationship satisfaction. However, Level 2 kindness and humor were negatively related to relationship satisfaction and Level 1 kindness, humor and same outlook were not significantly related to relationship satisfaction. There was not a significant association between number of children and relationship satisfaction and there were no significant interactions between number of children and relationship behavior variables.

In the Turkish sample, most relationship behaviors were positively related to relationship satisfaction. However, Level 1 kindness, humor, and same outlook and Level 2 same outlook were not significantly related to relationship satisfaction. There was also not a significant association between number of children and relationship satisfaction. However, level 1 kindness and same outlook did significantly moderate the association between number of children and relationship satisfaction. In particular, there was no relationship between number of children and relationship satisfaction for people who rated the item my spouse was kind to me higher than was usual in the dyad. However, when people rated the item my spouse was kind to me as lower than usual in the dyad, the relationship between number of children and relationship satisfaction was more strongly negative (Figure 2d). Similarly, when people rated having the same outlook as their spouse more than was usual for the dyad, number of children had no effect on relationship satisfaction. However, when people rated having the same outlook as their spouse less than was usual for the dyad, the relationship between number of children and relationship satisfaction was more strongly negative (Figure 2e).

Finally, in the United States sample, most relationship behaviors were positively related to relationship satisfaction. However, Level 1 kindness, dependability, same outlook, and attractiveness and Level 2 dependability were not significantly related to relationship satisfaction. There was also not a significant association between number of children and relationship satisfaction nor were there significant interactions between number of children and relationship behavior variables.

DISCUSSION

The results suggest that relationship variables (Sexual Fulfillment, Kindness, Humor, Dependable spouse, Same outlook, and Attractive spouse) are profoundly important in their impact on marital satisfaction, and also that there are significant differences between cultures in how these relationship variables moderate the way that children affect marital satisfaction. The discussion will address, first, the intraclass correlation findings, then the relationship variable findings, and, lastly, the moderation effects on the impact of children. Cultural differences will be explored.

Intraclass correlation results

As presented above, the percentage of variance in relationship satisfaction occurring at Level 2 (the dyad level) differed substantially across countries. Although the median ICC was .452, values ranged from .162 in China to .610 in the United States. For China specifically, a larger proportion of the variability in marital satisfaction was explained at the person level (rather than the dyad level). One wonders if this might be partly an effect of the unique one-child policy present in China at the time of data collection. Because the one child policy restricted couples' planning, reproductive choices and family decisions, it may have limited the variability between dyads. This explanation could be evaluated by replicating this study's methodology in the current environment in China, where reproductive restrictions have been lifted; perhaps updated Chinese results would be more in line with those from other countries.

Multilevel modeling of relationship satisfaction results

All relationship variables at level 1 and level 2 significantly predicted relationship satisfaction as measured by Love Scale scores (all at $p < .001$). Individuals and dyads who reported higher than usual sexual fulfillment and having the same outlook in their marriage reported greater satisfaction, as did individuals and dyads who rated their spouses as having higher than average humorousness, dependability, and attractiveness to others. The kindness variable was an

exception to this pattern. Although dyads who reported more kindness than was usual for the sample also reported greater relationship satisfaction, individuals who reported that their spouse was kinder to them reported less relationship satisfaction. These findings may highlight the importance of reciprocal kindness in relationships. As Trivers (1971) pointed out in his seminal paper, we have evolved to be sensitive to others taking advantage of us or using us, and that sensitivity would certainly be refined in a long-term close relationship like marriage. Thus, mutual kindness appears optimal for satisfaction with the marriage. When one member of the couple bears the burden of altruistic behavior in the household, relationship satisfaction becomes less sustainable. Additionally, because the dyad and individual level findings differ, these results illustrate nicely what Jackson and colleagues (2014) meant when they stated that linked couples' data provides insights that cannot be obtained by surveying random adults. Another possibility is that one spouse is kinder because of lower mate value, as a means of compensation. Such imbalanced marriages may be less satisfactory for both spouses, to begin with.

Findings at the dyad level were largely replicated in the British, Russian, Turkish, and American samples. However, there were a few notable exceptions. In particular, dyad level dependability was not a significant predictor of relationship satisfaction in Britain and the USA, dyad level kindness and humor were negatively associated with relationship satisfaction in Russia, and dyad level same outlook was not a significant predictor in Turkey (where approximately a third of the sample is in an arranged marriage). These findings were surprising given previous research. Lippa (2007), for example, found in a primarily British/American sample that dependability was identified as one of 9 traits that were frequently cited as most important in a partner. In fact, 13% of men and 19% of women indicated that dependability was in their top 3 most important traits. Similarly, Pearce et al., (2010) found that kindness and humor were the fourth and fifth most important traits respectively in a combined Russian and American sample with no significant differences in ratings between the two cultures on these variables.

One possible explanation for these findings is that despite the overall importance of dependability, kindness, and humor, their effects may be different when modeled with other important relationship variables. By controlling for these other variables and by separating their variability into between and within dyad components, these more complex models can help us to better understand how the system of relationship behaviors is functioning in couples. Thus, dependability may no longer contribute uniquely to relationship satisfaction in the British and US samples when modeled with kindness, humor, attractiveness, and same outlook/values despite univariate research to the contrary. Alternatively, it is possible that we are capturing meaningful culture-specific differences in dyad level findings. For example, the emphasis on independence common to Western cultures (for review see Kitayama & Park, 2007) may be at odds with the interdependence inherent to the marital relationship. This tension in values may play a role in the weakened association between partner dependability and relationship satisfaction in these cultures. Despite these differences, dyad level findings were generally similar across cultures.

Findings at the individual level, however, were much less consistent. Across the six relationship variables, coefficients were significant for these four countries only 50% of the time. Because the sample sizes for individual countries were unequal, the same analyses run on different samples may not have had equal power to detect effects. This idea is supported by the fact that findings at the individual level were most consistent for Britain, the country with the largest sample size. Additionally, post hoc power analyses suggest that with a global ICC of .5, a sample of 400 couples has approximately a 54% chance of detecting these individual level effects if they exist, while a sample of 750 couples would be needed to have over an 80% chance of detecting the same individual level effects. Future studies should examine these relationships

in larger samples to determine whether these insignificant findings are a result of limited power or are a result of truly non-significant relationships between these constructs.

For the Chinese sample specifically, relationship behaviors were largely unrelated to relationship satisfaction. In fact, individual level ratings of dependability were the only significant main effect predictor. It is noteworthy that China is also the most collectivistic of our samples, and dependability in a spouse may supersede other characteristics as being important in an extended family context. And, while economic dependability may have become more important in recent decades, moral dependability has long been seen as an essential element in Confucian values contributing to family stability (Hao, 2022; Ng, 2019).

Number of Children

In the sample as a whole and the British sample (which provided more than 40% of the total number of couples), number of children was significantly and negatively associated with marital satisfaction. There was not a significant association between number of children and relationship satisfaction for the Chinese, Russian, Turkish, and American samples. Given that the impact of children on parental marital satisfaction tends to be small and hovers around the level of statistical significance (Dillon and Beechler, 2010; Twenge et al., 2003), it may be that certain methodological considerations impacted our results. In particular, we chose to use a more conservative alpha level (α was reduced to .01) to control for the large number of statistical analyses we were conducting. This decision differs from previous analyses which set α at .05 (e.g., Weisfeld, et al., 2011; Kowal, et al., 2021). Additionally, because the samples from China, Russia, Turkey, and USA were smaller than the British sample, it may be that they were unable to detect smaller effects. Post hoc power analyses suggest that with a global ICC of .5, a sample of 400 couples has approximately a 30% chance of detecting this dyad level effect if they exist, while samples of 1500 couples would be needed to have an 80% chance of detecting the same dyad level effect. Increasing the sample size for these countries in future research would help determine whether trend level results (p values were .07 and .02 for Russia and Turkey respectively) were due to low power or truly nonsignificant associations.

Given the heterogeneity in the research literature on the relationship between number of children and marital satisfaction, exploring potential moderators is important. Many previous studies (Doss & Rhoades, 2017; Kowal et al., 2021) have examined the moderating role of demographic variables (sex, education, religiosity) and psychological variables (attachment, mental health). Our study focuses on how perceived relationship behaviors may moderate this association.

For the sample as a whole, individual and dyad level sexual fulfillment, individual level kindness and dyad level humor all significantly moderated the association between number of children and relationship satisfaction. These moderation effects suggest that maintaining sexual fulfillment, perceiving one's spouse as kind, and making each other laugh mitigate the negative impact of children. It is the absence, then, of these behavioral characteristics that leaves a couple at risk for the relationship moving in a failing direction. These findings are consistent with prior work examining how positive and frequent sexual experiences, kindness, and humor can buffer against insecure attachment, neuroticism, and stressors broadly defined (Abel, 1998; Bartzik et al., 2021; Cohen & Willis, 1885; Fryburg, 2022; Little et al., 2010; Russell & McNulty, 2011; Tülay et al. 2019).

There was, however, substantial variability in these moderation effects across cultures. Individual level kindness was a significant moderator in both the British and Turkish samples, dyad level kindness was a significant moderator in the British sample, and individual level sexual fulfillment and same outlook were significant moderators in the Chinese and Turkish samples respectively. There were no significant moderators in the Russian and American

samples. This heterogeneity is notable and speaks to culture specific influences on the association between number of children and relationship satisfaction.

The moderation findings in the Chinese sample were intriguing because there was a positive relationship between number of children and relationship satisfaction for individuals who reported more sexual fulfillment in their marriage. This finding is unique across analyses and contrasted with the largely negative findings for individuals in the Chinese sample (who reported below average sexual fulfillment) and findings in other cultures. In fact, this is the only instance where number of children and relationship satisfaction were significantly and positively related. It is possible that this unique finding might be directly related to the time of data gathering for the Chinese sample, which was during strict enforcement of the one-child policy. However, it is also possible to view this finding through the lens of Confucianism and its influence on families (Hao, 2022). Ironically, although sexual fulfillment is not articulated as a value in Confucianism, it is privately held as a key to happiness. It may be said that the greatest happiness is experienced if a husband and a wife have sexual fulfillment while also fulfilling the tasks (including having more children) obligated by their larger families and Chinese society. Chastity is the virtue that keeps sexuality focused on its ethical purpose and brings desires into alignment with that purpose (Huff, 2021).

The significant moderation effects in the Turkish sample may also have important cultural implications. Of note, about one third of the Turkish sample indicated that they were in arranged marriages, where they have not chosen their partner based on similarity in personality and other characteristics. While findings suggest that individuals in arranged marriages may have similar levels of relationship satisfaction as individuals in love marriages (Myers et al., 2005), there is evidence that the interpersonal problems associated with arranged marriages are sometimes characterized by husbands being too dominant and/or being too cold and dominant (Akhtar et al., 2017). Similarly, a large proportion of this Turkish sample is documented to have lower scores on another MARQ scale, the Partnership scale, which measures to what degree partners have things in common (Imamoğlu, et al., 2019). Given these findings, it is interesting that kindness and same outlook, characteristics that are associated with warmth and cooperation, were the variables that produced significant moderation effects.

Limitations and future directions

These data are archival and limited to five different countries. Future research would benefit from more samples of married couples from a wider variety of settings. Also, in this study we chose to focus on individuals and dyads within five countries; we did not explore sex differences here, even though, as stated in our literature review and as found in our earlier work (Weisfeld, et al., 2011; Weisfeld, et al. 2018a), sex differences are profoundly important in mate choice and relationship maintenance. More research on sex similarities and differences among husbands and wives is needed. Future research would also benefit from analyses of data on same-sex couples in long-term committed relationships (Weisfeld, et al., 2018a). Ethological studies of couples in interaction are time-consuming but invaluable in terms of clarifying our understanding of marital functioning. For example, one of our own ethological studies (Weisfeld & Stack, 2002) revealed that wives smiled and laughed twice as often as their husbands did in an interaction lasting a couple of minutes, in a way that is consistent with other findings on sex differences in humor. Future ethological studies, particularly observational studies under natural conditions, may be very useful in answering some basic questions, such as who typically brings humor into the relationship, and whether it is communicating about kindness or enacting kindness that has an impact on relationships.

CONCLUSION

In these analyses, Sexual fulfillment, Kindness, Humor, Dependability, Same outlook, and Attractive spouse were all significantly related to marital satisfaction as measured by the MARQ Love Scale. Number of children had a negative impact on marital satisfaction, but that finding was limited to the British sample, and not found in the samples from the USA, China, Turkey and Russia (with α set at .01). Sexual fulfillment was a significant moderator of the impact of children, at both the person and the dyad levels, as found in multi-level modeling analyses. That is to say, the more sexually fulfilled people feel within marriage, the more marital satisfaction may drop with the arrival of children, as both spouses deal with the wife's recovery from the birth, and with increasing demands on their energy and other resources. In addition, it appears that mutual kindness is more conducive to marital satisfaction than is kindness that benefits only one member of the couple; furthermore, as there is less kindness, the negative impact of children is magnified. A similar dynamic is found with humor, the absence of which seems to make a marriage less satisfying with children around. These findings show nuanced variations by culture, as would be expected. In general, the findings suggest that there is no magic recipe for maintaining relationship satisfaction in a marriage, particularly once children arrive. But, if together a husband and wife have generated sufficient levels of Sexual satisfaction, Kindness, Humor, Dependability, Same outlook and Attractiveness – and they maintain adequate levels of those behaviors even after they become parents – then they have a good chance of carrying on with a satisfying long-term partnership, with children in the mix.

DISCLOSURES

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The data sets analyzed and presented in the current study are available from the corresponding author, contingent on the cooperation of each local author.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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