Cross-Cultural Differences in Experiences of Singlehood

by

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Abstract

The number of single people around the world is on the rise. Although prior research highlights the detriments associated with singlehood (e.g., discrimination), recent research paints a more mixed picture, with singlehood also linked with various positive outcomes (e.g., greater sexual satisfaction, closer ties with kin). Existing studies on singlehood, however, are mostly conducted with Western samples, which raises the question about the generalizability of findings to non-Western populations. Compared to the West, Asian cultures more strongly emphasize the need for marriage; thus single Asians might feel more coerced by their families into marriage than Westerners, and experience more distress and poorer well-being compared to their Western counterparts. I used data from existing archival datasets (Japan and America; Study 1) and conducted an online study (Singapore and American; Study 2) to examine whether (1) single Asians, versus single Westerners, report poorer well-being; (2) family support and strain explain any differences in well-being between Asian versus Western participants. In general, singles felt worse about their physical health and reported lower life satisfaction than married people. Although there was evidence for moderation by culture such that single Asian participants reported worse well-being compared to all other groups (i.e., married and/or Western), the interaction between relationship status and culture was only present for Japanese versus Western participants in Study 1, and not for Singaporean versus Western participants in Study 2. There was also some evidence that familial support and strain explained the links between relationship status and well-being, but in divergent ways for Westerners and the two Asian samples. The current project contributes important new information about singlehood across cultures and identifies mechanisms linking relationship status and people's well-being.

Chapter I.

Introduction

Singlehood is commonly defined as the state of being unmarried or uninvolved in a stable romantic relationship (DePaulo, 2006). Across the globe, marriage rates are on the decline, and the percentage of single people is on the rise (United Nations, 2019). It is estimated that by 2040, at least 1 in 4 adults in the United States will have never been married (Pew Research Center, 2014). Elsewhere, single-person households were the fastest growing household type globally in the past century, with half of this growth concentrated in Asia (i.e., East, South and South-East Asia; Euromonitor International, 2019). Although more adults are single than ever before, research suggests that singlehood remains mired in stigma (Strijbosch, 2015). Singles are often expected by their family and members of their society to conform and adhere to the societal convention of marriage (Chen & Tong, 2021; Gaetano, 2014); especially in Asian societies, where marriages are perceived as normative and expected to persist into old age (Himawan et al., 2018a), Asians who remain single tend to report more discrimination and scrutiny (Himawan et al., 2018a; Shahrak et al., 2021). Surprisingly, however, there is more research examining singlehood in Western versus Asian cultural contexts.

For the present research, I define singlehood as having never been married and not currently in a romantic relationship; this definition excludes people who are divorced, separated, or widowed. In particular, I focus on the cross-cultural disparity in single people's physical and psychological outcomes, particularly in Asian versus Western cultures, and I argue that singles in Asian societies may experience poorer well-being than their Western counterparts (i.e., life satisfaction, subjective physical health). Although the majority of singlehood research has

emphasized the discrimination experienced by single people (DePaulo & Morris, 2005), more recent research investigating indicators of well-being paints a more nuanced picture: Although single people report more discrimination, stress, and anxiety compared to married people (Morris et al., 2008; Ta et al., 2017), they also report higher levels of sexual satisfaction (Park et al., 2020) and stronger ties to kin, friends, and neighbors (Sarkisian & Gerstel, 2016). However, it is important to note that these studies are conducted with Western populations. Growing acceptance of singlehood and nonmarriage in Western societies may help to cushion the deleterious impacts historically associated with singlehood (Sassler & Lichter, 2020).

In contrast, there are few studies that have examined the well-being of single Asians. Asian cultural values (e.g., Confucianism) propagate marriage as a social and societal responsibility and place a premium on marriage (Ang et al., 2020; Gaetano, 2014). In fact, marital expectations in Asian cultures can exacerbate single Asians' struggles and potentially manifest in heightened distress and poorer well-being (Himawan et al., 2018a, 2018b; Shahrak et al., 2021). Yet, research on singlehood in Asia remains scarce. Compared to their Western or married counterparts, do single Asians report worse physical health? Are single Asians less satisfied and more unhappy? The limited research with single Asians suggests "yes", but this question has not received as much empirical attention as research with singles in the West.

The current study examines whether there are cross-cultural differences in the correlates of singlehood by asking: Do singles in Asian societies experience lower well-being compared to singles in Western societies, and why? In two separate cross-cultural studies, I examined how Asian (i.e., Japanese and Singaporean) participants' well-being differed from their Western (i.e., American) counterparts. Specifically, I used a combination of existing longitudinal datasets (Japanese; Study 1) and I also conducted an online study (Singaporeans; Study 2) to compare

single people's subjective physical health and their life satisfaction. Further, I sought to identify potential mechanisms that explain differences in single (versus married) individual's well-being in Asian (versus Western) cultural contexts.

Cross-Cultural Differences in Singlehood

"Singlehood" is ill-defined in the literature. Some researchers adopt the social definition of singlehood and study people who are not currently in a dating relationship; however, other researchers and scholars have also adopted a more conservative definition of the term to include the legal status of singlehood and include people who are not presently in a relationship and have also never been married. This distinction between single people who have *never* been married and those who have been married *before* is important (Purol et al., 2021) because people who have left a difficult marriage (i.e., divorced or separated) and those that experienced the loss of a partner/spouse (i.e., widowed) are often grouped together with people who have never been married or are not presently involved in a romantic relationship and collectively labeled as "single". Such categorization can be problematic, especially when conducting research on health and psychological outcomes, as some studies reveal that divorced, separated, and widowed people show significantly lower well-being when compared with never married people who are not involved in a romantic relationship (Williams & Umberson, 2004).

Previously, researchers often compared single to married people to examine the health and psychosocial advantages of marriage (Perelli-Harris et al., 2019; Sullivan et al., 2010). For example, it has been demonstrated that married people are more likely than unmarried people to perceive greater levels of social support, be happier, and feel less isolated (Girme et al., 2021; Purol et al., 2021). Additionally, married people show better recovery and adaptation from illnesses and a lower risk of mortality compared to single people (Gordon & Rosenthal, 1995;

Leigh & Fries, 1991; Rook & Zettel, 2005). Married people also enjoy many tangible benefits compared to single people: Married people can take advantage of tax incentives, favorable medical and housing social policies, and laws that are exclusively beneficial for married people (DePaulo, 2016; Morris et al., 2007).

Few researchers focus specifically on singlehood, which is a challenge to our ability to understand the purported disparities in health and psychological burden born by single people (Himawan et al., 2018a). DePaulo and colleagues (DePaulo, 2006; DePaulo & Morris, 2005, 2006; Morris et al., 2008) have conducted extensive research on singlehood in the US and a substantial body of this work is centered on the phenomena of *singlism* – the stereotype, prejudice, and discrimination based on a person's singlehood, which might give us hints to the outcomes of single people. Compared with married people, singles are often perceived in unpleasant ways, including being more immature, socially inept, irresponsible, insecure, self-centered, cold-tempered, lonely, uncaring, unattractive, unexciting, maladjusted, and a burden to the family (Hertel et al., 2007; Kern, 1998; Sharp & Ganong, 2011). One study found that landlords were more likely to rent out their houses to married than to single or cohabiting people (Morris et al., 2007). Unfortunately, singlism is so pervasive that even single people hold these adverse stereotypes about themselves (DePaulo & Morris, 2006). Findings on singlism have been replicated in countries outside of the US, including other Western and non-Western samples such as Germany, Israel, and Singapore (Au & Lau, 2010; Greitemeyer, 2009; Slonim et al., 2015).

However, the changing social landscape and the increasing popularity of nonmarital unions in Western societies may help ameliorate the adverse impacts of singlehood. Growing acceptance of alternative relationship arrangements in Western societies (i.e., cohabitation, remarriage, dating in later adulthood) tends to translate to a greater tolerance for non-marriage

(Lee & Ono, 2012). This reduced burden for marriage for Western singles may manifest in better psychological health among singles; for instance, in Germany, there is evidence of a cohort effect such that middle-aged singles – who are arguably more accepting and satisfied with the single life – felt less lonely than older single adults (Böger & Huxhold, 2020). Whereas Westerners perceive romantic relationships as fundamental for fulfilling intimacy needs, they are also more likely to believe that romantic relationships need not lead to marriage (Coontz, 2005; Neff & Morgan, 2014). In the West, there is greater emphasis on individualism, independence, self-reliance, autonomy, and competition (Markus & Kitayama, 1991; Marshall, 2008). Individualism, as compared to collectivism, has also been associated with less affective involvement, and reduced likelihood for describing romantic love as possessing qualities such as tender, deep, and rewarding (Dion & Dion, 1991). Thus, the single lifestyle might be more in line with Western versus Asian beliefs. In fact, Westerners today are increasingly satisfied with being single (Böger & Huxhold, 2020) and they are more likely to perceive singlehood as a voluntary decision, which might explain the familiarity of the phrase "happily single" when describing single Western men and women who are comfortable with their single identities (Kislev, 2019).

The scholarship on singlehood has been conducted primarily in Western populations, and there is much less work conducted with single Asians; however, the limited body of work suggests that single Asians likely experience worse well-being compared to their Western counterparts. Asian marriages are generally perceived as normative and expected to persist into old age, and Asians who do not fulfil this developmental milestone tend to be perceived as lacking in some way (Himawan et al., 2018a). Asians who remain single often continue to be questioned by their family and friends about their sexual orientation (i.e., it is assumed that their

deviance against heteronormativity results in their choice for nonmarriage as LGBTQ+ is frowned upon in most Asian cultures; Hostetler, 2009). Singlehood in Asia is also branded as shameful and deviant to existing cultural norms and some Asian communities go so far as to suggest that only people who are mentally unwell stay single for the rest of their lives (Jones, 2017).

Additionally, Asian marital beliefs may disrupt single Asians' well-being. Himawan et al. (2018a) argued that Asians are more likely to prioritize the functionality of marriages and their marital rituals over the married couples' own well-being – for example, arranged marriages, regardless of the quality of the relationship, are still common in some Asian communities (Jones & Yeung, 2014). As marriages are important for the growth of family wealth and as a way to propagate one's family lineage (Mehrotra, 2016; Yeung & Hu, 2016), these deep-rooted beliefs mean that Asians may be more likely to regard romantic relationships as a means to marriage, and that different forms of relationship arrangements outside of marriage (e.g., cohabitation; including divorce) are seen as taboo and are even against the law in some cultural contexts (Furstenberg, 2015; Higgins et al., 2002; Vignato, 2012). Even in Japan, an Asian country marked by high acceptance of cohabitation, the duration of cohabitation tends to be relatively short (slightly less than two years) when compared to the cohabitation duration in the US and most European countries (Raymo et al., 2009). Further, most cohabitation in Japan eventually evolves into marriage, suggesting that cohabitation is seen as a precursor, rather than a substitute, for marriage. As Asian singles are more likely to find themselves without a culturally-sanctioned alternative to marriage (Utomo et al., 2013), they may be more likely to feel caught between their cultures' value system (i.e., the intolerance for non-marriage) and threats to their ability to

fulfil intimacy and emotional needs; in turn, this dissonance might contribute to greater internalized distress (Himawan et al., 2018a; Li et al., 2010; Rosenberger, 2007).

Familial Support and Strain

What might account for singles' well-being compared to their married counterparts? A recent study investigated lack of social support and experiences of discrimination as possible interpersonal and intergroup explanations for singles' potentially worse well-being (Girme et al., 2021). The authors found that single people showed lower levels of perceived social support and felt more discriminated; however, it is important to note that this study examined social support as support from single people's close others and discrimination at the broader societal level and it was not possible to determine the source of social support (e.g., partner, family, or friends) or capture the pressures from single people's direct social networks. In the present study, I focused on single peoples' perceptions of family support and family strain because some studies have revealed that (1) single people report increased support from family members (Sarkisian & Gerstel, 2016) and because (2) single people's family are the most likely source of pressures to marry (Himawan et al., 2018a). Specifically, I posit that familial support and familial strain are separate mechanisms that may more directly explain the disparity between single and married people's well-being (as compared to social support and societal discrimination in the aforementioned study).

Romantic partners are seen as a primary form of familial support in adulthood, and single people who are without a partner may be more likely to feel they are missing out on an important source of support (Adamczyk, 2016). Single people also perceive less familial support and feel less equipped to seek out advice and obtain comfort, which has been linked to lower levels of life satisfaction and mental health (Girme et al., 2021). Interestingly, however, compared to married

people, singles are more likely to share close ties, keep in contact with, socialize and receive help from their parents or siblings (DePaulo, 2006). For instance, findings from nationally representative studies showed that singles in the US were more likely than their married counterparts to socialize with people in their social networks at least several times a month, meet with their parents at least once a week, and to provide and receive advice, encouragement, physical and emotional support (Sarkisian & Gerstel, 2008, 2016). Insofar as singles spend more time maintaining their relationships with non-romantic close others than married people, singles may also derive greater benefits from these familial ties than married individuals. Thus, it was important to test whether singles perceive higher or lower familial support, which is in turn related to their well-being (i.e., whether familial support mediates the path from relationship status to well-being).

Additionally, I tested whether culture moderated the association between familial support, relationship status, and well-being. It is important to point out that the body of research on singlehood and higher familial support has been primarily conducted with Western samples, thus family support may be better suited to explain why single Westerners show high well-being but may be less informative for Asian singles. It is possible that single Asians perceive less social support from their immediate families because they are unable to uphold the wishes of their family (i.e., getting married); at the same time, parents of single Asians might feel "defeated" and resigned to the fact that their child remains unsuccessful in finding a marriable spouse, and may show less support (Chen & Tong, 2021; Mehrotra, 2016). Yet it is also possible that interdependence in Asian societies might translate to equal levels of familial support for both singles and married people regardless of their relationship status, due to the focus on ingroup harmony within interdependent families (Markus & Kitayama, 1991).

A second likely mechanism linking relationship status with well-being is strained relationships with the family. As marriage is normative across most cultural life scripts (Scherman et al., 2017), single people – regardless of their culture – likely experience familial pressure for marriage and this need for marriage is often communicated to younger singles by older family members. For instance, one study conducted in the US showed that familial pressure may manifest in both benign (e.g., advice and concern from elderly family members) and hostile forms (e.g., explicit ridicule and criticisms), which can compel singles toward marriage and threaten single people's emotional well-being (Moorman, 2020). For single people, because family relationships are a potent source of social support, disruptions in familial ties might exert more influence on their emotional health and well-being compared to those who are married (Gaughan, 2002). Indeed, some studies suggest that single people report greater levels of family loneliness compared to those who are partnered (Adamczyk, 2016).

In addition, I tested whether culture moderated the association between familial strain, relationship status, and well-being. For Asians, family strain is likely an even more direct explanation for single Asians', as compared to single Westerners', poorer well-being. Failure to marry has been argued to tarnish family reputation and singles are sometimes labeled as self-centered because their single identity is perceived as bringing dishonor to the family (Azmawati et al., 2015; Himawan et al., 2017, 2018b; Situmorang, 2007). Such expectations can be unhealthy and detrimental for all members of the family. Moreover, when compared to Westerners, Asians place a higher emphasis on interdependence and respecting one's parents and the elderly (e.g., the virtue of filial piety). Single Asians are thus faced with the uncomfortable task of managing parental marriage pressure without disturbing family harmony, in turn exacerbating their feelings of distress (Himawan et al., 2018a; To, 2015). Perhaps Asians, as

compared to Westerners, feel more coerced into marriage by their family members, and this tension and familial strain culminates in their poorer well-being. It is important to note also that family support and strain might appear to lie on opposite ends of the same spectrum, but it is possible that they operate independently depending on people's culture, such that single Westerners feel more family support and report greater levels of well-being, while single Asians feel more family strain and report lower levels of well-being.

Gender, Age, and Education Differences

The implications of singlehood may also differ by gender, age, and education levels. Many existing studies of singlehood focus exclusively on women and there are few studies that solely address singlehood in men. One reason may be that singlehood is perceived as more punishing for women, as single women are seen as violating cultural norms associated with marriage and motherhood (DePaulo & Morris, 2005; Hays, 2004); in turn, women's experienced pressures for marriage might translate to their greater distress as compared to men. In more recent research, however, the expected gender difference in well-being is minimal or non-existent: Single men and women in the US report equally low levels of well-being compared to their married counterparts (DePaulo, 2016). As described earlier, these findings may reflect changing social norms in Western societies.

In comparison, in Asia, where femininity is traditionally and historically tied to childbearing and childrearing, single women who do not marry and do not have children might be perceived as lacking, or less than a woman (Ang et al., 2020). Indeed, the common assumption in the limited body of Asian singlehood research is that Asian women might be more taxed by their single status than Asian men (Ang et al., 2020; Himawan et al., 2018a). However, it is important to note that different factors may contribute to single men's versus women's well-

being. For example, Asian men might feel additional pressure to marry because of the need to perpetuate the family lineage and report greater internalized distress; yet there are few studies that investigate these factors and rarely do researchers include examinations of single Asian men's well-being (for an exception, see Li et al., 2010). As there is not enough research on Asian singles in general, it is important to include gender as a factor in the current research to ascertain whether the associations between singlehood, culture, and well-being also differ by gender.

Additionally, most studies on singlehood examine *older* adults because young adults are potentially "marriable" or may be categorized as "temporarily single" (Kaiser & Kashy, 2005); thus, younger adults are less likely to experience pressure to marry and report worse well-being. In fact, people who have been single for an extended duration might show even worse psychological well-being. For instance, Adamczyk (2016) found that the duration of singlehood was correlated with singles' well-being such that the longer people stayed single, the more they felt a sense of romantic loneliness. Not surprisingly, singlehood researchers often adopt an unofficial yardstick for singlehood (i.e., above 30 years old) to distinguish between the marriable and those who are temporarily single (Jones et al., 2012; Situmorang, 2007; Yeung & Hu, 2016). Interestingly, this age threshold for defining singlehood has not changed in the past decades despite an increasing mean age at first marriage (Ang et al., 2020). As there is limited research concerning singlehood in Asia, it was important to include participants' age as a factor in the present work to account for the potential influence of peoples' age in the associations between singlehood, culture, and well-being.

Another important factor that has been linked with people's singlehood is their education levels (Bellani et al., 2017; Qian & Qian, 2014). In general, previous research revealed that people are more likely to postpone marriages and are less likely to get married with increasing

education attainment (Setyonaluri et al., 2020). In line with arguments from assortative mating (Greenwood et al., 2014) for example, well-educated people are more likely to seek mates that share similar levels of education attainment and values (regarding childcare and household division of labor); however, note that it may be more challenging for people who are poorly educated (especially poorly educated men) to find mates who are willing to partner with them (Li et al., 2010), and for highly educated people (especially highly educated women) to find partners who match with them in terms of their education, values, and worldviews (Hull & Hartanto, 2009). Additionally, increased education also serves to decelerate the timing of marriage and reduces likelihood of marriage because time spent on higher education takes away time from marriage (e.g., being a student versus being a wife/mother or husband/father). Further, people who are well-educated are also more likely to enter the workforce, which could again reduce likelihood of marriage (Smith et al., 2012). As marriage is still perceived as normative and ideal in people's cultures, people with different levels of education (especially those with higher education levels) might feel more inadequate in finding a potential mate, and experience increased threats to their self-competence and well-being. Given that greater educational attainment and higher educational qualifications are also positively associated with people's well-being, it is possible that the associations between singlehood and well-being may be underestimated as people's education levels are likely linked to their likelihood for singlehood (i.e., more educated people are more likely to be single) and their well-being outcomes (i.e., more educated people are more likely to show better well-being). Thus, I wanted to account for education levels in the current study.

Overall Aim

In the present study, I examine differences in the experiences of singlehood in Asian versus Western cultural contexts. I investigate whether (1) relationship status (*married* versus *single*) is associated with people's well-being (i.e., subjective perceptions of health, life satisfaction); (2) culture (Western versus Asian) moderates associations between relationship status and well-being; and (3) perceived familial support and strain mediates links between relationship status and well-being (and whether culture moderates this mediation).

In Study 1, I used archival data to assess whether single Asians report worse well-being compared to their married and/or Western counterparts. To do so, I used nationally representative samples of Western (i.e., American) and Asian (i.e., Japanese) cultures. These countries were chosen because Western singlehood research has been conducted primarily in America, and because Japan has one of the highest percentage of singles in the world (United Nations, 2019). I investigated whether *married* versus *single* (i.e., never married, excluding divorced, separated, and widowed) people differed in their well-being (i.e., physical health and life satisfaction). I also included familial support and strain as mediators, and culture as a moderator, while controlling for gender, age, and education levels.

In Study 2, I tested whether the findings from Study 1 would replicate in a separate online study with three notable changes: First, in Study 1, I could not differentiate between single people who were currently in a committed relationship versus *not* in a committed relationship due to the questionnaires in the existing datasets. Thus, it was important to ensure that single participants who were eligible for participation in Study 2 were *also* not involved in a romantic relationship. Second, I aimed to recruit Asian participants outside of Japan to extend the generalizability of findings in Study 1 to a group of non-Japanese Asian participants. Asians are not a monolith, and it is important to examine the potential discrepancies among different

Asian groups. Specifically, I recruited Singaporean participants in Study 2 as (1) Singapore is also a country with a growing population of single people (United Nations, 2019); (2) Japan and Singapore are both industrialized countries that are influenced by the West; (3) the primary language used in Singapore is English (i.e., the measures used in Japan for Study 1 were presented in Japanese), which is helpful for avoiding potential problems related to translation and back translation. Third, the questionnaires made available in the archival datasets in Study 1 did not include measures of important factors that might explain people's singlehood. For instance, some people might be happy and satisfied with their singlehood status and that could confound the links between singlehood status and well-being. Thus, it was important to include measures of people's reasons for their singlehood status (i.e., involuntary singlehood) in Study 2. As the archival datasets from Study 1 were collected more than a decade ago, and given changing beliefs about singlehood, it was important to collect a contemporary sample for Study 2.

Chapter II.

Study 1: Archival Data

The purpose of Study 1 was to investigate the health and psychological well-being of Asian (i.e., Japanese) and Western (i.e., American) single and married people. I expected a main effect of relationship status, such that single people would report lower well-being than married people (worse physical health, lower life satisfaction). Additionally, I hypothesized that culture would moderate this association, such that single Japanese participants would show the lowest well-being across all groups (i.e., married Americans, single Americans, and single Japanese).

As part of exploratory analyses, I also tested the possibility of a three-way interaction between relationship status, culture and gender, such that single Asian women would show the worst outcomes compared to their married, Western and/or male counterparts, as women may be are more disadvantaged than men due to their singlehood status (particularly for Asian women) (Smith et al., 2012). I also tested the possibility of a three-way interaction between relationship status, culture and age, as older single adults may feel more romantic loneliness (Adamczyk, 2016). In addition, singlehood has been linked with both education and gender, such that more highly educated women and poorly educated men have the most difficulty attracting mates (Hull & Hartanto, 2009; Li et al., 2010). I would have liked to have tested the moderating role of education in the current study; however, I was unable to do so given that sample size was relatively small for single Asians. As the links between singlehood and well-being may be underestimated if education levels are related to people's likelihood for singlehood and its links with well-being, I controlled for participants' education level in all analyses (Qian & Qian, 2014).

In Study 1, I expected that the associations between relationship status and well-being would be at least partially explained by familial support and strain. For familial support, I expected that the mediating effect of familial support would be most pronounced among American versus Japanese participants, as existing research suggests that single Westerners enjoy closer kinship ties with their extended families, which may be related to higher well-being (Sarkisian & Gerstel, 2016); there is much less research on familial support and singlehood in Asia. For familial strain, I expected that the mediating effect of familial strain would be most pronounced among Japanese versus American participants. Families are a strong socializing agent of one's culture; especially for Japanese participants, who belong to a collectivistic culture, families may play a more potent role (as compared to the West, which tends to be more individualistic) in inculcating their cultural values and traditions. Thus, single Japanese people who fail to fulfil the expectations of getting married may be less likely to derive familial support or report a greater sense of burden and strain from their families, which could then compromise their own well-being (Brinton et al., 2021; Maeda & Hecht, 2012). For all analyses, I controlled for participants' gender, age and education levels.

Methods

Participants and Overview of Datasets

Study 1 used data from the Midlife in the US (MIDUS) and Midlife in Japan (MIDJA) datasets, two large-scale nationally representative longitudinal samples of mid- and later-life adults in the United States and Japan, respectively. These datasets are commonly used in cross-cultural research, and they include assessments of behavioral, psychological, and social factors associated with health and well-being measured over 18 (MIUDS) and 5 (MIDJA) years. The MIDUS study began data collection in 1995 with 2 follow-ups occurring in 2004 (N = 4,964,

MIDUS 2) and 2013 (N = 3,294, MIDUS 3). The MIDJA study began data collection in 2008 (N = 1,027, MIDJA 1) and a follow-up was conducted in 2012 (N = 657, MIDJA 2). An important goal of MIDJA was to provide a cross-cultural sample for comparison with the MIDUS dataset, thus items in MIDJA were identical to those used in the MIDUS (except the study was conducted in Japanese). For the current study, data were obtained from MIDUS 2 and MIDJA 1 because (1) the years for data collection were more similar, and (2) there was loss of sample size due to attrition, particularly from MIDJA 1 to MIDJA 2, which can greatly reduce statistical power of the study. I only included the subset of participants in both samples who self-reported being currently married or never married[1], and I excluded all participants who were divorced (N_{US} = 639, N_{JA} = 65), separated (N_{US} = 81, N_{JA} = 14) or widowed (N_{US} = 349, N_{JA} = 70). This yielded a total of 3,888 American (78.32% of MIDUS sample; M_{age} = 54.27, SD = 12.12, 49.07% female), of which 3,505 were married (M_{age} = 54.73, SD = 12.03, 48.45% female) and 383 were single (M_{age} = 50.08, SD = 12.16, 54.83% female), and 876 Japanese (85.30% of MIDJA sample; M_{age} = 53.43, SD = 14.14, 47.83% female), of which 710 were married (M_{age} = 55.34, SD = 13.70, 49.07% female) and 166 were single (M_{age} = 45.24, SD = 13.07, 48.03% female) participants. Participants also provided their response to a single item that asked for their highest level of education attained on a scale from 1 (no school/some grade school) to 8 (some graduate school); both the mean and median response was "1 to 2 years of college." Complete data and documentation of both the MIDUS and MIDJA datasets are publicly available at the Inter-University Consortium for Political and Social Research website (icpsr.umich.edu).

[1] Participants self-reported their marital status from one of 5 possible options (i.e., married, separated, divorced, widowed, never married). Follow-up items to assess relationship (vs. marital) status differed by sample: In MIDUS, participants were only asked about cohabitation status; in MIDJA, participants were only asked about relationship status. Thus, we could not differentiate participants who may have been partnered but not married in a way that was equivalent across datasets.

Measures

Familial support. To obtain a general index of participants' supportive relationships with their family, I calculated the mean of 4 items that assessed participants' familial strain adapted from Schuster et al. (1990) and Walen and Lachman (2000) (see Grzywacz & Marks, 1999). Participants provided their response to items including "Not including your spouse or partner, how much do members of your family really care about you?", "How much do they understand the way you feel about things?", "How much can you rely on them for help if you have a serious problem?" and "How much can you open up to them if you need to talk about your worries?" (1 = *never*, 4 = *often*). A higher mean score of the 4 items reflected higher levels of familial support (α_{MIDUS} = .84 and α_{MIDJA} = .78).

Familial strain. To obtain a general index of participants' strained relationships with their family, I calculated the mean of 4 items that assessed participants' familial strain adapted from Schuster et al. (1990) and Walen and Lachman (2000) (see Grzywacz & Marks, 1999). Participants provided their response to items such as "Not including your spouse or partner, how often do members of your family make too many demands on you?", "How often do they criticize you?", "How often do they let you down when you are counting on them?" and "How often do they get on your nerves?" (1 = *never*, 4 = *often*). A higher mean score of the 4 items reflected higher levels of familial strain (α_{MIDUS} = .79 and α_{MIDJA} = .78).

Subjective physical health. Participants were asked to provide subjective ratings of their own physical health based on a single item, "Using a scale from 0 to 10 where 0 means "*the worst possible health*" and 10 means "*the best possible health*," how would you rate your health these days?"

Life satisfaction. To obtain an index of participants' subjective psychological well-being, I included assessments of participants' life satisfaction. I calculated the mean of 6 items that measured participants' satisfaction with various domains of their life (Prenda & Lachman, 2001). Sample items included "How would you rate your life overall these days?" and "How would you rate your work situation these days?" (0 = *the worst possible*, 10 = *the best possible*). A higher mean score of the 6 items reflected higher levels of life satisfaction (α_{MIDUS} = .82 and α_{MIDJA} = .75).

Analysis Plan

Analyses for Study 1 are split into two segments. In step 1, I tested whether relationship status was associated with physical health and life satisfaction and whether these associations were moderated by culture. Specifically, I ran a 2 (relationship status: 0 = single, 1 = married) X 2 (culture: 0 = Japanese, 1 = American) factorial ANCOVA in SPSS 27.0, controlling for participants' gender, age and education level. As there were two different outcome variables, I ran two separate ANCOVA's (one for each outcome).

In step 2, I used the Hayes PROCESS macro in SPSS 27.0 to run double mediation models to test whether familial support and strain explained the significant association between relationship status and health/life satisfaction. When there was no significant interaction with culture in the ANCOVA in step 1, I ran double mediation models (i.e., with familial support and strain), while controlling for participants' culture, gender, age and education level. When there was a significant interaction with culture in the ANCOVA in step 1, I ran double *moderated* mediation analyses (i.e., with familial support and strain as mediators), with the dichotomous moderator of culture, while controlling for participants' gender, age, and education level (see Figure 1 for conceptual model). I adopted a more conservative approach and tested the

moderating role of culture for all possible paths. As before, I ran two different models (one for each outcome variable).

I also ran additional analyses to test the moderating role of gender and age. These moderators were tested separately in light of the small cell size for single Asians and also I had no predictions about a gender by age interaction. As gender was a dichotomous variable, I ran I ran a 2 (relationship status: 0 = single, 1 = married) X 2 (culture: 0 = Japanese, 1 = American) X 2 (gender: 0 = male, 1 = female) mixed factorial ANCOVA in SPSS 27.0, controlling for participants' age and education level. As age was a continuous variable, I ran moderation analyses in the Hayes PROCESS macro in SPSS 27.0 for relationship status, culture and age, while controlling for gender and education level.

Results

Preliminary Analyses

Table 1 shows the descriptives of the two dependent variables in Study 1, separated by relationship status, culture and gender. Overall, American participants tended to score higher on subjective physical health, life satisfaction, and familial support compared to Japanese participants, but similar levels of familial strain.

Table 2 lists the bivariate correlations among the key study variables, separated by culture (i.e., correlations above the diagonal are derived from Japanese participants; correlations below the diagonal are derived from American participants). In general, familial support and strain were moderately negatively correlated, suggesting some degree of overlap between the different mediators. Additionally, physical health and life satisfaction were also significantly moderated positively correlated, again suggesting overlap between different domains of people's well-being.

ANCOVA's

Table 3 shows the full ANCOVA results, detailing the differences in subjective physical health and life satisfaction, by participants' relationship status and culture.

For physical health, there was a significant interaction between relationship status and culture such that single Japanese (M = 5.69, SE = .13) reported the lowest levels of subjective physical health compared to married Japanese (M = 6.43, SE = .06, $p < .001$), single Americans (M = 7.18, SE = .10, $p < .001$) and married Americans (M = 7.43, SE = .03, $p < .001$), after controlling for gender, age and education levels (see Figure 2).

For life satisfaction, there was a significant interaction between relationship status and culture such that single Japanese (M = 5.38, SE = .10) reported the lowest levels of life satisfaction compared to married Japanese (M = 6.48, SE = .05, $p < .001$), single Americans (M = 6.81, SE = .07, $p < .001$) and married Americans (M = 7.64, SE = .02, $p < .001$), after controlling for gender, age and education levels (see Figure 3).

Moderated Mediation

Next, I ran moderated mediation analyses using the Hayes Process macro. As results of the ANCOVA showed a significant interaction with culture for both health and life satisfaction, I ran the moderated double mediation models to test the link from relationship status (married vs. single) to well-being, and included familial support and strain as mediators, and culture as the moderator (for all possible paths). Figures 4 and 5 show the full moderated mediation models for health and life satisfaction, respectively. I controlled for participants' gender, age and education levels in both models. In general, there was evidence for mediation for both familial support and strain.

Specifically, I found a significant indirect effect from relationship status to familial support to subjective health and life satisfaction. I also found evidence for moderated mediation (b_{health} = .07, 95% CI [.03, .11]; $b_{lifesat}$ = .11, 95% CI [.02, .19]), such that familial support explained why married American (b_{health} = .07, 95% CI [.04, .11]; $b_{lifesat}$ = .12, 95% CI [.08, .17]), but not married Japanese (b_{health} = .00, 95% CI [-.02, .03]; $b_{lifesat}$ = .01, 95% CI [-.06, .08]), participants showed better physical health and higher life satisfaction compared to their single counterparts. Additionally, I found a significant indirect effect from relationship status to familial strain to subjective health and life satisfaction, but culture did not moderate this mediation effect (b_{health} = -.05, 95% CI [-.14, .02]; $b_{lifesat}$ = -.01, 95% CI [-.07, .04]): Compared to married people, familial strain explained why both single Japanese (b_{health} = .08, 95% CI [.02, .17]; $b_{lifesat}$ = .04, 95% CI [.00, .10]) and American (b_{health} = .03, 95% CI [.01, .06]; $b_{lifesat}$ = .03, 95% CI [.01, .06]) participants showed worse physical health and lower life satisfaction.

Additional Analyses

Next, I ran additional analyses to test the moderating role of gender and age in the associations between relationship status, culture and well-being, in two separate models.

For gender, there was a significant two-way interaction between culture and gender predicting health after controlling for age and education, $F(1, 4007) = 3.88$, $p = .05$, $\eta_p^2 = .00$, such that Japanese men ($M = 5.86$, $SE = .10$) reported the lowest levels of physical health compared to Japanese women ($M = 6.23$, $SE = .10$), American men ($M = 7.27$, $SE = .07$), and American women ($M = 7.34$, $SE = .07$). There was no significant three-way interaction among relationship status, culture and gender. For the moderating role of gender predicting life satisfaction, there was a marginally significant three-way interaction among relationship status, culture, and gender after controlling for age and education, $F(1, 4019) = 3.51$, $p = .06$, $\eta_p^2 = .00$.

When the 3-way interaction was decomposed by gender, I found that, for men, there was a significant interaction between relationship status and culture ($p = .006$), such that single Japanese men ($M = 4.90$, $SE = .14$) reported the lowest levels of life satisfaction compared to married Japanese men ($M = 6.29$, $SE = .07$, $p < .001$), single American men ($M = 6.74$, $SE = .11$, $p < .001$), and married American men ($M = 7.62$, $SE = .03$, $p < .001$), after controlling for age and education levels. For women, there was no significant interaction between culture and gender ($p = .98$); there was a significant main effect of relationship status ($p < .001$), however, such that single women ($M = 6.40$, $SE = .08$) reported lower life satisfaction than married women ($M = 7.17$, $SE = .04$, $p < .001$). There was also a significant main effect of culture ($p < .001$), such that Japanese women ($M = 6.30$, $SE = .08$) reported lower life satisfaction than American women ($M = 7.27$, $SE = .05$, $p < .001$).

For the moderating role of age on health, I did not find any significant 2-way or 3-way interactions between relationship status, culture, and age (all p's > .05). For the moderating role of age on life satisfaction, I found a significant 2-way interaction between relationship status and age ($b = -.02$, $se = .01$, $p = .04$), such that single people reported lower levels of life satisfaction than married people, and this effect was stronger for younger, as compared to older, people.

Findings from Study 1 revealed that single Japanese participants reported worse well-being compared to their married or American counterparts. In line with my predictions, I found a significant interaction between relationship status and culture such that single Japanese showed the lowest levels of life satisfaction. I also found that familial support explained why married, versus single, people showed better personal well-being, but only for American and not for Japanese participants. Additionally, familial strain explained why single, versus married, people showed worse well-being for both American and Japanese participants. Of note, I found a

marginally significant three-way interaction among relationship status, culture, and gender in my additional analyses, such that single Japanese men reported lowest levels of life satisfaction. Considering that there is widespread belief that single women (as compared to single men) experience greater distress due to their singlehood status, it is important to replicate this finding. Finally, it is important to be mindful that Study 1 was limited by the fact that participants who were categorized as "never married" might still be in a relationship (i.e., *never married ≠ single*). Thus, it was important to conduct a separate study to determine whether the findings of Study 1 would replicate with a sample of truly single American and Asian participants.

Chapter III.

Study 2: Online Study

In Study 2, I aimed to test whether findings from Study 1 would be similar when I examined the links from people's relationship status (married versus single) to physical and psychological well-being in a different sample of Asian participants. Three important changes (from Study 1) were made in Study 2: First, additional restrictions were implemented in Study 2 to ensure that single participants were not presently involved in a romantic relationship. As mentioned previously, "never married" participants in Study 1 might nevertheless be romantically involved, which might confound the findings of Study 1. Thus, only married and single participants were eligible for participation in Study 2. To do so, a new relationship status variable was included to allow participants to indicate if they are "single" (i.e., never married and not in a relationship, as opposed to simply not married).

Second, Asian participants in Study 2 were recruited from Singapore, a different Asian country, to extend the generalizability of findings from Study 1. Although national statistics reveal that many Asian countries show growing single populations, only Japanese participants were included in Study 1 (due to the availability of existing datasets that allowed for cross-culture comparisons of singles' physical and psychological well-being). Critically, although research has often grouped different participants from the Asian continent together under "Asian", there are substantial between-group (i.e., across countries) and within-group (in the same country) differences even among different sub-Asian samples. Thus, it was important to incorporate a sample of Asian participants other than Japanese in a follow-up investigation. As many of the Asian countries with growing single populations are predominantly of Asian

heritage (United Nations, 2019), which might suggests some degree of cultural overlap or similarity in these Asian countries; perhaps singles in these cultures experience familial support and strain in the same way as Japanese participants and share similar levels of physical and psychological outcomes.

Third, various factors have also been proposed to explain people's singlehood that are, in turn, likely related to the associations between singlehood status and psychological outcomes. These factors include people's educational attainment (Bellani et al., 2017; Qian & Qian, 2014), and reasons for staying single (e.g., people who are single involuntarily versus those who are single by choice) (DePaulo & Morris, 2005; Kislev, 2019). To account for participants' educational attainment, I included participants' education level as a covariate in Study 1 (and I included education level as a covariate in Study 2). More importantly for Study 2, I tested whether reasons for singlehood (i.e., involuntary singlehood versus singlehood by choice) also affected the link between singlehood status and well-being. As there was no such measure in the MIDUS/MIDJA datasets, a test for involuntary singlehood was included in Study 2; this addition allowed for a new relationship status variable that differentiated between different groups of single people (i.e., voluntary versus involuntary singles) to investigate whether people's preference for singlehood affected the association between relationship status and well-being.

In Study 2, my aim was to extend from work in Study 1 and again test (1) whether relationship status is associated with physical health and life satisfaction, (2) whether these associations are moderated by culture, and (3) whether familial strain mediates the association between relationship status and the two outcomes, while controlling for gender, age, and education. Similar to Study 1, I also ran additional analyses (i.e., testing the moderating role of gender and age) and I additionally examined whether people's preference for singlehood (i.e.,

involuntary singlehood) would differentially predict their well-being outcomes in Study 2. Based on the findings of Study 1, I hypothesized a main effect of relationship status such that single, versus married, participants would show poorer physical health and lower life satisfaction; additionally, I expected that culture would moderate the associations from relationship status to well-being such that single Singaporeans show worse well-being in both domains compared to single Westerners, married Singaporeans, and married Americans; finally, familial support would mediate the association only for American participants, while strain would mediate the association for both Singaporean and American participants, between single status and well-being.

Methods

Participants and Procedure

For Study 2, I recruited 296 American and 150 Singaporean participants (Total $N = 446$) for an online study on relationship experiences through social media platforms (e.g., Facebook, Reddit). Sample size was determined through a priori power analysis – from Study 1, the partial eta square for the interaction between relationship status by culture was very small (.002); however, this very small effect might be explained by the fact that single participants might still be involved in a relationship and thus differences in well-being between married and Asian participants who were not presently in a relationship would likely be even more pronounced – accordingly, to achieve 80% power with small effect size ($\eta_p^2 = .01$), power analysis suggested a sample of $N = 387$. The aim of Study 2 was to recruit a total of 400 participants for four categories (i.e., single Asian; married Asian; single Westerner; married Westerner; $N = 100$ people for each); however, the final sample was slightly below this target due to difficulties in recruiting Singaporean participants. As before, participants had to be at least 30 years old,

consistent with previous studies on singlehood (Jones et al., 2012; Situmorang, 2007; Yeung & Hu, 2016), and either married or single (i.e., not currently in a romantic relationship and excluding those divorced, separated, or widowed). Additionally, participants had to identify as heterosexual to minimize potential confounds due to discrimination linked to one's sexual orientation (Hostetler, 2009). All participants who were interested in the study had access to an online link to a survey containing several personality and well-being questionnaires. Participants were entered into a raffle for a chance to win one of multiple US$100 gift cards.

In the American sample, there were a total of 198 married (M_{age} = 48.76; 68.04% women) and 98 single (M_{age} = 47.47; 69.47% women) participants. In the Singapore sample, there were a total of 78 married (M_{age} = 36.78; 60.26% women) and 72 single (M_{age} = 32.83; 57.75% women) participants. Participants reported their highest education level attained on a scale of 1 (no school/some grade school) to 5 (PhD, EDD, MD, DDS, LLB, LLD, JD, or some other professional degree). The mean and median were both "Graduated from college, or some bachelor's degree." I controlled for gender, age and education level in all analyses.

Measures

Questionnaires used in Study 2 were identical to those used in Study 1 (i.e., familial support, α_{US} = .87 and α_{SG} = .88; strain, α_{US} = .72 and α_{SG} = .80, subjective physical health, and life satisfaction, α_{US} = .82 and α_{SG} = .84).

Analysis Plan

The analytical plan for Study 2 is identical to that described for Study 1 (i.e., ANCOVAs, double mediation models, additional analyses).

The sole difference in analytic approach in Study 2 was the inclusion of an additional exploratory analysis where I tested whether people's preference for singlehood would

differentially relate to their well-being outcomes, after controlling for culture, gender, age, and education levels. Specifically, single participants were presented with an additional item, "I am single because I prefer to be single" and they responded on a scale of 1 (strongly disagree) to 5 (strongly agree). To parallel the original analyses (i.e., ANCOVAs), a median split was used to differentiate between voluntary and involuntary singles. Thus, a new relationship status variable was created: married ($N = 276$), voluntary singles ($N = 62$), involuntary singles ($N = 108$).

Results

Preliminary Analyses

Table 4 shows the descriptives of the two dependent variables in Study 2, separated by relationship status, culture and gender. Overall, Singaporean participants tended to score higher on subjective physical health and life satisfaction. American participants were significantly older than Singaporean participants ($t(444) = 10.85$, $p < .001$),

Table 5 lists the bivariate correlations of the key study variables, separated by culture (i.e., correlations above the diagonal are derived from Singaporean participants; correlations below the diagonal are derived from American participants). In general, familial support and strain were negatively correlated, suggesting overlap between the two mediators. Additionally, physical health and life satisfaction were also significantly positively correlated, again suggesting interdependence between different domains of people's physical and psychological well-being.

ANCOVA's

Table 6 shows the full ANCOVA results, detailing differences in subjective physical health and life satisfaction by participants' relationship status, culture, and gender. As I was only able to recruit a smaller (than targeted) *N* for my sample in Study 2, I ran a sensitivity power

analysis for the ANCOVA's to understand the smallest effects that I could detect with the total sample size that I collected. Results from sensitivity power analyses using G*Power showed that with the current sample size, I could detect small effect sizes of at least $f = .13$. It is important to note here that for Study 1, the observed effect size of the main effect of relationship status was small, but the effect size of the interaction effect of relationship status by culture was *very* small. Thus, it was possible that Study 2 might be sufficiently powered to detect only the main effects of relationship status, but my study may be underpowered to detect the interaction between relationship status by culture. In general, the results revealed some evidence for differences by relationship status, such that single people reported lower levels of physical health and life satisfaction than married people.

Specifically, for physical health, there was only a significant main effect of relationship status such that single participants reported lower subjective physical health ($M = 7.35$, $SE = .14$) compared to married participants ($M = 7.84$, $SE = .12$, $p = .008$), after controlling for gender, age, and education. The interaction between relationship status and culture was not significant in this analysis.

For life satisfaction, there was a marginally significant interaction between relationship status and culture ($p = .053$) such that single Americans ($M = 7.66$, $SE = .15$) reported the lowest levels of life satisfaction compared to married Americans ($M = 8.87$, $SE = .11$, $p < .001$), single Singaporeans ($M = 8.94$, $SE = .19$, $p < .001$), and married Singaporeans ($M = 9.56$, $SE = .17$, $p < .001$), after controlling for gender, age, and education levels. There was a significant main effect of relationship status, such that single people reported lower levels of life satisfaction ($M = 8.30$, $SE = .12$) compared to married people ($M = 9.22$, $SE = .10$). There was also a significant main

effect of culture, such that Singaporeans reported higher levels of life satisfaction (M = 9.25, SE = .14) than Americans (M = 8.27, SE = .10).

Mediation

As results from the ANCOVA showed no significant interactions between relationship status and culture for health and only a marginally significant interaction for life satisfaction, I ran double mediation models to test the link from relationship status (married vs. single) to well-being (i.e., health and life satisfaction), and included familial support and strain as mediators to test whether familial support and strain explain the links between marital status and health and life satisfaction. Figures 6 and 7 show the mediation models for health and life satisfaction, respectively. I controlled for participants' culture, gender, age, and education in both models. In general, there was evidence for mediation for both familial support and strain.

For physical health and life satisfaction, I found similar pattern of findings: There were significant indirect effects from relationship status to familial support to subjective health, such that compared to single people, familial support explained why married participants showed better physical health and higher levels of life satisfaction (b_{health} = .08, 95% CI [.01, .17]; $b_{lifesat}$ = .08, 95% CI [.01, .17]). However, I did not find a significant indirect effect from relationship status to familial strain to subjective health and life satisfaction (b_{health} = .05, 95% CI [-.01, .12]; $b_{lifesat}$ = .01, 95% CI [-.01, .05]), which suggests that the association between relationship status and poor physical health or life satisfaction was not explained by familial strain.

Additional Analyses

Next, I ran additional analyses to test the moderating role of gender and age (as in Study 1). I also ran an additional analysis for Study 2 to test how voluntary singlehood might moderate the associations between single status and well-being.

For the moderating role of gender on health, I did not find any significant 2-way or 3-way interactions among relationship status, culture, and age (all *p*'s > .05). For the moderating role of gender on life satisfaction, there was a significant interaction between relationship status and gender, $F(1, 426) = 10.16$, $p = .002$, $\eta_p^2 = .02$, such that single women reported lower life satisfaction ($M = 8.11$, $SE = .15$) compared to married women ($M = 9.38$, $SE = .13$, $p < .001$), single men ($M = 8.66$, $SE = .19$, $p = .02$) and married men ($M = 8.93$, $SE = .16$, $p < .001$), after controlling for age and education. There was also a main effect of culture such that Singaporeans reported greater life satisfaction ($M = 9.25$, $SE = .13$) than Americans ($M = 8.29$, $SE = .10$). No other effects or interactions were significant in this analysis.

Of note, I found distinct results in Study 2 compared to Study 1, most notably, the absence of a relationship status by culture interaction for health and a marginally significant association for life satisfaction. Because the mean age of single Singaporeans in Study 2 was relatively young (32.83), it is possible that age of participants is an important moderator in Study 2 of the associations between relationship status, culture, and well-being. I tested this hypothesis by running a moderation analysis in PROCESS with culture and age as moderators of the association between relationship status and well-being outcomes, while controlling for gender and education levels. I found a significant three-way interaction among relationship status, culture, and age for subjective physical health ($b = -.13$, $se = .06$, $p = .02$) but not for life satisfaction. Simple slopes analysis from the PROCESS macro revealed that younger Singaporean participants did not differ in how they felt about their physical health regardless of relationship status ($b = .01$, $se = .35$, $p = .97$), but older married Singaporeans felt better about their health than single Singaporeans ($b = 3.20$, $se = 1.34$, $p = .018$). For American participants, married people felt better about their health than single people, regardless of their age (b_{young} =

.87, *se* = .35, *p* = .015; b_{old} = .53, *se* = .26, *p* = .044). As older Singaporeans showed effects consistent with my hypotheses, it is possible that results from Study 2 were discrepant from those in Study 1 because the Singaporeans in my sample were younger, on average, and may not have experienced the detriments associated with singlehood yet.

In addition, as part of exploratory analyses, I tested whether people who were single differed as a function of whether they considered their singlehood status voluntary. Thus, I ran a one-way ANCOVA to determine if different groups of single (voluntary singles, involuntary singles) and married people showed variations in their subjective physical health and life satisfaction, after controlling for culture, gender, age, and education levels. For physical health, there was a significant main effect of relationship status, $F(2, 429) = 12.63$, $p < .001$, such that voluntary singles ($M = 8.08$, $SE = .23$) were not different from married people ($M = 7.90$, $SE = .11$, $p = .46$) and both voluntary singles and married people felt better about their health than involuntary singles ($M = 6.97$, $SE = .17$, p's $< .001$). For life satisfaction, there was a significant main effect of relationship status, $F(2, 430) = 26.41$, $p < .001$, such that voluntary singles ($M = 8.50$, $SE = .19$) were more satisfied than involuntary singles ($M = 7.91$, $SE = .14$, $p = .01$), but less satisfied than married people ($M = 9.12$, $SE = .09$, $p = .004$). Married people were also more satisfied than involuntary singles ($p < .001$). These additional findings may suggest that singlehood may not be as detrimental for personal well-being to the extent that people prefer and are satisfied with their singlehood status.

In summary, both Study 1 and 2 examined the links between relationship status (married vs. single) and physical and psychological well-being. Results from Study 2 suggested that single people reported worse well-being compared to married people; however, culture did not moderate this association. Results from mediation analyses further showed that only familial

support, but not familial strain, explained the links between relationship status and physical health/life satisfaction.

Chapter IV.

Discussion

The purpose of the current study was to examine whether (1) single people reported worse well-being than married people, (2) culture (i.e., Asian versus Western) moderated this association, and (3) familial support and strain explained the associations between relationship status and well-being. Across two cross-cultural studies, I found support for my hypothesis that single, as compared to married, people felt worse about their physical health and reported lower life satisfaction. Additionally, in Study 1, I found an interaction between relationship status and culture, such that single Asians (i.e., Japanese) reported the lowest levels of subjective physical health and life satisfaction compared to their married and/or American counterparts. Interestingly however, in Study 2, the interaction between relationship status by culture was not evident for a different group of Asian participants (i.e., Singaporeans).

I also tested the mediating role of familial support and strain as separate mechanisms linking relationship status to people's well-being in Studies 1 and 2. In general, there was some support for the indirect effects of familial support, such that single people reported less familial support and in turn, worse well-being (for Americans in both Studies 1 and 2 and Singaporeans); however, the indirect effect of familial support was not evident for Japanese participants in Study 1. For the indirect effects of familial strain, single people reported experiencing greater strain and pressure from their families, which culminated in their worse well-being; however, this indirect effect of familial strain was evident only for Japanese and American participants in Study 1, but not for Singaporean and American participants in Study 2.

Overall, consistent with existing work, I found that single people reported worse well-being than married people in both Studies 1 and 2 (Kiecolt-Glaser & Newton, 2001; Sullivan et al., 2010). Across different cultures, single, as compared to married, people felt worse about their physical health and reported lower life satisfaction. Singlehood is often viewed as violating the cultural norm of marriage and many singles face prejudice and discrimination due to their relationship status (or lack thereof) that can intensify singles' feelings of inadequacy and threaten their well-being (DePaulo, 2006; DePaulo & Morris, 2006).

Of importance, I ran additional analyses comparing voluntary and involuntary singles with married people in Study 2. I found that voluntary singles showed similar patterns of well-being compared to married people, and they showed better outcomes than involuntary singles. It is possible that results of this additional analysis may be a product of response biases or a third variable (e.g., people who are happier in general are more likely to be satisfied with their singlehood status); however, it is possible that this finding may be indicative of the fact that singlehood may not be harmful for one's well-being when single people prefer to be single and are satisfied with their singlehood status (Kislev, 2019). Considering the growing rates of singlehood in recent years, more people (across the globe) might become increasingly accepting of being single, and perhaps the silver lining is that singlehood may be detrimental only for a smaller group of people who remain dissatisfied with their singlehood status (Lehmann et al., 2015). Additionally, this is the one of few existing studies to approach the study of well-being of singles cross-culturally, and I defined singles based on their relationship status. However, results from my additional analyses – which demonstrate that voluntary singles show better outcomes than involuntary singles – might be indicative of the fact that it may be important to study personal evaluations of individuals' relationship statuses (i.e., satisfaction with singlehood;

Lehmann et al., 2015) in future research as recommended by some researchers (see Oh et al., 2021 for an example). In general, as the literature is disproportionately focused on married people, with few studies specifically focused on singlehood, the current study sheds new light and provides more information on single people's well-being.

Why did single Japanese show worse well-being than Americans? My results suggest that familial support explained the interaction between relationship status and culture in Study 1. When I examined the path from relationship status to familial support to health/life satisfaction, I found support for the indirect effects of familial support only for Americans but not for Japanese, such that married, as compared to single, Americans showed better physical health and life satisfaction. Although some recent research suggests that single people in the US are more "unsupported" (see Girme et al., 2021), my results are helpful in demonstrating that single people in the US enjoyed some level of familial support when compared to their Japanese counterparts (albeit to a smaller extent than married people). In fact, my results may suggest that married Americans had even greater access to social support from their families than single Americans (possibly because married Americans are conforming to the social convention of marriage; DePaulo & Morris, 2005), while single and married Japanese did not differ in their access to familial support.

More importantly, these findings might also provide support for the idea that singlehood is more in line with Western than Eastern ideals, where there is greater emphasis on independence, self-reliance, autonomy, and competition (Markus & Kitayama, 1991; Marshall, 2008). As Japanese are more collectivistic than Americans, and people in Asian cultures tend to focus more on the ingroup compared to Westerners (Markus & Kitayama, 1991), Japanese families may provide the same level of support to family members regardless of one's

relationship status (i.e., married versus single). Additionally, Americans in Study 1 also showed higher baseline levels of familial support compared to Japanese participants, which I attributed to cross-cultural differences in how familial support is manifested in Japanese versus American families. For instance, compared to the West, social support is usually more indirect in Asia (Kim et al., 2008), which may deprive Japanese of the support systems necessary for buffering against adverse experiences. Especially for single Japanese, who are subjected to greater discrimination in their culture for their singlehood status, indirect forms of familial support are unlikely to be helpful and can be even more punishing for their well-being. In turn, cross-cultural differences in familial support may mediate the links between relationship status and people's well-being.

Relatedly, results of the double mediation model revealed that singles experienced greater familial strain, which in turn manifested in their lower well-being (Azmawati et al., 2015; Himawan et al., 2017, 2018b). Results from the mediation analyses in Study 1 revealed that both Japanese and American singles experienced greater familial strain, which explained their lower levels of health and life satisfaction (i.e., no moderated mediation). Further, there was also evidence in Study 2 (albeit marginally significant) that both Singaporean and American singles reported more familial strain than married people. Although findings in Study 2 were only marginally significant and should therefore be interpreted with caution, when taken together with the findings from Study 1, there is a general trend suggesting that single people likely experience greater familial strain that is in turn associated with worse well-being, regardless of their culture.

Taken together, findings from Study 1 point to the possibility that single Japanese felt worse about their health and reported lower life satisfaction due to the combination of (1) increased familial strain because of their singlehood status, and (2) lower levels of familial

support in Japanese cultures (which may be exacerbated by indirect expressions of support provision, typical of Asian cultures). Perhaps interventions aimed at reducing familial strain and pressure, while building family solidarity and enhancing familial networks (Sarkisian & Gerstel, 2008), may be particularly useful for alleviating and promoting single Japanese' subjective physical health and life satisfaction levels. For instance, strengthening and promoting effective communication channels between single Japanese and their family could help in building up individuals' psychological resource and resilience, while downplaying the pressures of marriage. These findings may also speak to the importance of distinguishing between familial support and strain as separate mediators – as opposed to collapsing across both constructs to form a single marker of participants' family relationship quality, which would have missed this critical insight.

Of importance, I included Singaporean participants in Study 2 to test the generalizability of the findings in Study 1. I did not find support for my hypothesis that single Singaporeans showed worse outcomes than single Americans, married Singaporeans, and Americans. These findings may be interpreted to suggest that there may be heterogeneity in the experience of singlehood between the two Asian subgroups (i.e., Singaporeans versus Japanese); there could also be differences between American participants across samples in Studies 1 and 2. There are several reasons that may explain why I found this pattern of mixed findings. Methodologically, the relatively large sample size in Study 1 using nationally representative datasets, likely provided enough statistical power to detect the interaction effects of relationship status by culture. However, there was only adequate statistical power for testing the main effects of relationship status and culture for Study 2; in fact, the sensitivity power analysis showed that with my collected N, I was only able to detect small effect sizes (f = .13), which may have limited my ability to detect true effects that had even smaller effect sizes (Blake & Gangestad,

2020) (also see elaboration below for a more detailed account of limitations linked to statistical power).

Additionally, data collection for MIDUS/MIDJA in Study 1 occurred approximately 15 years before data collection for Study 2 (2004 and 2008, versus 2021, respectively), and it is possible that acceptance of singlehood has grown in recent years. For instance, cohort effects have been observed in Germany, which may suggest that middle-aged singles, as compared to older singles, are more accepting of singlehood, and feel less lonely than older single adults (Böger & Huxhold, 2020). Relatedly, data for MIDJA was collected amid the 2007-2008 financial crisis, which might have a played a role in further lowering single people's life satisfaction levels. Singles are more likely to pay attention to financial success and economic independence (Jones et al., 2012). Further, Asian masculine norms emphasize the need for men to achieve career success to be a provider (Ng et al., 2008). Thus, single Japanese men might be most vulnerable during a financial crisis as they might perceive greater risk in losing job security, which potentially explains my marginally significant finding that single Japanese men had lowest life satisfaction levels. It may be important for future work to track people's well-being in a more recent sample that is not exposed to significant financial threats. Perhaps, similar results might be observed if I had recruited a more recent sample of singles in Japan.

Conceptually, although Singaporean participants were selected as an alternate Asian subsample that more closely resembles Japanese participants (i.e., in terms of their high degree of globalization, financial prosperity, education levels), these two Asian cultures likely differ on many other important and nontrivial ways (i.e., geography, language use, access to support). Specifically, Singaporeans may differ from Japanese in the extent of access to familial support: Singapore is a small country with a population of 5.90 million people, with a population density

estimated at 8,423.8 per km^2; this is in contrast with Japan, where there is a larger population of 13.49 million people living in Tokyo (where the sample for Study 1 was derived), yet an even smaller (relatively) population density of 6,158 km^2. Singapore has been argued to be one of the densest cities in the world, thus it is highly likely that Singaporeans live closer to their extended family members and may enjoy greater access to familial resources such as social support from their family members (Jones et al., 2012). In fact, government policies and initiatives are in place to encourage co-living, or at least living in close vicinity, with older adult parents in Singapore. It is also highly likely that Japanese participants in the study may have family members living outside of Tokyo (i.e., adult children moving to Tokyo for work and only visit older adult parents during vacation), which can further restrict and limit single Japanese' access to familial support. Put together, it may not be all that surprising why there were discrepant associations between singlehood among Japanese and Singaporeans; the difference in access to familial support may also explain why I found that familial support was a significant mediator for Singaporean participants in Study 2, but not for Japanese participants in Study 1. Indeed, many cross-cultural researchers have argued for greater distinctions between different Asian cultural groups (Matsumoto & Yoo, 2006).

Another important factor to consider across samples is age of participants. Japanese participants in Study were age 50 on average; Singaporeans in Study 2 were much younger, with an average age at 38 years. In fact, almost 80% of all our Singapore participants were younger than 45. The mean age of marriage for Singaporeans is 32 for men and 30 for women (Ang et al., 2020), thus it is possible that the relatively young Singaporean sample in Study 2 may not yet have experienced the pressure to marry. Indeed, findings from the exploratory analyses provided additional support that younger Singaporeans did not differ in reported subjective physical

health, regardless of their relationship status. It is important to point out again, however, that my additional analyses were conducted on a restricted sample of relatively young Singaporeans as there were few participants above 40 in the Singapore sample in Study 2; thus, I may have observed worse well-being if I had a larger sample of older single Singaporeans. Although I made some attempt to address the potential confound of age by controlling for age in all analyses, it may be particularly important for future studies to include more diverse age groups to examine how age moderates the link between relationship status and familial status, and the possibility that there may be a critical age or a tipping point when singles feel more pressured into marriage. Some singlehood researchers have argued that age 30 is a preferred age used to distinguish people who are "truly" single versus those who are "marriable" (Ang et al., 2020); however, the mean age of marriage has increased globally (United Nations, 2019), thus participants aged 30-40 may no longer feel pressure or experience the detriments associated with their singlehood. Replicating the current study with a sample of older Singaporean participants (i.e., mean age of 50 years) who were also not presently in a relationship would likely yield a more comparable sample and might reveal more similar findings to what I found in Study 1.

It is important to point out again here that Asian countries are not a monolith and there are distinct cross-cultural differences across "Asian" cultures. I selected Japan and Singapore for the current two studies as the topic of singlehood is a highly salient social issue in both Japan and Singapore (i.e., there is a substantially high proportion of single people in these two Asian counties) (United Nations, 2019). Yet, it is important to be mindful that motivation and the direction of social policy related to singlehood may differ: the Japanese government has placed a large emphasis on understanding and improving the well-being of single Japanese people (e.g., Japan appointed a Minister of Loneliness in 2021) following high rates of suicide related to

isolation and loneliness, while the Singapore government' attention and efforts have largely remained on encouraging marriage and providing financial incentives for childbirth as the issue of singlehood is viewed to better manage an ageing population and declining birth rates. Thus, the institutionalized policies that follow likely vary according to the unique goals and motivation that each government is trying to address. It is likely that how different Asian countries (other than Japan and Singapore) approach the topic of singlehood will vary, and it is important to understand how well-being of single people may differ even among different "sub-Asian" samples.

There are several limitations that also needs to be addressed. First, as mentioned, the sample size for Study 2 was much smaller compared to Study 1, which likely affected my ability to detect the hypothesized main and interaction effects (Blake & Gangestad, 2020). Data from Study 1 was derived from a relatively large nationally representative sample, which was sufficiently powered to detect very small effects. I reasoned that the very small effect in Study 1 may have been due to the inclusion of single participants who were in a relationship (i.e., "never married" participants were used as proxy for single participants in Study 1, but I was unable to distinguish if these "never married" participants were presently in a relationship). Thus, in Study 2, I recruited a sample of single people who were also not presently in a relationship, which should have decreased measurement error. However, notwithstanding the smaller targeted sample size in Study 2, I had difficulty recruiting Singaporean participants (both married and single), which resulted in a smaller sample of Singaporean participants that likely decreased statistical power. In fact, sensitivity power analysis in Study 2 showed that my sample size was sufficient for detecting only small effect sizes. Perhaps the interaction between relationship

status and culture is indeed very small, which could have precluded my ability to detect this effect in Study 2 that had an even smaller sample.

Second, the present study adopted participants' country as a marker of cross-cultural difference. This classification of culture may be limited as it does not consider the large within-group variability even among participants in the same country (Matsumoto & Yoo, 2006). It is important for future work to include tests for how Western and Asian cultures differ meaningfully (i.e., identifying how the two cultures differed along a specific cultural dimension, for example, such as collectivism versus individualism that may explain the current pattern of findings).

Third, I tested the moderating effects of culture in two different sub-Asian samples, but it remains important to extend the generalizability of these findings to other Asian (non-Japanese, non-Singaporean) samples. The present findings suggest the experience of single Japanese and Singaporeans may be different, but it remains important to test for cross-cultural differences among other Asian populations.

Despite these limitations, the current study demonstrates that singlehood can be an adverse experience that is detrimental for some people's well-being across cultures. Singlehood is often stereotyped as undesirable and single people often experience pressures to marry that can adversely affect their physical health satisfaction with life. Here, I tested whether the negative links between relationship status and well-being may be further moderated by people's culture (i.e., Western versus Asian) and I tested familial support and strain as separate candidate mechanisms. Across two studies (and two different sub-Asian samples, Japanese and Singaporeans), I found that singles reported worse outcomes compared to married people; and the moderating effects of culture were present primarily for Japanese participants, such that

single Japanese felt worse about their health and reported lower life satisfaction. Familial support (or the absence of support) and familial strain helped to explain why single Japanese felt worse about their health and life satisfaction. Single Americans and Singaporeans, however, reported better outcomes – despite also experiencing familial strain, likely due to their greater access to familial support. It may be important for future work to develop single people's access to familial support as a buffer against the health and psychological detriments associated with their singlehood status.

Table 1 Descriptive Statistics of Key Study Variables in Study 1

	American				Japanese			
	Female		Male		Female		Male	
Married participants	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Age	53.87	11.89	55.54	12.11	54.09	13.32	56.50	13.95
Familial support	3.62	.53	3.50	.57	2.73	.65	2.41	.60
Familial strain	2.08	.59	1.95	.57	1.91	.60	1.79	.58
Subjective health	7.46	1.52	7.42	1.49	6.46	1.85	6.29	1.95
Life satisfaction	7.69	1.18	7.64	1.14	6.59	1.31	6.25	1.47
Single participants	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Age	50.29	12.50	49.82	11.77	45.79	13.29	44.75	12.92
Familial support	3.40	.67	3.16	.77	2.75	.66	2.24	.68
Familial strain	2.23	.58	2.06	.59	2.26	.59	2.05	.60
Subjective health	7.30	1.98	7.23	1.57	5.95	1.93	5.39	2.10
Life satisfaction	6.92	1.56	6.72	1.43	5.71	1.46	4.63	1.77

Note. Total *N* for American = 3,888; Total *N* for Japanese = 1,027.

Table 2 Bivariate Correlations of Key Study Variables by Culture in Study 1

	1.	2.	3.	4.	5.	6.	7.	8.
1. Gender		-.06	.21**	.01	.27**	.12**	.06	.16**
2. Age	-.06**		-.30**	.28**	-.01	-.23**	.02	.10**
3. Education level	-.07**	-.13**		.01	-.00	.07	.05	.15**
4. Relationship status	-.04*	.11**	-.06**		.03	-.19**	.15**	.32
5. Familial support	.11**	.11**	.00	.13**		-.16**	.07	.24**
6. Familial strain	.12**	-.24**	-.01	-.07**	-.34**		-.13**	-.17**
7. Physical health	.01	-.05**	.15**	.03	.15**	-.15**		.63**
8. Life satisfaction	.02	.19**	.11**	.20**	.32**	-.29**	.60**	

Note. Correlations under the diagonal are for American participants; correlations above the diagonal are for Japanese participants.

Relationship status was coded 0 = single, 1 = married; Gender was coded 0 = male, 1 = female. * $p < .05$; ** $p < .001$.

Table 3 Full ANCOVA Results for Study 1

	Physical Health					Life Satisfaction				
	SS	*df*	MSS	*F*-test	η^2	SS	*df*	MSS	*F*-test	η^2
Corrected Model	1234.77	6	205.80	78.65***	.11	2088.44	9	348.01	230.15***	.26
Intercept	4331.91	1	4331.91	1655.51***	.29	2689.18	1	2689.18	1778.46***	.31
Age	6.23	1	6.23	2.38	.00	173.75	1	173.75	114.91***	.03
Education	156.77	1	156.77	59.91***	.02	189.04	1	189.04	125.02***	.03
Gender	15.17	1	15.17	5.80*	.00	53.17	1	53.17	35.16***	.01
Relationship status	86.49	1	86.49	33.05***	.01	324.59	1	324.59	214.67***	.05
Culture	535.15	1	535.15	204.52***	.05	579.45	1	579.45	383.21***	.09
Relationship status*Culture	21.09	1	21.09	8.06**	.00	6.90	1	6.90	4.56*	.00
Error	10492.80	4010	2.62			6081.60	4022	1.51		
Total	218124.00	4017				221774.68	4029			
Corrected Total	11727.58	4016				8169.65	4028			

Note. Relationship status was coded 0 = single, 1 = married; Culture was coded 0 = Japanese, 1 = American; Gender was coded 0 = men, 1 = women. * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 4 Descriptive Statistics of Key Study Variables in Study 2

	American				Singaporean			
	Female		Male		Female		Male	
Married participants	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Age	46.83	12.59	53.06	15.49	35.43	8.60	38.84	11.10
Familial support	3.27	.70	3.06	.79	3.24	.71	3.19	.75
Familial strain	2.17	.64	2.00	.69	2.25	.54	2.26	.70
Subjective health	8.05	1.60	8.06	1.47	7.51	1.73	7.45	1.95
Life satisfaction	9.19	1.48	8.99	1.81	9.24	1.06	8.93	1.43
Single participants	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Age	47.39	13.79	47.79	16.42	32.68	4.12	33.07	4.95
Familial support	3.20	.71	2.94	.83	2.92	.74	2.75	.90
Familial strain	2.19	.59	2.22	.54	2.42	.73	2.54	.80
Subjective health	7.44	2.05	7.41	1.76	7.07	2.10	7.37	2.21
Life satisfaction	7.67	1.93	8.35	1.83	8.16	1.38	8.71	1.38

Note. Total *N* for Americans = 296; Total *N* for Singaporeans = 150.

Table 5 Bivariate Correlations of Key Study Variables by Culture in Study 2

	1.	2.	3.	4.	5.	6.	7.	8.
1. Gender		.12	-.08	.03	.08	-.05	-.03	-.03
2. Age	-.14*		.48**	.25**	.11	-.03	-.09	.06
3. Education level	.04	.07		-.10	-.07	.12	.10	.04
4. Relationship status	-.01	.04	.00		.24**	-.15	.08	.27**
5. Familial support	.14*	.20**	.12*	.06		-.47**	.35**	.25**
6. Familial strain	.08	-.36**	-.04	-.08	-.34**		.31**	-.15
7. Physical health	-.00	.09	.21**	.17**	.24**	-.20**		.53**
8. Life satisfaction	-.03	.34**	.29**	.34**	.36**	-.28**	.51**	

Note. Correlations under the diagonal are for American participants; correlations above the diagonal are for Singaporean participants. Relationship status was coded 0 = single, 1 = married; Gender was coded 0 = male, 1 = female. * $p < .05$; ** $p < .001$.

Table 6 Full ANCOVA Results for Study 2

	Physical Health					Life Satisfaction				
	SS	*df*	MSS	*F*-test	η^2	SS	*df*	MSS	*F*-test	η^2
Corrected Model	99.11	6	16.52	5.41***	.07	279.70	6	46.62	21.77***	.23
Intercept	404.08	1	404.08	132.44***	.24	313.92	1	313.92	146.58***	.26
Age	3.67	1	3.67	1.20	.00	94.36	1	94.36	44.06***	.09
Education	38.49	1	38.49	12.62***	.03	70.78	1	70.78	33.05***	.07
Gender	.01	1	.01	.00	.00	.27	1	.27	.13	.00
Relationship status	21.68	1	21.68	7.11**	.02	77.92	1	77.92	36.39***	.08
Culture	1.94	1	1.94	.64	.00	67.41	1	67.41	31.48***	.07
Relationship status*Culture	2.65	1	2.65	.87	.00	8.09	1	8.09	3.78^{+}	.01
Error	1308.93	429	3.05			918.72	429	2.14		
Total	27240.00	436				34523.40	436			
Corrected Total	1408.04	435				1198.41	435			

Note. Relationship status was coded 0 = single, 1 = married; Culture was coded 0 = Singapore, 1 = American; Gender was coded 0 = male, 1 = female. $^{+}p = .05$; * $p < .05$; ** $p < .01$; *** $p < .001$.

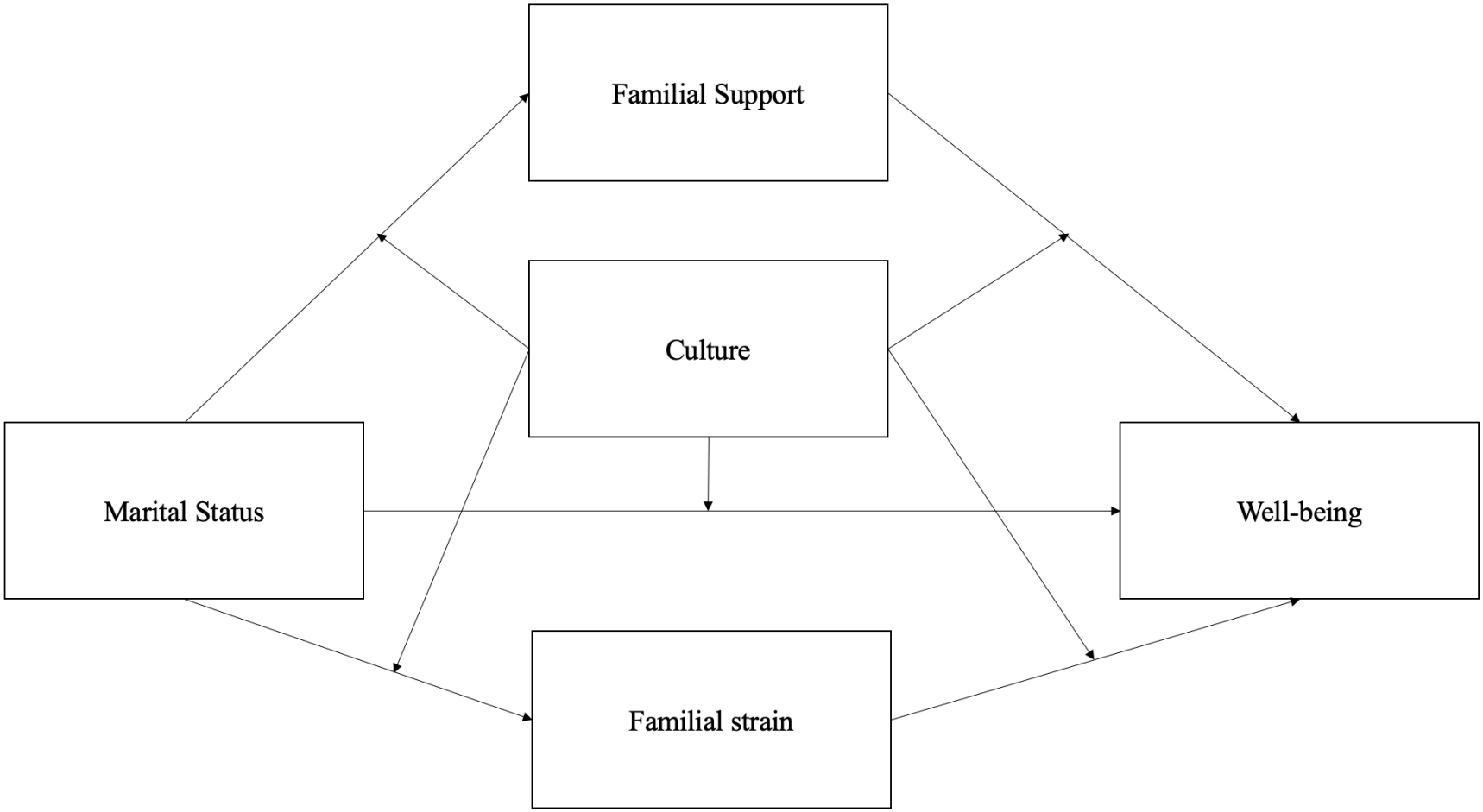

Figure 1 Conceptual model of relationship status to familial support and strain to well-being, moderated by culture.

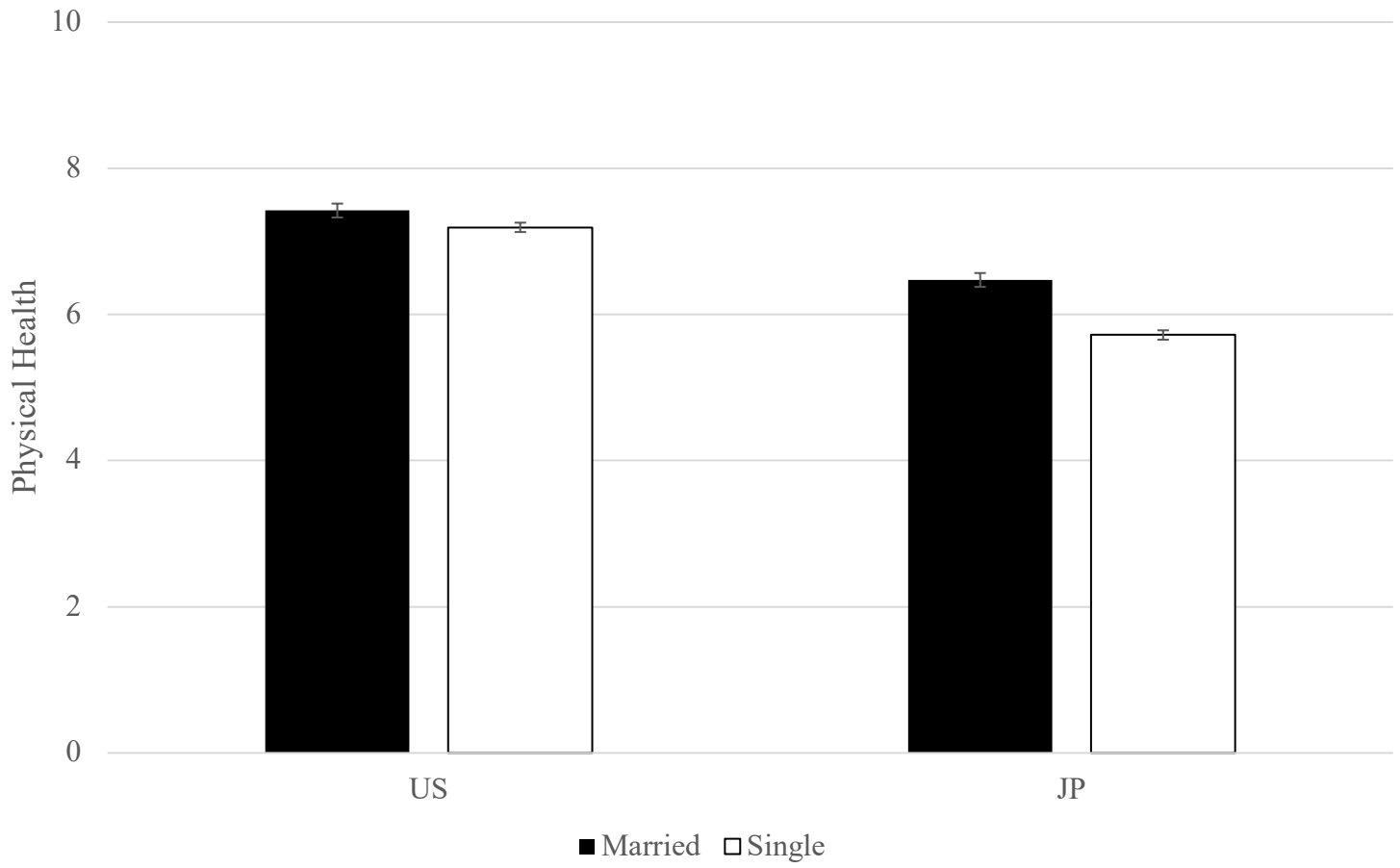

Figure 2 Mean ratings of physical health by culture and relationship status in Study 1 . Error bars represent standard errors.

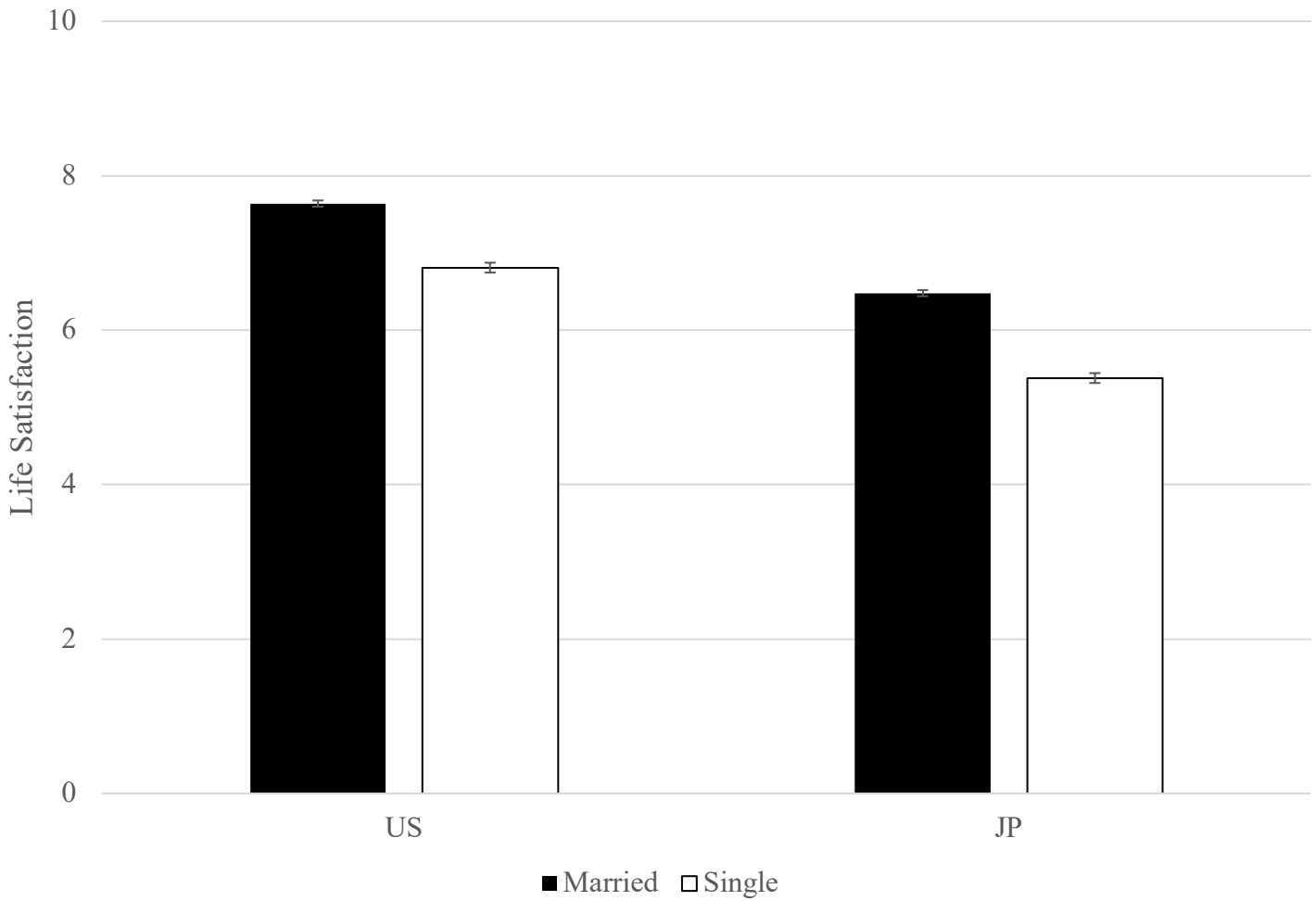

Figure 3 Mean ratings of life satisfaction by culture, gender and relationship status in Study 1 . Error bars represent standard errors.

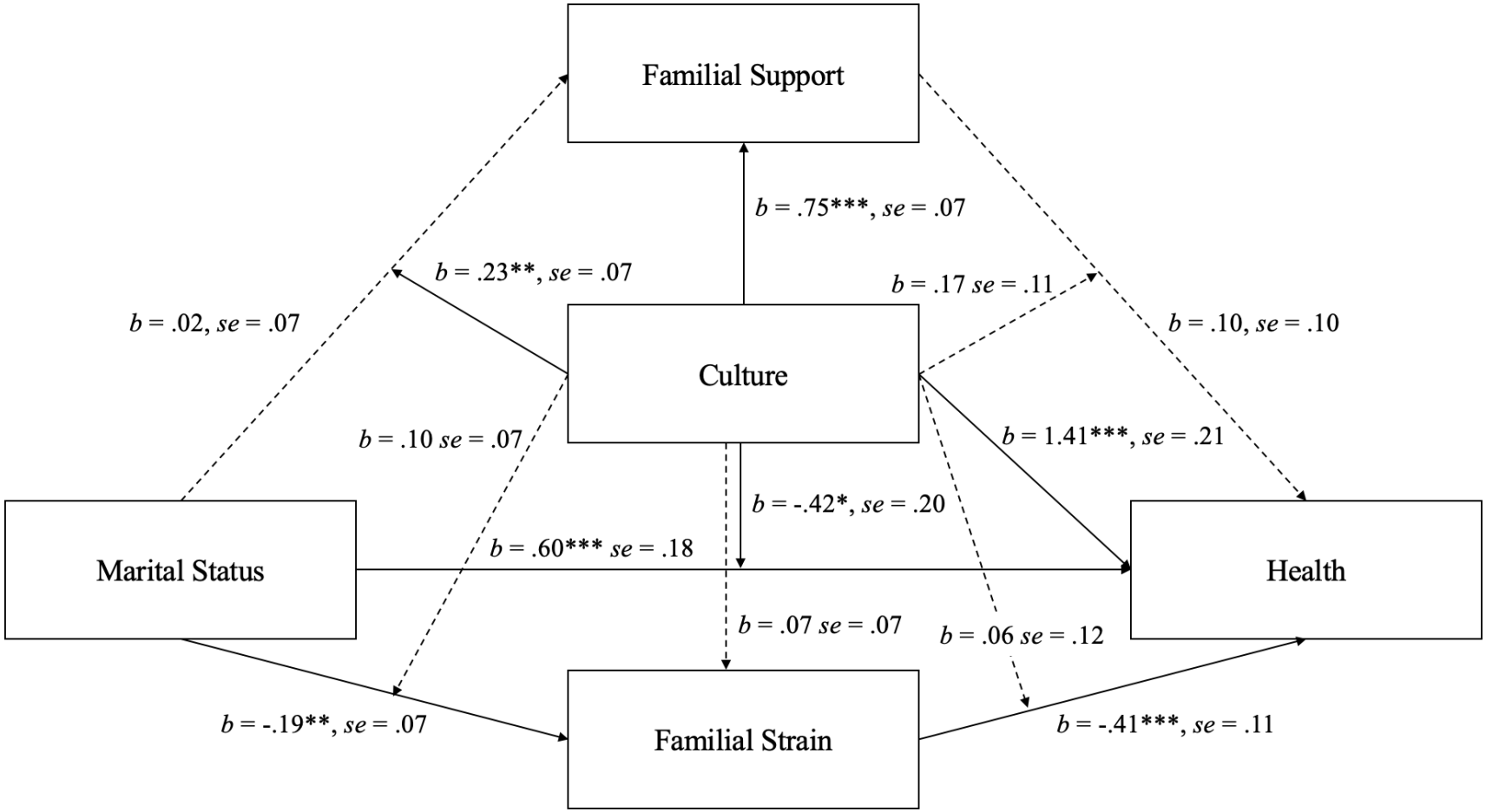

Figure 4 Mediation model for relationship status to familial support and strain to health in Study 1, moderated by culture

Standard (dashed) lines represent significant (non-significant) associations. Relationship status was coded 0 = single, 1 = married; Culture was coded 0 = Singapore, 1 = American. Covariates included gender, age and education. * $p < .05$; ** $p < .01$; *** $p < .001$.

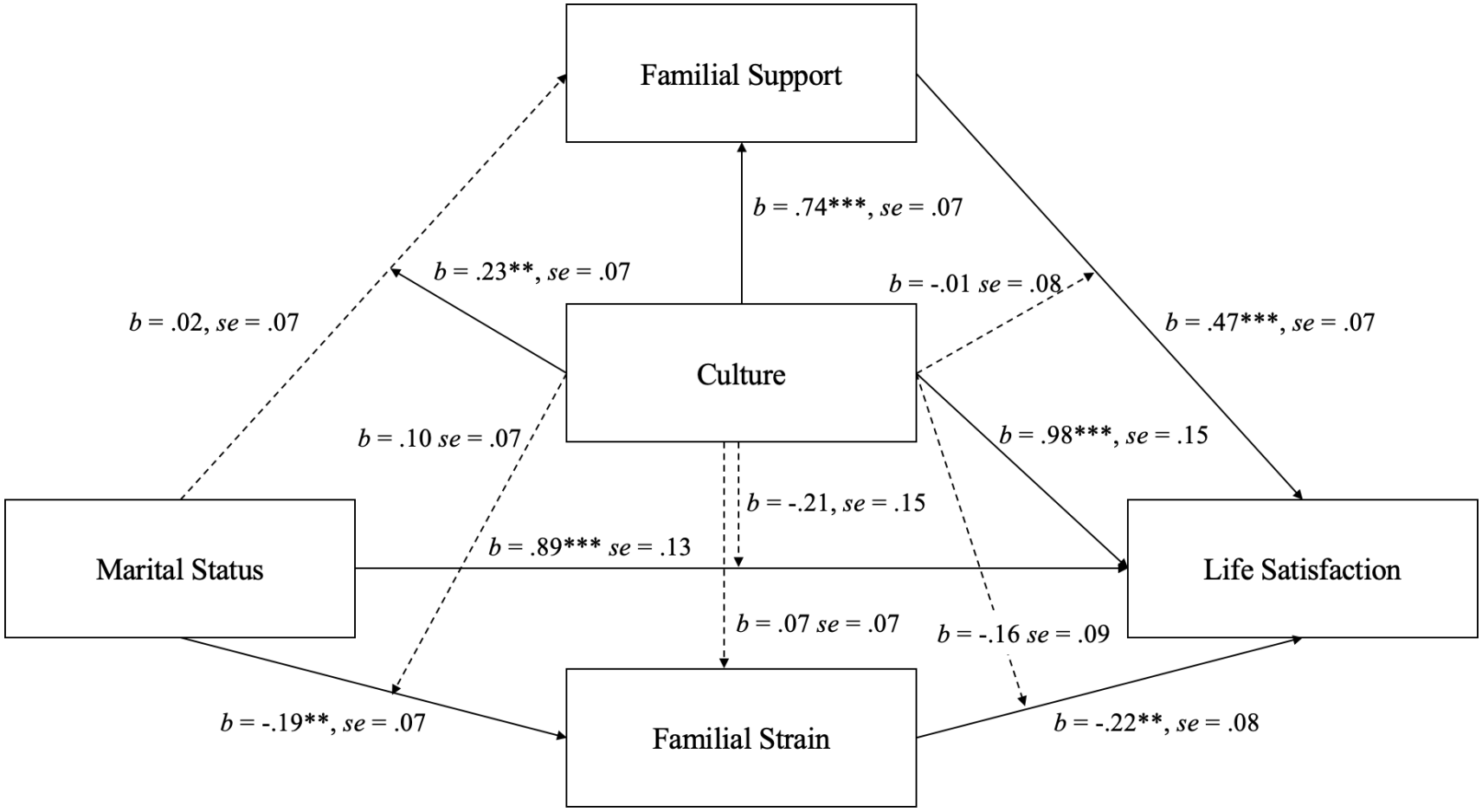

Figure 5 Mediation model for relationship status to familial support and strain to life satisfaction in Study 1, moderated by culture. Standard (dashed) lines represent significant (non-significant) associations. Relationship status was coded 0 = single, 1 = married; Culture was coded 0 = Singapore, 1 = American. Covariates included gender, age and education. * $p < .05$; ** $p < .01$; *** $p < .001$.

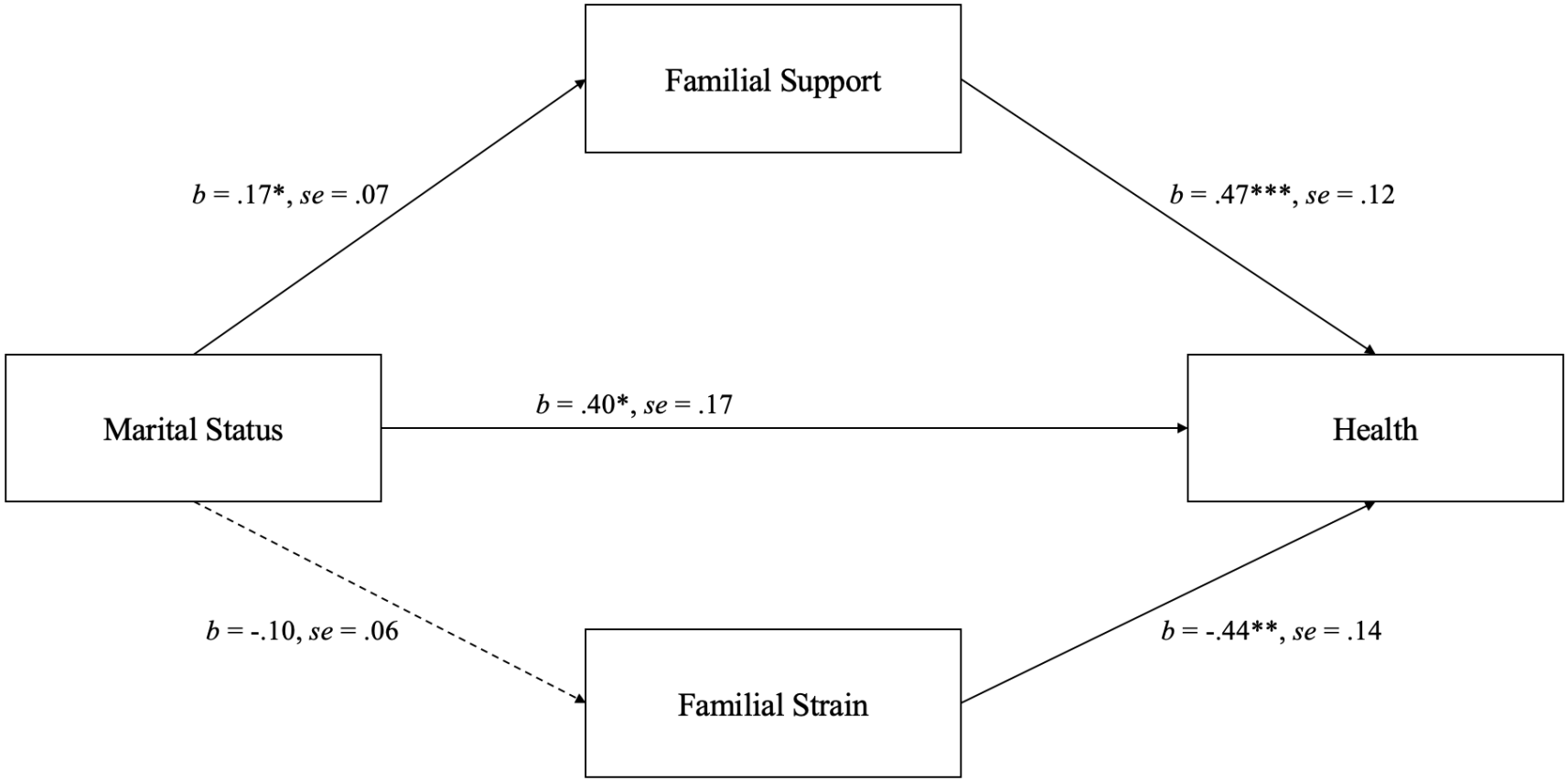

Figure 6 Mediation model for relationship status to familial support and strain to health in Study 2. Standard (dashed) lines represent significant (non-significant) associations. Relationship status was coded 0 = single, 1 = married. Covariates included culture, gender, age and education. * $p < .05$; ** $p < .01$; *** $p < .001$.

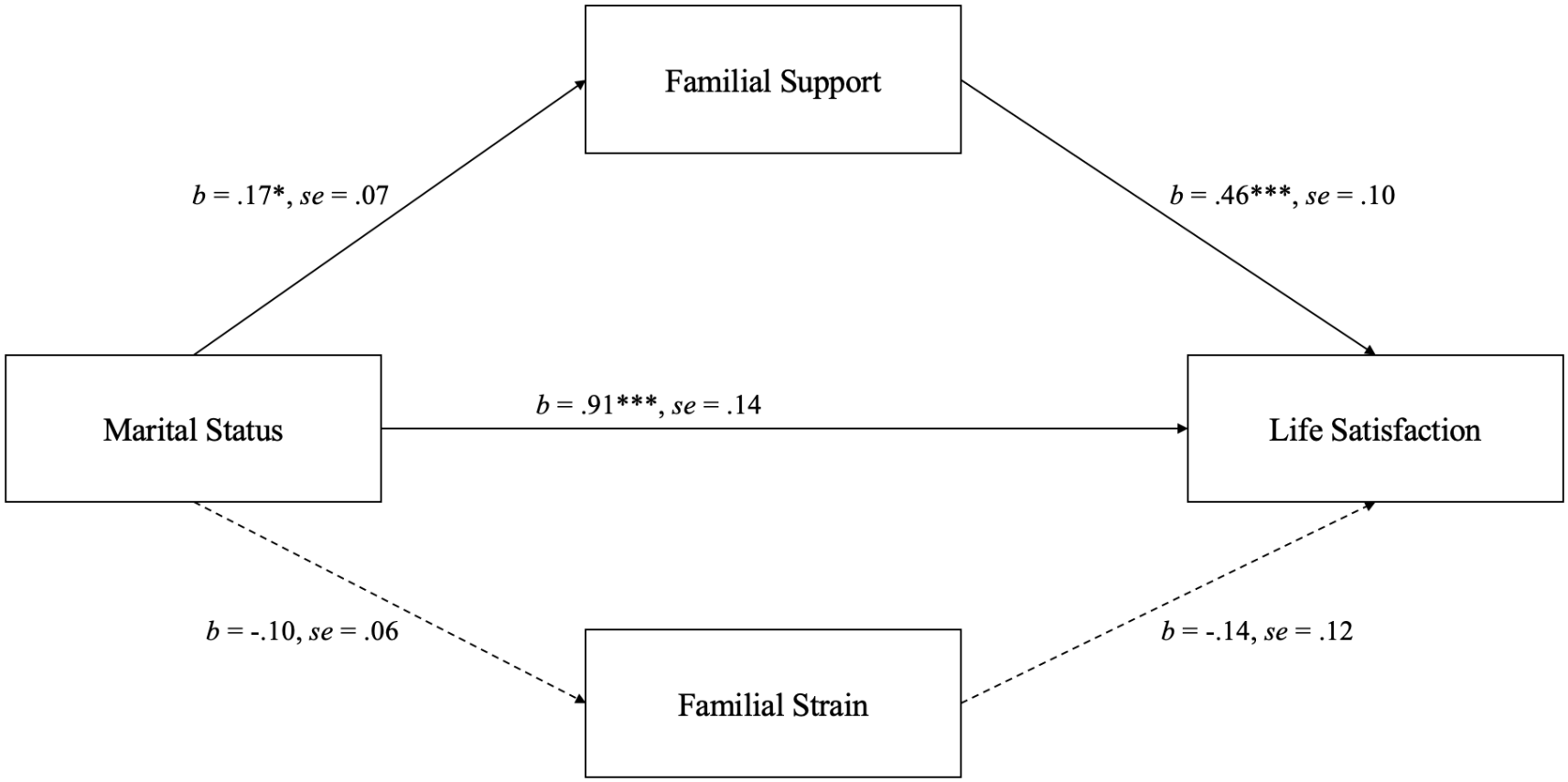

Figure 7 Mediation model for relationship status to familial support and strain to life satisfaction in Study 2. Standard (dashed) lines represent significant (non-significant) associations. Relationship status was coded 0 = single, 1 = married. Covariates included culture, gender, age and education. * $p < .05$; ** $p < .01$; *** $p < .001$.

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