



HHS Public Access

Author manuscript

Soc Sci Med. Author manuscript; available in PMC 2016 May 01.

Published in final edited form as:

Soc Sci Med. 2015 May ; 132: 236–244. doi:10.1016/j.socscimed.2014.11.009.

After Spouses Depart: Emotional Wellbeing among Nonmigrant Mexican Mothers

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Abstract

Nonmigrant family members play a central role in facilitating Mexico-U.S. migration by maintaining families, sustaining social relationships, and overseeing household economic organization in sending communities. This study investigates changes to the emotional wellbeing of nonmigrant mothers when their partners reside in the United States. We hypothesize that partner migration affects mothers' wellbeing through three pathways: directly via the toll of spousal separation, and indirectly via changes to the economic profile of the sending household and through changes to mothers' household responsibilities. We test these relationships using data on 2,813 mothers aged 18-44 in 2002 and measured in three waves (2002, 2005, 2009) of the Mexican Family Life Survey. We employ a fixed-effect estimation strategy that improves causal attribution of women's wellbeing to spousal residential location. We find evidence of increases in some forms of distress—sadness, crying, difficulty sleeping—when spouses are in the United States but no meaningful increase in depressive symptomology. Though partner emigration shifts several aspects of women's lives in sending households, changes to household resources or time allocation do not account for the moderate shifts in emotional duress associated with spousal absence. Importantly, additional tests reveal that we *would* observe large and significant associations between spousal migration and mothers' emotional wellbeing using a less rigorous estimation strategy, raising caution about the interpretation of cross-sectional studies evaluating wellbeing in sending homes.

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An earlier version of this work was presented at the American Sociological Association meetings. All opinions and errors are those of the author.

Keywords

Mexico; migration; transnational families; emotional health

The institution of family is central to understanding the processes driving and resulting from migration behavior. Migration decisions are often organized within family relationships (Stark and Bloom, 1985 and Parreñas, 2005) and the implications of migration are widely believed to operate through the social connections, economic transfers, and caregiving functions embedded in families (Levitt, 2001 and McKenzie, 2005).

Increasingly, research documents the instrumental role of nonmigrants in facilitating movement among family members. Several studies show how migration among partnered men and women is made possible by their nonmigrant spouses' efforts to oversee household finances, sustain the family's social ties, and ease family transitions for children (Pribilski, 2004 and Kanaiaupuni, 2000b). Despite attention to the critical *role* played by nonmigrant partners, a small body of research documents the *effects* of family migration on these partners' wellbeing. The experience of family separation likely influences many elements of welfare, including mental and physical health outcomes. Shifts in living arrangements and attendant changes in family responsibilities have known implications for emotional distress, depression, and fatigue (Cooper et al., 2009, Alegria et al., 2007, Grzywacz et al., 2006, and Osborne, Berger, & Magnuson, 2012). When the couples under consideration are parents, the effects of migration on nonmigrant partners may also have indirect implications for children (Creighton et al., 2009 and Dreby, 2010).

These relationships are particularly relevant for flows like those linking Mexico and the United States, in which migration is not limited to late adolescence and in which migrants maintain meaningful social and economic connections to sending families. As this study will show, 1 in 25 partnered women in Mexico had a spouse living in the U.S. during the mid-2000s.

What does migration mean for nonmigrant partners? Most research in Mexico describes changes in the lives of women, who are more often the nonmigrant partner when one member of a couple migrates. Research findings are mixed. Some studies suggest that spousal migration exacerbates psychological distress, increases housework, increases social isolation, and worsens sleep (Dreby, 2010, Kanaiaupuni, 2000b, and Salgado de Snyder, 1993). Others note that some strained marriages are improved by distance and that some women experience increased autonomy in their partners' absence (Echegoyén Nava, 2013a).

This study focuses on emotional wellbeing among nonmigrant *mothers*. Because these women are often primary caregivers for children, the experience of distress may have broader implications for the sending household. Adults suffering even mild forms of psychological and emotional distress demonstrate lowered work productivity and raise children with increased risk of deficits in nutritional intake, general health status, and educational attainment (e.g., Campbell et al., 2007 and Das et al., 2007). As such, the links between migration and resource-improvement in sending households depends in part on how nonmigrant caregivers fare in their partners' absence.

Drawing from previous research, we propose that spousal migration affects emotional health among nonmigrant mothers through at least three pathways: directly because of the emotional costs of partner separation, and indirectly through changes to the economic profile of sending households and changes to caretaking and household management responsibilities. We test these hypotheses using prospective data from repeated in-person surveys of a nationally-representative sample of Mexican households. Because male migration is more common than female migration after family formation in Mexico, we focus this analysis on couples in which men emigrate and women do not. We revisit this decision in the final section of the study.

The investigation makes several contributions to existing research. Studying the effects of migration on nonmigrants provides an important complement to the much larger body of research on health among migrants in *receiving* destinations. Ascertaining the broader implications of migration flows requires attention to the welfare of persons in sending communities. Second, most research on the mental health implications of migration is cross-sectional. It is difficult to ascertain whether observed associations arise because of migration or because of something else that causes migration. Prospective data improve our ability to attribute variation in emotional health to migration itself. As we will demonstrate, the approach has implications for the interpretation of existing findings on the subject. Further, we draw from data that include information about multiple dimensions of life in sending households. As such, we also assess changes to aspects of nonmigrants' lives that are hypothesized to be proximate causes of emotional health during spousal absence. Finally, because nonmigrant mothers are the primary caretakers of children in sending households, the findings shed light on a set of pathways through which father migration may influence children's wellbeing.

GENDER, FAMILY, AND MEXICO-U.S. MIGRATION

The circular flows between Mexico and the U.S. are large and well-studied. By the mid-2000's, 600,000 migrants crossed the Mexico-U.S. border each year. After 2006, emigration slowed, dipping to approximately 150,000 migrations in 2011 (Passel, Cohn, and Gonzalez-Barrera, 2012). Nevertheless, the Mexico/U.S. corridor remains the largest international population movement in the world; currently, twelve million U.S. residents are Mexican emigrants (World Bank, 2011).

Mexican emigration spans late adolescence and mid-adulthood and often takes place in the course of family building (Lindstrom and Giorguli Saucedo, 2007). As such, a growing literature investigates how families negotiate these transitions and maintain connection, partnership, and caregiving across borders (Boehm, 2008, Dreby, 2010, Hirsch, 2003, Bazán and Rodríguez, 2009, and Hondagneu-Sotelo, 1994). Many families adopt a "divided household" strategy, in which men migrate to the U.S. to seek employment while women stay in Mexico to raise children and care for extended family—an arrangement reflective of gendered parenting responsibilities in Mexican homes (Arias, 2013 and Kanaiaupuni, 2000a). This arrangement is decreasingly common; women presently comprise 42% of flows. Nevertheless, women are still more likely to depart before forming families (Cerutti and Massey, 2001 and Fry, 2006) and as such, within couples, men are more commonly the

absent migrant partner. These absences are decreasingly “temporary”; because of mounting physical and political barriers to border-crossing, family separation may last several years (Dreby, 2010 and Suarez-Orozco et al., 2002).

Some evidence suggests these experiences translate into measurable shifts in welfare for nonmigrant family members. For example, several studies describe negative effects on children’s schooling, health, and access to resources (e.g., Antman, 2011, Creighton et al., 2009, and Schmeer, 2009). As a result, scholars have called for research on the proximate causes of these deficits. Wellbeing among nonmigrant caregivers is one candidate explanation. The shift in family responsibilities, the change in parental authority, and the short-run income costs of a migrant’s departure are hypothesized to influence children’s access to stable parenting environments (Heymann et al., 2009 and McKenzie, 2005).

Indeed, spousal migration generates both opportunities and challenges for nonmigrant parents. We highlight a few such changes here, but see Arias (2013) and Antman (2013) for extended reviews. U.S. migration can significantly shift the level of economic resources available to sending households, both positively and negatively. Initially, financing a trip may require indebtedness to extended family (Rose and Shaw, 2008). However, if the migrant has employment success in the U.S., remittances may eventually exceed previous earnings in Mexico. Some nonmigrant women also begin new jobs in their partners’ absence, further contributing to household resources (Aysa and Massey, 2004). Data in rural communities suggest that, on average, households with a U.S. migrant have more resources than those without (Mora-Rivera, 2012).

The migration of partnered men typically creates gaps in household authority and responsibility, often filled by their nonmigrant spouses. New tasks include increases in agricultural labor, oversight of household finances, and maintenance of the family’s community responsibilities (Cohen, 2004 and Kanaiaupuni, 2000b). Patriarchal relations have a long history in Mexican households and for some women, exercising new authority is valued (Echegoyén Nava, 2013b and Hondagneu-Sotelo, 1994). This experience not universal however, and is particularly challenging when fulfilling these responsibilities is gender non-normative in the community (Boehm, 2008, and Echegoyén Nava, 2013a). Kanaiaupuni writes that although her “initial expectations” were that assuming men’s responsibilities would be “a sign of empowerment,” she found that “for many poor women in rural Mexico, the added responsibilities are unwanted and exacerbate their already marginalized position in society” (2000b: 8).

The “opportunities” generated by spousal absence may also be curtailed by the extended family; women’s behavior is often tightly monitored by in-laws, neighbors, and with the rise of communication technology, migrant spouses. When the couple disagrees, the migrant can enforce his preferences through threats to stop sending remittances—an outcome widely recognized as akin to marital abandonment (Arias, 2013). This threat is an often-referenced source of distress (Salgado de Snyder, 1993 and Kanaiaupuni, 2000b).

Finally, spousal physical separation results in the loss of companionship and the introduction of worries about safety, fidelity, and the durability of the union (Falicov, 2007 and Frank

and Wildsmith, 2005). For couples whose relationships include discord and violence, separation may be a welcome outcome (Echegoyén Nava, 2013b). For many other couples, distance is accompanied by isolation and worry (Salgado de Snyder, 1993).

To date, very few studies examine how these changes translate into measurable aspects of nonmigrant women's physical and mental wellbeing (for a notable exception, see research on HIV risk (e.g., Hirsch and colleagues, 2007). Yet, the rich characterizations in the aforementioned research point to several potential shifts in nonmigrant women's health profiles. In the present study, we assess *emotional* distress, in light of clear theoretical links with spousal migration. We describe these below.

EMOTIONAL DISTRESS IN NONMIGRANT WOMEN

Emotional distress, typically characterized as a mismatch between psychosocial resources and situational demands, is a well-documented outcome of family transitions. An exhaustive literature links distress to household re-organization following marital changes or the death of family members (Slone et al., 2006, Cooper et al., 2009, Osborne et al., 2012, and Avison, Ali, and Walters, 2007). Scholars have argued that these effects may extend to household transitions associated with migration, because of a similar disruption to established family roles, ambiguity about family reunification, and the rupture of supportive relationships (Falicov, 2007, Alegria et al. 2007, and García-Coll and Magnuson, 1997). Indeed, in the Mexico-U.S. context, these links are regularly referenced in studies of both sending and receiving communities (Cohen, 2004, Dreby, 2010, Grzywacz et al., 2006, and Hondagneu-Sotelo, 1994).

To-date, most epidemiological research describes an inverse association between U.S. migration and mental health in Mexico. Aguilar-Morales and colleagues (2008) observe elevated levels of depression and anxiety among residents of high-migrant communities. Relative to those living in Mexican households without U.S. migrants, members of households with a U.S. migrant exhibit higher levels of substance abuse (Orozco and colleagues, 2013), psychosocial stress (Aguilera-Guzmán et al., 2004), depressive symptoms (Silver, 2014), and suicide ideation (Borges et al., 2009).

Such research leaves room for several important extensions. First, integrating epidemiological scholarship with the ethnographic work on migration and families points to the importance of examining mental health among nonmigrant *wives*, who may disproportionately shoulder the mental health costs of U.S. migration (Torres, 2014 and Silver, 2014). Moreover, family scholarship points to specific mechanisms through which such relationships might arise. For example Salgado de Snyder's (1993) interviews of nonmigrant women in Zacatecas revealed two sources of anxiety for nonmigrant women: concern about the responsibilities acquired upon their husbands' departure and anxiety about their absent spouses' welfare. Finally, research on emotional health in sending households is exclusively cross-sectional. Because migration is almost certainly nonrandom, confounding bias threatens the interpretation of these associations as the *effects* of migration. Revisiting these relationships with longitudinal data and accompanying econometric techniques is warranted.

In the present study, we assess how the emotional distress of nonmigrant mothers is affected by spousal migration to the U.S. We hypothesize that this occurs through at least three pathways. One, the spatial separation of partners directly influences emotional welfare. Family separation, the loss of companionship, and concern about spousal welfare have documented costs for depression, stress, and anxiety (Cooper et al., 2009 and Osborne et al., 2012). Two, migration may influence emotional wellbeing *indirectly* via changes to the economic profile of sending households. If migrants do not send remittances for extended periods, then declines in resources—a known predictor of depression and anxiety (Ozer et al., 2011)—will worsen emotional distress. Alternatively, spousal migration that increases the net resources of the household should attenuate distress. Three, migration may exert a second indirect effect via increased household responsibilities (Arias, 2013 and Salgado de Snyder, 1993). If nonmigrant mothers appropriate additional caretaking, housework, or agricultural work, these may decrease time available for leisure and sleep. Both leisure and sleep are well-known correlates of mental and emotional wellbeing (e.g., Adrien, 2002); their reduction likely increases emotional distress.

METHOD

To test these hypotheses, we use data from three waves of the Mexican Family Life Survey. The nationally-representative survey was first fielded in 2002 and included in-person interviews with members of over 8,400 randomly sampled households in 150 localities in Mexico. In 2005 and 2009, a second and third wave of the survey were fielded, collecting data on over 90% and 85% of original households, respectively (Rubalcava and Teruel, 2007 and Velasquez et al., 2010). We use data on partnered mothers who in 2002 had coresident minors (children under 18 years old) and who were themselves aged 18-44, ages during which spousal migration to the U.S. is concentrated. Studying *mothers* generates findings relevant to the growing literature on the intergenerational implications of migration (e.g., Antman, 2013 and Creighton et al., 2009), though the mean age at first birth in Mexico is 21.5 and the vast majority of partnered women 18-44 have coresident children. We include mothers in marital *or* cohabiting unions in 2002; long-term cohabitation is common in Mexico, and in some less-resourced communities is substitutable for marriage (DeVos, 1995). For ease of discussion, we refer to members of both types of couples as “spouses.” Because we seek comparisons between the experience of spousal U.S. migration and spousal coresidence in Mexico, we exclude mothers partnered to domestic migrants. We revisit this choice in the discussion.

13% of sample cases are not re-interviewed in 2005 and 8% of remaining cases are not interviewed in 2009. In addition, 4-6% of cases do not complete the emotional health module in each survey round. Though data from proxy respondents are collected for many measures in the MxFLS, they are not collected for emotional health. As a result, 33% of cases must be excluded due to missing data in one of the three survey waves. Of key concern is that those who attrite are more likely to be migrants; however a comparison of 2002 values on spousal migration status and levels of U.S. migration in the community reveals no statistically significant differences between retained and excluded cases. Moreover, the retained and excluded cases have nearly identical values on emotional health indicators in 2002.

The resulting analytical sample includes 2,813 mothers. In each wave, 3-4% reported their spouse was living in the U.S. Although the analysis would ideally also consider the effects of mother migration on nonmigrant fathers, this family arrangement occurs much less frequently; the MxFLS lacks sufficient data support for such estimates.

The central obstacle to measuring the effects of spousal migration on nonmigrant health is the likely correlation between the decision to migrate and other aspects of the household or community that are related to wellbeing. Researchers often address this issue by using available controls in regression estimates. However, the more pernicious type of selection bias comes from characteristics that are difficult to measure. Furthermore, it is possible that the decision to migrate is related to the outcome of interest. For example, a spouse may migrate away from an unhappy marriage (Arias, 2013 and Frank and Wildsmith, 2005); if this occurs, regression of emotional wellbeing on spousal migration will produce upwardly-biased estimates.

We use an approach that explicitly compares the same individuals over time, thereby holding constant any characteristic that is enduring over time (Wooldridge, 2003). We pool sample observations from 2002, 2005, and 2009 and estimate a series of individual fixed-effects specifications:

$$\theta_{it} = \alpha + \beta_1 U_{it} + \beta_n X_{nit} + \beta_2 T_t + \mu_i + \varepsilon_{it} \quad (1)$$

where i indexes mothers, t indexes the three periods of observation, θ is the outcome, U_{it} is an indicator of whether mother i has a spouse in the United States at time t , X is a vector of time-varying control measures, T is a survey-wave-specific fixed effect, μ is an individual-specific fixed effect, and the β s are estimated coefficients.

Coefficients are interpreted as the change in outcome that temporally accompanies a change in covariate – for example, whether a father migrates to the U.S. or returns between survey waves. Because the sample includes families in which fathers return and families in which fathers depart, the β_1 estimate is a weighted average of the effect of departure and the inverse effect of return. If the effect of departure is equivalent to the inverse effect of return, the estimates are appropriately interpreted as the average effect of father absence on mother wellbeing. The approach increases data support for the estimations. To ensure the method is appropriate, we tested for significant differences in the effects of departure and the inverse effects of return; the substantive conclusions made here are also supported by an analysis of the effects of departure (results available from authors).

The survey-wave fixed effects (β_2) adjust for period and aging effects among all mothers. Robust standard errors are adjusted for clustering at the largest unit of non-independence, the locality.

We first specify the equation using an OLS regression with a random-effect at the individual level to adjust for non-independence. We then introduce the individual-level fixed effect (μ_i) and use a Hausman test to assess its inclusion (Wooldridge, 2003). The fixed effect is conceptually equivalent to including a dummy variable for each mother. Any time-invariant individual, household, or community characteristic that predicts both father migration and

mothers' wellbeing is controlled. This includes potential confounding, such as regional variation in migration levels and difficult-to-measure aspects of socioeconomic status. This also includes stable aspects of reporting bias, like differences in interpretation of the survey questions or enduring variation in temperament.

To interpret β_1 as the causal effect of spousal U.S. migration, we must assume that: 1) *changes* in the outcomes are not driving migration and 2) something else that changes between the survey waves does not predict both migration and the change in mothers' wellbeing. The first assumption is a special case of the second, and to help make this assumption we include time-varying controls, described below.

Outcome: Symptoms of Emotional Distress

The MxFLS includes a module comprising 21 questions about emotional health in the four weeks prior to interview; these capture symptoms related to depression, including emotions like sadness and fear; physical symptoms like chest pain and headache, and feelings of pessimism, uselessness, and a wish to die. 20 of the 21 questions form an index developed by the Mexican National Institute of Psychiatry. The remaining question asks about respondents' experiences of loneliness. The 20-question index has been validated against other mental health inventories in Mexico (Calderon, 1997) and used in studies to measure depression in the Mexican population (Das et al., 2007 and Schmeer, 2013). For each item, the respondent reports the frequency of symptoms over the past month, ranging from 1=Never to 4=All the time. The summed index values span a 60-point range; higher values indicate worse distress. We log the measure to adjust for a non-normal distribution (Table 1).

Importantly, the summed measure masks considerable variation in the types of questions to which women respond, ranging from more benign aspects of duress (feeling discouraged) to more acute and concerning symptoms (wishing for death). To more richly characterize women's experiences, we then measure changes in the probability of reporting each of the index sub-items as well as the additional indicator of loneliness. We create dichotomous measures indicating whether respondents experienced the symptom in the four weeks prior to interview. Because these measures are dichotomous, we estimate Eq. 1 using fixed-effect linear probability models (Wooldrige, 2003); conditional logit models produce substantively identical results.

Indirect Pathways: Household Responsibilities and Household Economic Resources

We have proposed that, in addition to having a direct effect of nonmigrant emotional health, spousal migration may shift two aspects of nonmigrant mothers' lives that influence emotional health. To test this, we measure reported time allocation and the household's economic circumstances at each survey wave.

As is customary in time-use surveys, adults report on hours allocated to activities over the week prior to interview. We generate five categories of time allocation: 1) housework: the summed hours mothers report cleaning, preparing food, gathering wood, and acquiring water; 2) agricultural work; 3) caretaking work for children and the elderly, 4) leisure: the

summed hours of time spent watching television, reading, and attending entertainment activities in the community; and 5) nightly sleep (see Table 1).

We use two measures to capture the household's economic profile: asset wealth and total household monthly consumption. The two measures will capture changes to household resources that result from financing a migration to the U.S. and from migrant remittances. Both measures are logged to adjust for skewed distributions.

Time-varying Controls

To reduce time-varying confounding, we control for characteristics that might generate migration and change mothers' emotional health, such as changes to household structure or unexpected economic declines that do not result from migration. For example, if an additional child is born, a husband may migrate to increase family resources, while his wife may have increased levels of housework, decreased hours of sleep, and higher levels of emotional distress. We measure two indicators of household structure: the number of children and the number of coresident adult women.

Similarly, if the household experienced a major economic setback, it may have created incentive for fathers to migrate, while also increasing distress among other household members. MxFLS households report the occurrence of major economic shocks. We construct a dichotomous measure indicating the experience of any such event (including natural disasters, robberies, major crop losses, or deaths in the family) in the three years prior to each interview (four years prior to 2009). We measure whether the household generated earnings through agriculture. We also measure whether the mother's union ended between survey waves.

Our analysis proceeds in three steps. We begin by regressing measures of emotional health on spousal migration using equation 1. We then characterize the two proposed intermediary pathways by testing for an effect of spousal migration on mothers' time allocation and assets and consumption in their households. Finally, we assess how the association between migration and spousal emotional health changes once time-varying controls for time allocation, assets, and consumption have been introduced into equation 1.

RESULTS

We begin by examining variation in overall depressive symptomology associated with spousal U.S. residence. Column 1 of Table 2 presents coefficients from a random-effect regression predicting the logged symptom index. We observe a small but precisely-estimated association between fathers' U.S. residence and the extent of mothers' depressive symptoms; a 0.041 change in the log scale is approximately one-sixth of a standard deviation. In column 2, we introduce an individual-level fixed effect. The association shrinks in magnitude and is much less precisely-estimated. A Hausman test indicates that the fixed-effect specification is unambiguously preferred ($X^2 = 60.58$; $p < 0.000$). Unobserved traits are likely upwardly biasing the estimate in column 1.

Turning to the time-varying controls: changes to household composition and changes to patterns of agricultural use are uncorrelated with depressive symptoms. Unsurprisingly, suffering an unexpected economic loss significantly increases depressive symptoms. In column 1, we observe higher index values among mothers whose unions have ended by the later survey waves; however this association also becomes statistically insignificant in the presence of a fixed effect. For all mothers, depressive symptoms declined as they aged between 2002 and 2009.

Because the questions comprising the index vary in severity, we also test item-specific results. Doing so provides a fuller characterization of changes to mothers' emotional states when fathers' migrate. Figure 1 displays coefficients from linear probability models (Eq. 1 with a dichotomous outcome) multiplied by 100; these indicate the percentage point change in the probability of symptom expression associated with spousal U.S. residence.

Most of the associations are positive, indicating a higher probability of reporting the symptom when fathers were in the U.S. relative to reporting that symptom when they coresided in Mexico. Five of the twenty-one are significant. Notably, these five do not include the most acute symptoms of duress (e.g., a wish for death). Instead spousal absence is associated with increases in the probability of reporting sadness, sleeping poorly, crying, obsessive thinking, and loneliness. The probability of reporting loneliness increases by about 60% (18 percentage points on a 31% base) when fathers are in the U.S.

These associations are robust to controlling for all time-invariant unobserved confounding, as well as the confounding measured with time-varying controls. Such adjustment appears warranted. Hausman tests for each of the estimates in Figure 1 confirm the appropriate use of the fixed-effect estimator. Without the fixed effect, 11 of the 21 associations are positive, large, and statistically significant (available from authors). Akin to our conclusions from Table 2, a less rigorous regression approach generates a substantial overstatement of the negative effects of spousal migration.

We hypothesized that spousal migration has a direct effect on nonmigrant mothers' emotional duress. We also hypothesized that spousal migration indirectly influences emotional wellbeing via changes to the household economic profile and changes to mothers' responsibilities during father absence. Because evidence for such changes—her time allocation, in particular—are not well-documented, we turn now to a characterization of both using the MxFLS data. Table 3 presents estimates from seven fixed-effect regressions.

Columns 1 and 2 predict changes to household economic resources associated with father U.S. residence. We observe small increases in asset value and expenditures; though only the expenditure estimate is significant. Of course, this average effect masks important variation; about two-thirds of nonmigrant women live in households that experienced increases in assets and expenditures associated with their partners' migration. The other one-third experienced declines. We revisit this variation below.

Turning to time allocation (columns 3-7), we observe that women's time spent doing housework does not increase when spouses are in the U.S. Instead, the estimate is negative, though imprecisely estimated. Changes in time allocated to agriculture and to caretaking are

both small and not significant. On average, then, spousal migration to the U.S. does not appear to significantly increase the time nonmigrant mothers allocate to tasks associated with managing the household and caring for the family. Instead, we observe a significant association between spousal U.S. residence and leisure time. Mothers report engaging in an additional two hours of leisure activities when their spouses live in the U.S. relative to periods when their spouses coreside in Mexico.

Notably, the patterns in Table 3 are quite different for mothers whose unions end. These women experience decreases in available assets and expenditures. Like spouses of migrants, their housework hours decline; unlike spouses of migrants, they experience large reductions in leisure. Part of this difference likely arises from changes in employment behavior. Roughly one-third of the women in the sample have wage-earnings. Spouses of migrants do not differentially enter the formal labor market when their partners migrate, whereas women who separate from their partners do (results available from authors).

In light of the associations in Table 3, we might expect spousal migration to have indirect effects that *reduce* the degree of emotional duress experienced by nonmigrant mothers. If this is the case, the coefficient on the direct effect observed in Column 2 in Table 2 will be underestimated. To test this, we introduce time-varying measures of household resources and women's leisure and sleep duration into Eq. 1. Results are presented in column 3 of Table 2. Interestingly, we find little evidence of a change in the association between spousal migration and women's distress. Though we might expect that household resources and time allocated to leisure and sleep would each be inversely correlated with emotional duress, a negative association is only observed for sleep duration.

We estimated a similar set of regressions to predict the symptom-specific outcomes in Figure 1, including controls for household resources and time allocation. Again, we observe no substantive change in the estimates (results not shown). We conclude then, that the modest associations with emotional duress shown in Figure 1 are not likely a function of changes in nonmigrants mothers' household resources or responsibilities.

Additional Considerations: Heterogeneity, Absence Duration, and Selection on Trajectory

Importantly, these estimates likely mask a number of forms of underlying variation. Because the sample of mothers partnered with emigrants is small in a nationally-representative survey, tests for heterogeneity are underpowered. For example, it may be that emotional duress is particularly acute for women partnered with men who do not send remittances or women who must take on additional household responsibilities in their partners' absence. Though we do not find support for these hypotheses in the MxFLS data (not shown; available from authors), future work with a larger sample of nonmigrant mothers would benefit from considering this variation. Similarly, the duration of spousal absence is likely associated with variation in the effects on mothers' emotional duress. In column 4 of Table 2, we present the symptom index change associated with spousal absence for mothers with a spouse in the U.S. in *both* 2005 and 2009 (net of period changes observed among all women). Descriptively, the estimate is much larger when limited to mothers whose partners were in the U.S. in both follow-up survey waves. However, this estimate is generated off of

60 observations of 20 mothers who meet this criterion, so should be interpreted with caution. It is indicative of the benefits of testing such variation in future work.

Finally, the fixed-effect approach adjusts for pre-migration variation in mothers' level of emotional distress. However, it is possible that an earlier occurrence generated a *trajectory* of increase in distress and also precipitated fathers' departure. Exploiting the presence of three survey waves, we test whether the difference between 2002 and 2005 measures of distress are different for mothers whose partners emigrate between 2005-2009 and mothers whose partners do not. We observe no meaningful difference-in-difference, indicating that selection on trajectory is unlikely driving the patterns observed here.

DISCUSSION

This research examines the understudied nonmigrant mothers who contribute to Mexico-U.S. migration by maintaining families and households in sending regions. We test for the effects of spousal U.S. migration on these mothers' emotional wellbeing. We use longitudinal data in which mothers report levels of distress before fathers depart and while fathers are living in the United States. We test for evidence of two indirect pathways through which spousal migration is hypothesized to affect distress: household resources and responsibilities.

We find evidence that mothers are more likely to report several symptoms of distress—namely loneliness, sadness, crying, difficulty sleeping, and obsessive thinking—when their partners are in the U.S. relative to when their partners are coresident in Mexico. We find that the modest shifts in emotional distress may be direct effects of spousal separation; we find no evidence that these changes are a function of decreases in household resources or increases in the burden of household management and family caretaking.

Importantly, these changes in symptom expression are not substantial enough to meaningfully shift mothers' scores on a validated index of depressive symptomology. Moreover, for most mothers, these are not *permanent* changes in wellbeing. As discussed earlier, we observe that the effects estimated on spousal departure and spousal return are statistically symmetric. For mothers whose spouses do return, these symptoms largely abate.

We arrive at these conclusions using a fixed-effect analysis. We also test an estimation strategy that does not sweep out unobserved confounding variation at the individual-level, an approach commonly employed in research that quantitatively characterizes life in sending households. We find that in the absence of addressing unobserved confounding, we would overstate the negative effect of fathers' migration on nonmigrant mothers' emotional wellbeing.

The symptom changes we observe are consistent with some of the feelings expressed among nonmigrant partners in ethnographic studies of sending communities. That the effects measured here are, in some cases, milder than those presented in earlier research may also emerge from differences in the populations under examination. Because of the small sample of U.S. migrants, we cannot subset the MxFLS data to differentiate settings akin to those

described in regional studies. This precludes a focused examination of mothers married to U.S. migrants who are living in resource-poor, rural communities, for example.

The study has several additional limitations. The transnational living arrangement depicted in this study is only one form of migration occurring in the Mexican population (Cerruti et al., 2001). Other research targeting regions in which mothers are more likely to move (e.g., Dreby's 2010 research on the Mixteca region of Oaxaca) would enrich a description of the effects of migration on nonmigrant caregivers. Further, by focusing on the implications of transnational family living arrangements, the study is silent about the effects of other divided family arrangements, such as those resulting from domestic migration. If the economic returns to the sending household are more modest, but visits more frequent, as one might expect with domestic migration, effects on nonmigrant wellbeing could either be larger or smaller than observed here.

Similarly, more extensive comparisons across multiple family forms (Creighton et al., 2009, Nobles 2011, or Schmeer, 2013) are outside the scope of this study. Here, we do not find meaningful differences in the emotional health effects of spousal migration and union dissolution. However the accompanying analysis of household resources and time allocation underscore the significant distinction between divorce and migration for other aspects of family welfare. Following divorce, mothers experience larger reductions in resources and leisure time relative to mothers experiencing spousal migration—a finding consistent with other research on Mexican families (Nobles, 2011 and Villareal and Shin, 2008). The finding is also consistent with Arias' (2013) assessment that the role of migration as a “de facto” form of divorce has waned as divorce has become more commonplace in Mexico.

Finally, though quantitative data can improve estimate attribution in a large, nationally-representative sample, this type of data may also influence the results, simply because in interview sessions, the narrative provided by respondents may conform to expectations that are gendered (e.g., Pessar, 1999). Similarly, the metrics of distress used here may simply not capture the challenges that arise in the context of spousal U.S. residence. As such, these results should not be interpreted as contradicting important evidence about the hardship experienced by some nonmigrant women depicted in ethnography of rural and resource-poor communities.

Despite these issues, the present study has several implications. When conceptualizing whether, and how, migration generates returns for sending communities, it is critical to ascertain the features of nonmigrant lives that shift alongside family separation. If increases in mothers' experiences of loneliness, crying, and difficulty sleeping have consequences for parenting behavior, or are enduring for mothers whose spouses are absent for lengthy periods, the emotional health of nonmigrant caregivers may be an important avenue through which migration influences population welfare in sending communities.

Secondly, the added household burdens generated by spousal migration described in previous research may be concentrated in particular types of communities. At the national level, we find little evidence of decreases in household resources or increases in the amount of time nonmigrant women must allocate to caretaking and household management. If

anything, the average mother experiences reductions in housework and increases in leisure upon her spouse's departure. As such, identifying the axes of variation that delineate households in which the situation of nonmigrants is made considerably worse—economically, physically, or emotionally—will be important for both future research and policy development.

Finally, in light of the estimate change generated by statistical adjustments for unmeasured confounding in this study, care is warranted when drawing conclusions from cross-sectional research on migration and health in sending households. Migration behavior is not random and appropriately attributing wellbeing to migration, versus the familial or structural context that supports it, is essential for broader discussions about the implications of migration flows.

Acknowledgements

The authors gratefully acknowledge funding from the Robert Wood Johnson Foundation, the Center for Demography and Ecology (NICHD R24 HD047873), and the Center for Demography of Health and Aging (NIA P30 AG17266) at the University of Wisconsin, Madison. The authors thank Nathan Jones, Kaja LeWinn, Valentina Mazzucato, Christopher McKelvey, and Christine Schwartz for useful comments about this work.

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Highlights

- Studies effect of spousal migration on nonmigrant mothers' depressive symptoms
- Fixed-effect regressions with population data reduce sources of estimate bias
- Spousal U.S. residence associated with some symptoms of distress among mothers
- No effect on overall depressive symptomology
- Cross-sectional estimates of migration effects on nonmigrant health likely biased

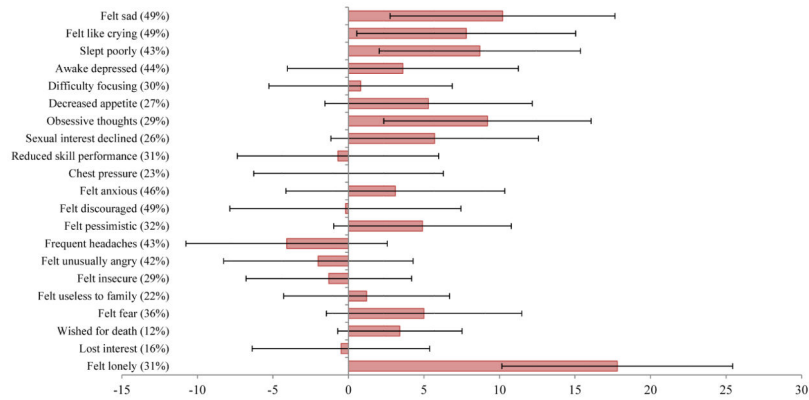


Figure 1. Percentage point change in the probability of experiencing symptom when spouse lives in the United States, relative to previous or subsequent measurement of symptom when spouse coresides in Mexico, Mexican mothers surveyed in 2002, 2005, & 2009.

Source: Mexican Family Life Survey waves 1, 2, & 3.

Notes: Percent of total sample reporting symptom in 2002 in parentheses. Graph: estimate on spousal residence in the U.S. from fixed-effect linear probability models predicting each of 21 symptoms. Regressions adjusted for time-varying measures of household composition, household economic shocks, and period changes observed between surveys for all women.

Table 1

Sample characteristics

	Mean	S.D.
<u>Sociodemographic (2002)</u>		
Age	32.7	6.7
Years of completed school	7.0	3.7
Number of children in the household	2.4	1.4
Number of adult females in the household	1.5	0.8
Agriculture-based earnings	18%	
<u>Emotional distress (2002)</u>		
Psychological distress scale (logged)	3.3	0.24
<u>Household economic resources (2002)</u>		
Household expenditures (logged pesos)	7.84	0.82
Household asset value (logged pesos)	11.41	1.90
<u>Time allocation (2002)</u>		
Hours of housework (hrs/week)	27.5	15.4
Hours spent caring for children & elderly (hrs/week)	26.1	25.4
Hours spent agricultural work (hrs/week)	0.3	2.7
Hours of leisure (hrs/week)	13.5	11.6
Sleep duration (hours/night)	7.7	1.3
<u>Partner migration characteristics (2002, 2005, 2009)</u>		
Spouse in the USA 2002	3.8%	
2005	4.8%	
2009	3.4%	
Spouse departed for the USA between 2002 - 2005	3.5%	
2005 - 2009	1.8%	
Spouse returned from the USA between 2002 - 2005	2.5%	
2005 - 2009	3.9%	
Couple separates between 2002 - 2005	2.8%	
2005 - 2009	1.7%	
<hr/>		
Number of mothers (unweighted)	2,813	

Note: Mean estimates weighted with MxFLS roster sampling weights.

Table 2

Within-person change in depressive symptoms index associated with spousal residence in the United States, partnered Mexican women aged 18-44 (number of women=2,813; pooled observations=8,439)

	(1)	(2)	(3)	(4)
<i>Time-varying measures:</i>				
Spouse is in the United States	0.041** [0.013]	0.031+ [0.017]	0.029+ [0.017]	0.137* [0.058]
Number of children in HH	0.001 [0.002]	0.001 [0.003]	0.000 [0.003]	0.001 [0.003]
Number adult females in HH	-0.002 [0.003]	-0.009+ [0.005]	-0.010+ [0.005]	-0.011* [0.005]
Household uses land for income	-0.011 [0.008]	0.003 [0.012]	0.002 [0.012]	0.007 [0.013]
Unexpected economic loss	0.070** [0.006]	0.052** [0.007]	0.050** [0.007]	0.048** [0.007]
Couple separated	0.053* [0.021]	0.023 [0.025]	0.024 [0.025]	0.019 [0.027]
Year = 2005 (vs. 2002)	-0.052** [0.006]	-0.051** [0.007]	-0.052** [0.007]	-0.050** [0.008]
Year = 2009 (vs. 2002)	-0.031** [0.006]	-0.027** [0.007]	-0.034** [0.008]	-0.034** [0.008]
Household expenditures (log)			0.015** [0.005]	0.015** [0.006]
Household assets (log)			-0.002 [0.002]	-0.002 [0.002]
Hours slept per night			-0.010** [0.003]	-0.011** [0.003]
Hours leisure per week			0.000 [0.000]	0.000 [0.000]
Individual fixed effect	No	Yes	Yes	Yes
R ²	0.03	0.03	0.04	0.04

+ p<0.10

* p<0.05

** p<0.01

Note: Results from random-effect (column 1) and fixed-effect (columns 2-4) linear regression models. Standard errors in brackets. Column 4 excludes 234 spouses of migrants who were not in the U.S. in both 2005 and 2009.

Table 3
Changes in household resources and time use associated with spousal residence in the United States (number of women=2,813; pooled observations=8,439)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Household asset value (log)	Household consumption (log)	Hours housework past week	Hours caretaking past week	Hours agriculture past week	Hours leisure past week	Hours sleep per night
<i>Time-varying measures:</i>							
Spouse is in the United States	0.123 [0.136]	0.076* [0.039]	-1.343 [0.892]	0.874 [1.594]	0.183 [0.363]	2.390** [0.629]	-0.080 [0.077]
Number of children in HH	0.040 [0.025]	0.022* [0.009]	0.527* [0.247]	2.004** [0.358]	0.030 [0.045]	-0.426** [0.137]	-0.044* [0.018]
Number adult females in HH	0.087* [0.041]	0.064** [0.013]	-0.819* [0.314]	0.567 [0.464]	-0.124* [0.056]	-0.045 [0.230]	0.015 [0.028]
Household uses land for income	0.723** [0.105]	0.159** [0.039]	1.059 [0.799]	0.644 [1.220]	0.460** [0.157]	-0.553 [0.422]	-0.020 [0.055]
Unexpected economic loss	0.072 [0.047]	0.094** [0.020]	1.000* [0.451]	1.468* [0.677]	0.034 [0.094]	0.219 [0.323]	0.008 [0.035]
Couple separated	-0.337* [0.164]	-0.109* [0.055]	-2.445* [1.163]	-2.166 [2.345]	0.207 [0.409]	-3.794** [0.869]	-0.003 [0.127]
Year = 2005 (vs. 2002)	0.136** [0.052]	0.065** [0.024]	-2.180** [0.557]	-8.790** [0.986]	-0.059 [0.058]	-0.379 [0.310]	-0.016 [0.031]
Year = 2009 (vs. 2002)	0.524** [0.055]	0.341** [0.021]	-3.040** [0.596]	-8.798** [1.089]	0.118+ [0.068]	-1.083** [0.329]	-0.198** [0.036]
Individual fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R ²	0.05	0.10	0.02	0.06	0.00	0.01	0.01

+ p<0.10
* p<0.05
** p<0.01

Note: Coefficients from fixed-effect regressions; standard errors in brackets.