



Amigas Latinas Motivando el Alma (ALMA): Increasing Mindfulness and Social Support to Reduce Depression and Anxiety in Latina Immigrant Women

India J. Ornelas¹ · Adrienne Katrina Nelson¹ · Cynthia Price² · S. Adriana Pérez-Solorio¹ · Deepa Rao³ · Kwun C. G. Chan⁴

Accepted: 6 May 2025 / Published online: 28 May 2025

© The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2025

Abstract

Objectives Our study sought to evaluate whether increased mindfulness and social support mediated the effect of the *Amigas Latinas Motivando el Alma* (ALMA) intervention on depression and anxiety among Latina immigrant women.

Method The study was a secondary analysis of data from a trial evaluating the ALMA intervention with a delayed-intervention comparison group design. Latina immigrants ($n = 226$) were recruited from local organizations in King County, WA, to participate in an intervention delivered by trained facilitators within community-based settings. The program integrated strategies to increase mindfulness and social support, was delivered in Spanish, and incorporated aspects of Latino culture. Participants completed surveys to assess mindfulness, social support, depression, and anxiety at baseline, post-intervention, and at a 2-month follow-up. We used multiple mediation models to test for mediation.

Results Intervention group participants reported decreased depression and anxiety scores post-intervention and at the 2-month follow-up. Mindfulness and social support mediated the effect of the intervention on both depression and anxiety. For depression, mindfulness mediated the effect through increased self-compassion, while social support mediated the effect through reduced social isolation and enhanced supportive networks. Results for anxiety indicated that increased self-compassion and reduced social isolation were the significant mediators.

Conclusions Community-based group interventions that increase mindfulness and social support can improve mental health outcomes among Latina immigrant women. Further research should evaluate the impact of mindfulness-based interventions in Latino communities.

Keywords Mindfulness · Social support · Intervention · Latina immigrants

Latina immigrant women have an increased risk for poor mental health, in part due to gender and cultural norms around caregiving and work demands, exposure to traumatic

experiences in their countries of origin, and immigration policies that promote family separation, social isolation, and experiences of discrimination (Cardoso & Thompson, 2010; Hatzenbuehler et al., 2017; Keller et al., 2017; Lara-Cini-somo et al., 2019; Muñoz Bohorquez et al., 2023; Rios Casas et al., 2020; Ryan et al., 2021; Vazquez et al., 2022). The significant impact of the COVID-19 pandemic on Latino communities has also contributed to increased mental health disparities from emotional distress due to the loss of family members and increased caregiving demands (Ornelas et al., 2021; Vahratian et al., 2021). Despite this need, Latina immigrants face several barriers to mental health services, including a lack of access to health insurance, stigma around seeking mental health support, and a lack of culturally and linguistically appropriate providers (Doshi et al., 2022; Espinoza-Kulick & Cerdeña, 2022; Garcini et al., 2022a,

✉ India J. Ornelas
iornelas@uw.edu

¹ Department of Health Systems and Population Health, School of Public Health, University of Washington, Seattle, WA 98195, USA

² Department of Biobehavioral Nursing and Health Informatics, School of Nursing, University of Washington, Seattle, USA

³ Department of Global Health, School of Public Health, University of Washington, Seattle, USA

⁴ Department of Biostatistics, School of Public Health, University of Washington, Seattle, USA

2022b; Ornelas et al., 2021). Furthermore, there are very few evidence-based programs designed to promote mental health and well-being in this population (Cotter & Jones, 2020; Morales & Burnett-Zeigler, 2024; Nagy et al., 2022; Sarmiento Hernández & Kia-Keating, 2024).

Amigas Latinas Motivando el Alma (ALMA) [Latina Friends Motivating the Soul] is a community-based group intervention designed to address this gap and promote mental health among Latina immigrants. ALMA aims to prevent and reduce depression and anxiety symptoms among Latina immigrant women by enhancing their mindfulness skills and social support (Ornelas et al., 2022). The program is delivered in Latino-serving community organizations, integrates cultural elements, and promotes healthy coping strategies, which can in turn reduce the risk for depression and anxiety. The program was tested in a trial conducted in King County, WA, using a delayed-intervention comparison group design (Ornelas et al., 2023). Results from the trial found that women in the intervention group had lower depressive symptoms post-intervention compared to those in the comparison group; and, in a group that received the intervention online, anxiety symptoms also decreased (Ornelas et al., 2023).

Based on theory and previous research, we hypothesized that the impact of the program on depression and anxiety symptoms would be mediated by increased mindfulness skills and social support. Mindfulness can be used as a coping strategy to buffer the impact of stress on mental health (Driscoll & Torres, 2013; Torres, 2010). Mindfulness skills that focus on developing and increasing present-moment awareness with an attitude of acceptance and non-judgment, body/interoceptive awareness, and self-compassion can be effective in reducing stress, depression, anxiety, and trauma, especially when these strategies build on existing cultural strengths (Han & Kim, 2023; Kroshus et al., 2023; Li et al., 2019; Sarmiento Hernández & Kia-Keating, 2024; Smith et al., 2015). A small yet growing body of research has assessed whether mindfulness-based interventions can be effective in promoting mental health in Latina immigrant populations (Boyd et al., 2018; Cotter & Jones, 2020; Fjorback et al., 2011; Khoury et al., 2015; Lopez-Maya et al., 2019; Ortiz et al., 2019; Sharma & Rush, 2014). Recent reviews of mindfulness-based interventions evaluated among Latinos found that they are generally feasible and acceptable among Latinos living in the USA (Cotter & Jones, 2020; Sarmiento Hernández & Kia-Keating, 2024). However, most studies have focused on culturally adapted interventions or were lacking in methodological rigor (Morales & Burnett-Zeigler, 2024). No previous studies have assessed whether mindfulness mediates changes in mental health in Latino populations (Cotter & Jones, 2020). Research describing the results of mediation analyses is needed to understand the mechanisms by

which mindfulness-based interventions promote mental health among Latino immigrant populations.

Social support also plays an important role in buffering the impact of stress and promoting mental health among Latina immigrants (Perreira et al., 2015; Rios Casas et al., 2020; Ryan et al., 2021; Viruell-Fuentes et al., 2013; Williams, 2018). Several studies have shown the association between social connections and improved mental health among Latino immigrants, especially among those that are socially isolated and undocumented (Cross et al., 2024; Garcini et al., 2022a, 2022b; Holt-Lunstad et al., 2017; Stafford et al., 2023). However, social ties are often disrupted by migration, and Latinas may struggle to build new social connections due to fears associated with their immigration status and family and work obligations (Fox & Kim-Godwin, 2011; Grzywacz & Smith, 2016; Hurtado-de-Mendoza et al., 2014; Torres et al., 2016). Interventions that strengthen social support may also improve the mental health of Latino immigrants (Cerda et al., 2023). Few studies have assessed whether social support mediates the effect of an intervention on depression and anxiety in this population.

In a secondary analysis of data collected as part of the trial, we aimed to test whether the effect of the ALMA intervention on depression and anxiety in a community-based sample of Latina immigrant women was mediated by increased mindfulness and/or social support. We hypothesized that women in the intervention group would report increased mindfulness skills and social support post-intervention, leading to fewer depression and anxiety symptoms at follow-up than women in the comparison group.

Method

Participants

Participants meeting the following eligibility criteria were recruited from community-based organizations: Latina, immigrant, over 18 years of age, and Spanish speakers ($n = 226$). Participants completed three interviewer-administered surveys in Spanish: baseline (T0), post-intervention (T1), and 2-month follow-up (T2). Baseline surveys included demographics such as age, education level, income, country of origin, years lived in the USA, and languages spoken. Surveys took an average of 60–90 min to complete and were conducted in person in a private location or over the phone. Participants provided written informed consent and were reimbursed \$30 for each completed survey.

Procedure

The ALMA intervention was delivered by trained facilitators with expertise in mental health and mindfulness, in weekly

sessions for groups of about 20 women (Ornelas et al., 2022). Sessions were interactive and included group discussions, activities to build connections between participants by sharing experiences, and recognizing commonalities in small and large group discussions. The program included cultural elements that reflected the participants' countries of origin, such as migration stories, art activities, family aphorisms (*dichos*), foods, and traditions. ALMA participants were introduced to coping strategies related to mindful movement, mindful eating, body and breath awareness, self-compassion, and other practices. For the first half of the study, facilitators delivered the intervention in person with eight sessions at community organizations. In 2020, the intervention was adapted for online delivery and, in 2021, the trial resumed with a six-session version. Further details on the intervention design, implementation, and efficacy have been published elsewhere (Miranda et al., 2024; Ornelas et al., 2022, 2023).

Measures

Mental Health

Our primary mental health outcomes were depression and anxiety. Depression symptoms were assessed using the Patient Health Questionnaire 9 (PHQ-9). The PHQ-9 measures the frequency of nine common depressive symptoms with a 2-week recall on a scale of 0 (*never*) to 3 (*almost every day*). The PHQ-9 has been used for repeated time measures and to assess changes in symptom severity (Kroenke et al., 2001). Total scores range from 0 to 27, with a score of 20 or more indicating severe symptoms (Kroenke et al., 2001). The PHQ-9 has been previously validated among Spanish speakers and demonstrated good internal consistency in our sample at baseline ($\omega = 0.80$) (Huang et al., 2006; Kroenke et al., 2001). Anxiety symptoms were assessed using the Generalized Anxiety Disorder-7 (GAD-7) which measures the frequency of seven anxiety symptoms in the past 2 weeks, with responses ranging from 0 (*not at all*) to 3 (*almost every day*). The GAD-7 has been used for repeated testing to assess changes in symptom severity over time (Spitzer et al., 2006). Scores range from 0 to 21, with a score of 10 or greater indicating moderate to severe anxiety. The GAD-7 has been validated among Spanish speakers and demonstrated good internal consistency in our sample at baseline ($\omega = 0.85$) (Mills et al., 2014; Spitzer et al., 2006).

Mindfulness

We used three measures to assess changes in various types of mindfulness. The Multidimensional Assessment of Interoceptive Awareness (MAIA) is a 32-item scale to measure interoceptive awareness. We used items for the following

scales (total of 26): attention regulation, noticing, emotional awareness, self-regulation, body listening, and trusting scales, and removed the two scales designed for chronic pain (not-worrying and not-distracting). Responses ranged from “*never*” to “*always*,” total mean scores ranged from 0 to 5, and higher scores indicate higher levels of mindfulness ($\omega = 0.93$). Example question stems include: *I notice where in my body I am comfortable*; *When I feel pain or discomfort, I try to power through it*; and *I notice how my body feels when I feel happy* (Mehling et al., 2012). The Freiburg Mindfulness Inventory is a 14-item assessment with a range of 14 to 56, where a higher score indicates more mindfulness skills ($\omega = 0.88$) (Walach et al., 2006). Sample question stems include: *I am open to the experience of the present moment*; *I feel connected to my experience in the here-and-now*; *I am impatient with myself and others*. We measured self-compassion using the Self-Compassion Scale Short Form, a 12-item assessment with a total score range of 12 to 60 ($\omega = 0.81$) (Raes et al., 2011). Sample question stems from this scale include: *When I'm feeling down I tend to obsess and fixate on everything that's wrong*; *I try to be loving towards myself when I'm feeling emotional pain*; *I'm kind to myself when I'm experiencing suffering*. All measures were translated into Spanish by the study team and tested using cognitive interviewing methods to ensure validity prior to use on the survey.

Social Support

Social support was assessed using subscales from the MOS Social Support Scale, including affection, positive social interaction, and emotional/informational support (15 items total). Scores range from 0 to 4 for both global and subscores, and higher scores indicate more social support ($\omega = 0.93$) (Sherbourne & Stewart, 1991). The 19-item version of this measure had good internal consistency and good convergent and discriminant validity among Spanish-speaking adults (Dumitrache et al., 2021). The 6-, 8-, and 13-item versions have also demonstrated potential for research based on their validity among Spanish-speaking populations (Dao-Tran et al., 2023). We assessed social isolation using the PROMIS Social Isolation Short Form, a 6-item scale with standardized scores ranging from 34 to 76 ($\omega = 0.86$). Higher scores indicate more social isolation (Carlozzi et al., 2019). The PROMIS Social Isolation measurement has shown strong construct validity among Spanish-speaking populations (Hahn et al., 2014).

Data Analyses

In previously published findings, we found that depression decreased almost two points in the intervention compared to the control group ($B = -1.82$, $p = 0.01$) and anxiety

decreased slightly more than one point among intervention participants compared to control ($B = -1.17, p = 0.07$) (Ornelas et al., 2023). Here, we tested each mindfulness and social support total score and sub-scores for mediation of these main effects. We used the *sem* (structural equation modeling) command with STATA to fit linear structural equation models for outcomes given mediators and exposure, and mediators given exposure. All models included the following adjustment variables: an indicator of high school degree or higher level of education, an indicator for whether they spoke English, and age. We estimated separate multiple mediation models for mindfulness and social support. Mindfulness models included total scores for interoceptive awareness, mindfulness skills, and self-compassion. Social support models included social isolation and the emotional support subscale. We hypothesized that decreases in anxiety and depression in the intervention group would be mediated by increased social support, decreased social isolation, and increased interoceptive awareness, mindfulness skills, and self-compassion. Standard errors for direct and indirect effect estimates were obtained using the delta method.

Results

We included participants with T1 data for both mediator variables and T2 data for both outcomes in the mediation analysis ($n = 182$). There were no significant differences in baseline characteristics between those included in the analysis ($n = 182$) and those missing data and therefore not included in the mediation analysis ($n = 44$).

The mean age of the women was 40, with an average of 15 years living in the USA. Most women were from Mexico (80%), followed by Guatemala (14%) and El Salvador (6%). The majority preferred speaking Spanish to English (61%) and most had a high school degree or a higher level of education. Most of the sample was low income, and most reported living with a partner. In terms of immigration status, 25% were citizens or had a current visa or permission to reside in the USA, 61% had entered or were living without permission, and 14% preferred not to say. At baseline, mean depression (7.09, $SE = 0.36$) and anxiety scores (6.98, $SE = 0.35$) were in the low to mild level of severity. The mean interoceptive awareness score from the MAIA was 3.54 ($SE = 0.07, n = 179$). The mean mindfulness skills score from the Freiburg measure at baseline was 38.98 ($SE = 0.72, n = 176$). Mean scores were 2.11 ($SE = 0.79$) for emotional awareness, and 2.55 ($SE = 0.09$) and 3.09 ($SE = 0.07$) for affection. Mean social isolation at baseline was 51.30 ($SE = 0.96$). Further details on the demographic characteristics of the sample have been reported previously (Ornelas et al., 2023).

For mindfulness, all interoceptive awareness subscales except the Noticing Scale mediated the effect of the intervention on depression ($IE = -1.09, p < 0.001, 88\%$ of intervention) (Table 1). The total score for mindfulness skills ($IE = -1.02, p < 0.001$) mediated 83% of the intervention effect, and the total score for self-compassion ($IE = -1.15, p < 0.001$) mediated 93% of the intervention effect. Mindfulness skills and self-compassion measures do not have subscores. For social support, affectionate and positive social interaction subscales did not mediate the effect of the intervention on depression, while emotional support ($IE = -0.63, p = 0.03, 51\%$ of intervention) and social isolation did ($IE = -1.15, p = 0.01, 93\%$ of intervention). Results for anxiety were similar. Interoceptive awareness ($IE = -0.90, p < 0.001, 59\%$ of intervention), with the exception of the Noticing Scale, mediated most of the effect, as did mindfulness skills ($IE = -0.78, p < 0.001, 52\%$ of intervention) and self-compassion ($IE = -0.94, p < 0.001, 63\%$ of intervention effect) total scores. Only social isolation demonstrated a complete mediation effect on anxiety ($IE = -0.85, p = 0.01, 56\%$ of intervention); however, emotional support demonstrated a partial mediation effect ($IE = 0.35, p = 0.05, 23\%$ of intervention).

Table 2 presents mediation findings for multiple mediation models. Both the mindfulness and social support models showed significant mediation for both depression and anxiety. For the models testing the effect of the intervention on depression, self-compassion (mindfulness, Fig. 1), reduced social isolation, and increased emotional support (social support, Fig. 2) were the significant mediators in each model. For anxiety, only self-compassion (Fig. 3) and social isolation (Fig. 4) were significant. We also estimated a combined model with mindfulness and social support variables entered together. Results (not shown) were similar to the separate models, with both self-compassion and social isolation mediating the effect on depression and anxiety.

Discussion

Our study was one of the first to show that the effect of community-based interventions on depression and anxiety was mediated by increases in both mindfulness and social support. For depression, this effect was driven by increased self-compassion, emotional support, and decreased social isolation. For anxiety, it was self-compassion and reduced social isolation. Our findings build on previous research findings that group-based mindfulness can be effective in supporting the mental health of Latina immigrants (Lopez-Maya et al., 2019; Muñoz Bohorquez et al., 2023; Ortiz et al., 2019).

While research has consistently shown the protective effect of social support in Latino immigrant communities, interventions that focus solely on social support may not be enough to reduce depression and anxiety (Guruge et al., 2015).

Table 1 Individual mediator indirect effects for on depression and anxiety (*n* = 182)

Mediators	Depression					Anxiety				
	Indirect effect	<i>p</i> -value	RIT (IE/TE)	RID (IE/DE)	Mediation	Indirect effect	<i>p</i> -value	RIT (IE/TE)	RID (IE/DE)	Mediation
Mindfulness measures										
Interoceptive awareness (MAIA total score)	-1.09	0.002	88%	7.62	Complete	-0.90	0.002	59%	1.45	Complete
Attention regulation (MAIA)	-0.69	0.013	55%	1.24	Complete	-0.61	<0.001	41%	0.69	Complete
Noticing (MAIA)	-0.14	0.451	11%	0.13	No mediation	-0.15	0.420	10%	0.11	No mediation
Emotional awareness (MAIA)	-0.63	0.019	51%	1.02	Complete	-0.02	0.022	34%	0.50	Complete
Self-regulation (MAIA)	-1.16	0.001	93%	14.16	Complete	-0.96	0.002	64%	1.78	Complete
Body listening (MAIA)	-1.10	0.002	89%	8.07	Complete	-0.91	0.002	60%	1.52	Complete
Trusting (MAIA)	-0.77	0.046	62%	1.65	Complete	-0.50	0.053	34%	0.50	Partial
Mindfulness skills (Freiburg total score)	-1.02	0.003	83%	4.74	Complete	-0.78	0.004	52%	1.08	Complete
Self-compassion (total score)	-1.15	0.003	93%	13.25	Complete	-0.94	0.004	63%	1.67	Complete
Social support measures										
Social isolation (PROMIS)	-1.15	0.009	93%	13.15	Complete	-0.85	0.011	56%	1.29	Complete
Social support (MOS-emotional)	-0.63	0.025	51%	1.02	Complete	-0.35	0.054	23%	0.31	Partial
Social support (MOS-affectionate)	-0.40	0.148	32%	0.47	No mediation	-0.27	0.161	18%	0.22	No mediation
Social support (MOS-positive interaction)	-0.17	0.652	13%	0.15	No mediation	-0.11	0.652	8%	0.08	No mediation

Table 2 Multiple mediator models effects for depression and anxiety ($n = 182$)

Depression	Total effect	<i>p</i>	Direct effect	<i>p</i>	Indirect effect	<i>p</i>	RIT (IE/TE)
Mindfulness	-1.23	0.099	0.19	0.793	-1.42	< 0.001	115%
					Partial indirect effects		
Interoceptive awareness					-0.24	0.408	
Mindfulness skills					-0.29	0.260	
Self-compassion					-0.89	0.012	
Social support	-1.14	0.13	0.12	0.854	-1.27	0.002	111%
					Partial indirect effect		
Social isolation					-1.05	0.007	
Emotional support					-0.21	0.202	
Anxiety	Total effect	<i>p</i>	Direct effect	<i>p</i>	Indirect effect	<i>p</i>	RIT (IE/TE)
Mindfulness	-1.50	0.020	-0.36	0.570	-1.14	< 0.001	76%
					Partial Indirect Effects		
Interoceptive awareness					-0.23	0.37	
Mindfulness skills					-0.14	0.52	
Self-compassion					-0.77	0.01	
Social support	-1.41	0.033	-0.53	0.391	-0.88	0.006	62%
					Partial indirect effects		
Social isolation					-0.83	0.008	
Emotional support					-0.05	0.712	

Fig. 1 Mindfulness multiple mediation model for depression

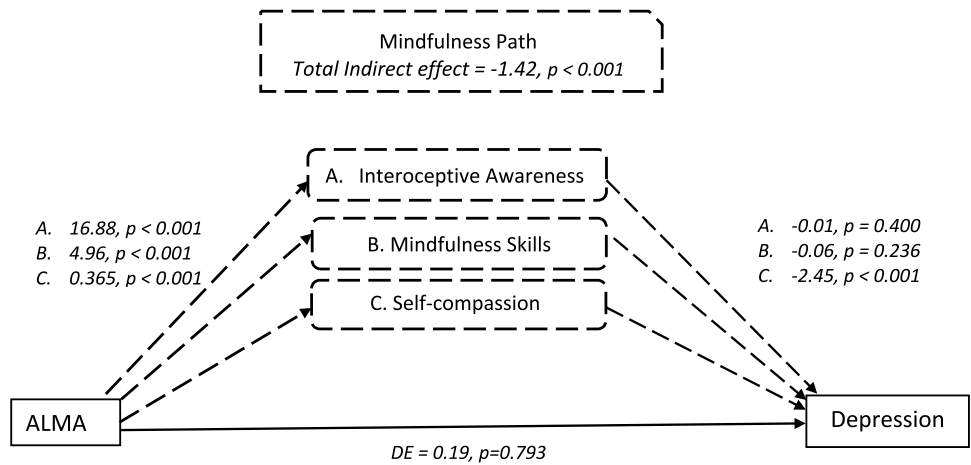


Fig. 2 Social support multiple mediation model for depression

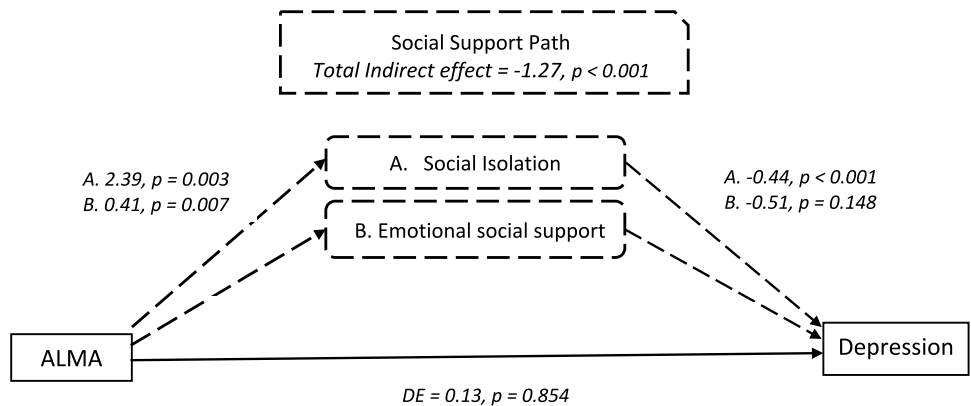


Fig. 3 Mindfulness multiple mediation model for anxiety

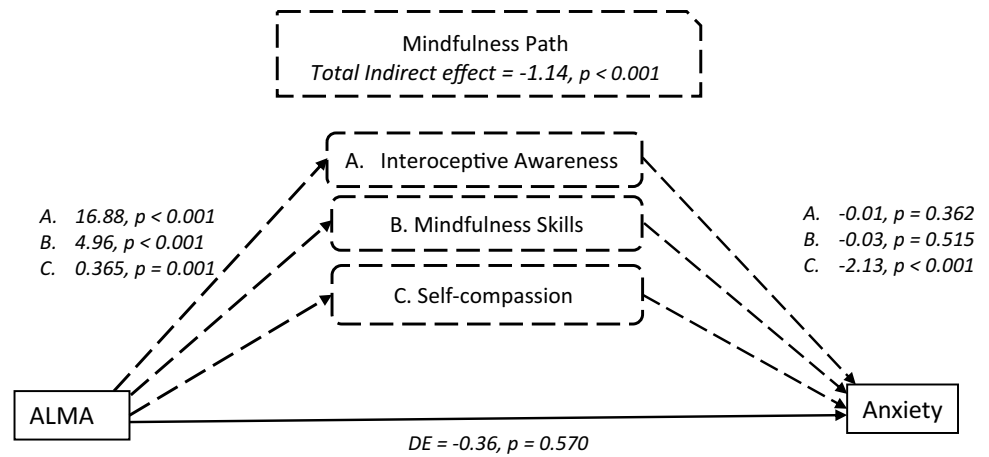
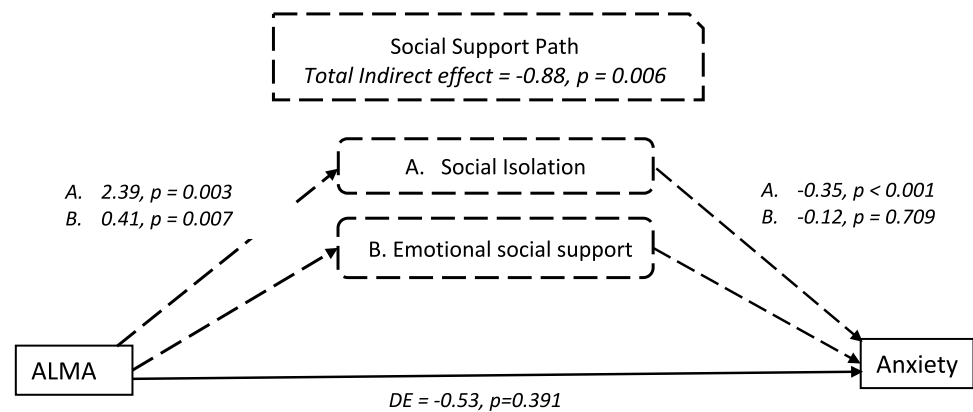


Fig. 4 Social support multiple mediation model for anxiety



Previous studies have shown that group interventions that teach mindfulness skills can be more effective than those that focus on social support alone (Carlson et al., 2016). Some researchers have also suggested that there may be an interaction between aspects of mindfulness, such as self-compassion, social relationships, and collectivistic Latino culture (Sarmiento Hernández & Kia-Keating, 2024). Our findings indicate that both are important intervention targets. In our formative research, many women cited social support as an important existing coping strategy for maintaining their mental health (Rios Casas et al., 2020). Yet, few women were regularly practicing mindfulness-based approaches prior to receiving the ALMA intervention. Future research should continue to explore how these two coping strategies may enhance one another.

The mindfulness skills learned through ALMA may have had a greater impact because they were new coping strategies and because the intervention was grounded in their social and cultural context. For example, women may have been more willing or able to use the mindfulness skills when offered in a group setting and integrated with social support, which has been shown to improve confidence and self-efficacy (McLeish & Redshaw, 2017; Nagy et al., 2022; Sarmiento Hernández & Kia-Keating,

2024). Participants may have been more receptive to learning these skills when taught in ways that aligned with their lived experiences and cultural norms around language, food, and family (García-Campayo et al., 2017). They may have also been more receptive because the sessions were led by bilingual and bicultural staff in a community setting. This speaks to the need to integrate social and cultural context into mindfulness interventions, which goes beyond surface-level cultural adaptations of existing interventions (Morales & Burnett-Zeigler, 2024; Sarmiento Hernández & Kia-Keating, 2024).

Our study included participants who received the intervention in-person and online. In post-intervention interviews with participants, those that received the intervention online reported making fewer social connections with other participants than those that received it in-person (Miranda et al., 2024). In the same interviews, many participants noted that their interactions with peers were a helpful component of the intervention. Participants who received the intervention online also did so after the onset of the COVID-19 pandemic. Therefore, these same participants may have also experienced increased levels of social isolation and had a greater need for social support during this time.

Limitations and Future Directions

There were limitations to our study. Our study was not specifically powered for mediation analyses, so our findings should be regarded as exploratory. Furthermore, given that not all hypothesized elements of mindfulness and social support were significant mediators, there may be other elements of these constructs that could be assessed in future studies. Further research should be done to determine which aspects of social support are more important. These studies could assess different facets of these constructs and detect smaller but important changes in social support and mindfulness in larger samples. There was some attrition in our sample, which may have biased our findings if those with higher depression and anxiety scores were more likely to be lost to follow-up. Our sample was also limited to a small geographic area with a specific social and political context, including being connected to community-based organizations, largely from Mexico and Spanish-speaking countries. A more diverse sample with a broader range of scores at baseline would increase the generalizability of the findings.

Our findings suggest that the ALMA intervention was able to enhance mindfulness skills and social support, which in turn prevented and reduced depression among Latina immigrant women. Given the limited access to mental health services for this population, community-based culturally grounded interventions that teach mindfulness skills can help improve access to mental health support (Oman 2025). Future research should test these strategies in other Latina immigrant communities. Ultimately, this will require building a more diverse mental health workforce with expertise in facilitating group mindfulness interventions in Spanish-speaking Latina immigrant communities (Nagy et al., 2022).

Acknowledgements The research team would like to acknowledge the contributions of the ALMA participants, as well as the community partner organizations Casa Latina and El Centro de la Raza. We would also like to thank Dr. Brian Flaherty, who provided consultation on the statistical analysis.

Author Contributions India J. Ornelas: conceptualization, methodology, writing—original draft preparation, supervision, project administration, funding acquisition. Adrienne Katrina Nelson: formal analysis, data curation, visualization, writing—reviewing and editing. Cynthia Price: methodology, writing—reviewing and editing. S. Adriana Pérez-Solorio: investigation, writing—reviewing and editing. Deepa Rao: conceptualization, methodology, writing—reviewing and editing. Kwun C.G. Chan: methodology, formal analysis, writing—reviewing and editing.

Funding This study was funded by the National Institute of Minority Health and Health Disparities (R01MD012230).

Data Availability The authors are unable to share or upload the dataset due to the ethics protocol and informed consent procedure of this study that ensured participants that all data we collected is confidential and would not be shared. We are available to answer any questions about the data collected in this study and to share unpublished information on this dataset and code for data analysis.

Declarations

Preregistration This trial was registered in ClinicalTrials.gov as NCT0349278.

Ethics Approval The study was approved by the Human Subjects Division at the University of Washington.

Informed Consent Informed consent was obtained from all individual participants included in the study.

Conflict of interest The authors declare no competing interests.

Use of Artificial Intelligence Artificial intelligence was not used.

References

- Boyd, J. E., Lanius, R. A., & McKinnon, M. C. (2018). Mindfulness-based treatments for posttraumatic stress disorder: A review of the treatment literature and neurobiological evidence. *Journal of Psychiatry & Neuroscience*, 43(1), 7–25. <https://doi.org/10.1503/jpn.170021>
- Cardoso, J. B., & Thompson, S. J. (2010). Common themes of resilience among Latino immigrant families: A systematic review of the literature. *Families in Society*, 91(3), 257–265. <https://doi.org/10.1606/1044-3894.4003>
- Carlozzi, N. E., Hanks, R., Lange, R. T., Brickell, T. A., Ianni, P. A., Miner, J. A., French, L. M., Kallen, M. A., & Sander, A. M. (2019). Understanding health-related quality of life in caregivers of civilians and service members/veterans with traumatic brain injury: Establishing the reliability and validity of PROMIS mental health measures. *Archives of Physical Medicine and Rehabilitation*, 100(4 Suppl), S94–S101. <https://doi.org/10.1016/j.apmr.2018.05.021>
- Carlson, L. E., Tamagawa, R., Stephen, J., Drysdale, E., Zhong, L., & Speca, M. (2016). Randomized-controlled trial of mindfulness-based cancer recovery versus supportive expressive group therapy among distressed breast cancer survivors (MINDSET): Long-term follow-up results. *Psycho-Oncology*, 25(7), 750–759. <https://doi.org/10.1002/pon.4150>
- Cerda, I. H., Macaranas, A. R., Liu, C. H., & Chen, J. A. (2023). Strategies for naming and addressing structural racism in immigrant mental health. *American Journal of Public Health*, 113(S1), S72–S79. <https://doi.org/10.2105/AJPH.2022.307165>
- Cotter, E. W., & Jones, N. (2020). A review of Latino/Latinx participants in mindfulness-based intervention research. *Mindfulness*, 11(3), 529–553. <https://doi.org/10.1007/s12671-019-01266-9>
- Cross, F. L., Marchand, A. D., Diaz, M., Waller, A., Ledón, C., & Kruger, D. J. (2024). The role of documentation status concerns, perceived discrimination, and social support on Latinx adults' physical and mental health. *Journal of Racial and Ethnic Health Disparities*, 11, 946–957. <https://doi.org/10.1007/s40615-023-01575-9>
- Dao-Tran, T.-H., Lam, L.-T., Balasooriya, N. N., & Comans, T. (2023). The Medical Outcome Study Social Support Survey (MOS-SSS): A psychometric systematic review. *Journal of Advanced Nursing*, 79(12), 4521–4541. <https://doi.org/10.1111/jan.15786>
- Doshi, M., Bryce, R., Mesa, H., Ibarra Avila, M. C., Lopez, W. D., Militzer, M., Quinones, S., Kraut, R., Rion, R., & Fleming, P. J. (2022). Barriers to health care services among US-based undocumented Latinx immigrants within the sociopolitical climate under the Trump administration: A comparative analysis between client experiences and provider perceptions. *SSM - Qualitative Research in Health*, 2, 100050. <https://doi.org/10.1016/j.ssmqr.2022.100050>

- Driscoll, M. W., & Torres, L. (2013). Acculturative stress and Latino depression: The mediating role of behavioral and cognitive resources. *Cultural Diversity & Ethnic Minority Psychology, 19*(4), 373–382. <https://doi.org/10.1037/a0032821>
- Dumitrache, C. G., Rubio, L., Cabezas Casado, J. L., & Córdón-Pozo, E. (2021). Psychometric properties and factor structure of the medical outcomes study social support survey instrument in a sample of Spanish older adults. *European Journal of Ageing, 19*(1), 143–154. <https://doi.org/10.1007/s10433-021-00612-y>
- Espinoza-Kulick, M. A. V., & Cerdeña, J. P. (2022). “We need health for all”: Mental health and barriers to care among Latinxs in California and Connecticut. *International Journal of Environmental Research and Public Health, 19*(19), 12817. <https://doi.org/10.3390/ijerph191912817>
- Fjorback, L. O., Arendt, M., Ørnbøl, E., Fink, P., & Walach, H. (2011). Mindfulness-based stress reduction and mindfulness-based cognitive therapy – A systematic review of randomized controlled trials. *Acta Psychiatrica Scandinavica, 124*(2), 102–119. <https://doi.org/10.1111/j.1600-0447.2011.01704.x>
- Fox, J. A., & Kim-Godwin, Y. (2011). Stress and depression among Latina women in rural Southeastern North Carolina. *Journal of Community Health Nursing, 28*(4), 223–232. <https://doi.org/10.1080/07370016.2011.614861>
- García-Campayo, J., Demarzo, M., Shonin, E., & Van Gordon, W. (2017). How do cultural factors influence the teaching and practice of mindfulness and compassion in Latin countries? *Frontiers in Psychology, 8*, 1161. <https://doi.org/10.3389/fpsyg.2017.01161>
- Garcini, L. M., Nguyen, K., Lucas-Marinelli, A., Moreno, O., & Cruz, P. L. (2022a). “No one left behind”: A social determinant of health lens to the wellbeing of undocumented immigrants. *Current Opinion in Psychology, 47*, 101455. <https://doi.org/10.1016/j.copsyc.2022.101455>
- Garcini, L. M., Rosenfeld, J., Kneese, G., Bondurant, R. G., & Kanzler, K. E. (2022b). Dealing with distress from the COVID-19 pandemic: Mental health stressors and coping strategies in vulnerable Latinx communities. *Health & Social Care in the Community, 30*(1), 284–294. <https://doi.org/10.1111/hsc.13402>
- Grzywacz, J. G., & Smith, A. M. (2016). Work–family conflict and health among working parents: Potential linkages for family science and social neuroscience. *Family Relations, 65*(1), 176–190. <https://doi.org/10.1111/fare.12169>
- Guruge, S., Thomson, M. S., George, U., & Chaze, F. (2015). Social support, social conflict, and immigrant women’s mental health in a Canadian context: A scoping review. *Journal of Psychiatric and Mental Health Nursing, 22*(9), 655–667. <https://doi.org/10.1111/jpm.12216>
- Hahn, E. A., DeWalt, D. A., Bode, R. K., Garcia, S. F., DeVellis, R. F., Correia, H., Cella, D., PROMIS Cooperative Group. (2014). New English and Spanish social health measures will facilitate evaluating health determinants. *Health Psychology, 33*(5), 490–499. <https://doi.org/10.1037/hea0000055>
- Han, A., & Kim, T. H. (2023). Effects of self-compassion interventions on reducing depressive symptoms, anxiety, and stress: A meta-analysis. *Mindfulness, 14*(7), 1553–1581. <https://doi.org/10.1007/s12671-023-02148-x>
- Hatzenbuehler, M. L., Prins, S., Flake, M., Philbin, M., Frazer, S., Hagen, D., & Hirsch, J. (2017). Immigration policies and mental health morbidity among Latinos: A state-level analysis. *Social Science & Medicine, 1982*(174), 169–178. <https://doi.org/10.1016/j.socscimed.2016.11.040>
- Holt-Lunstad, J., Robles, T., & Sbarra, D. A. (2017). Advancing social connection as a public health priority in the United States. *The American Psychologist, 72*(6), 517–530. <https://doi.org/10.1037/amp0000103>
- Huang, F. Y., Chung, H., Kroenke, K., Delucchi, K. L., & Spitzer, R. L. (2006). Using the Patient Health Questionnaire-9 to measure depression among racially and ethnically diverse primary care patients. *Journal of General Internal Medicine, 21*(6), 547–552. <https://doi.org/10.1111/j.1525-1497.2006.00409.x>
- Hurtado-de-Mendoza, A., Gonzales, F. A., Serrano, A., & Kaltman, S. (2014). Social isolation and perceived barriers to establishing social networks among Latina immigrants. *American Journal of Community Psychology, 53*(1–2), 73–82. <https://doi.org/10.1007/s10464-013-9619-x>
- Keller, A., Joscelyne, A., Granski, M., & Rosenfeld, B. (2017). Pre-migration trauma exposure and mental health functioning among Central American migrants arriving at the US Border. *PLoS ONE, 12*(1), e0168692. <https://doi.org/10.1371/journal.pone.0168692>
- Khoury, B., Sharma, M., Rush, S. E., & Fournier, C. (2015). Mindfulness-based stress reduction for healthy individuals: A meta-analysis. *Journal of Psychosomatic Research, 78*(6), 519–528. <https://doi.org/10.1016/j.jpsychores.2015.03.009>
- Kroenke, K., Spitzer, R. L., & Williams, J. B. W. (2001). The PHQ-9. *Journal of General Internal Medicine, 16*(9), 606–613. <https://doi.org/10.1046/j.1525-1497.2001.016009606.x>
- Kroshus, E., Hawrilenko, M., Tandon, P. S., Browning, A., Steiner, M. K., & Christakis, D. A. (2023). Structural inequities in self-compassion and parental burnout. *Mindfulness, 14*(5), 1192–1203. <https://doi.org/10.1007/s12671-023-02104-9>
- Lara-Cinisomo, S., Fujimoto, E. M., Oksas, C., Jian, Y., & Gharheeb, A. (2019). Pilot study exploring migration experiences and perinatal depressive and anxiety symptoms in immigrant Latinas. *Maternal and Child Health Journal, 23*(12), 1627–1647. <https://doi.org/10.1007/s10995-019-02800-w>
- Li, M. J., DiStefano, A. S., Thing, J. P., Black, D. S., Simpson, K., Unger, J. B., Milam, J., Contreras, R., & Bluthenthal, R. N. (2019). Seeking refuge in the present moment: A qualitatively refined model of dispositional mindfulness, minority stress, and psychosocial health among Latino/a sexual minorities and their families. *Psychology of Sexual Orientation and Gender Diversity, 6*(4), 408–419. <https://doi.org/10.1037/sgd0000338>
- Lopez-Maya, E., Olmstead, R., & Irwin, M. R. (2019). Mindfulness meditation and improvement in depressive symptoms among Spanish- and English speaking adults: A randomized, controlled, comparative efficacy trial. *PLoS ONE, 14*(7), e0219425. <https://doi.org/10.1371/journal.pone.0219425>
- McLeish, J., & Redshaw, M. (2017). Mothers’ accounts of the impact on emotional wellbeing of organised peer support in pregnancy and early parenthood: A qualitative study. *BMC Pregnancy and Childbirth, 17*, 28. <https://doi.org/10.1186/s12884-017-1220-0>
- Mehling, W. E., Price, C., Daubenmier, J. J., Acree, M., Bartmess, E., & Stewart, A. (2012). The Multidimensional Assessment of Interoceptive Awareness (MAIA). *PLoS ONE, 7*(11), e48230. <https://doi.org/10.1371/journal.pone.0048230>
- Mills, S. D., Fox, R. S., Malcarne, V. L., Roesch, S. C., Champagne, B. R., & Sadler, G. R. (2014). The psychometric properties of the Generalized Anxiety Disorder-7 scale in Hispanic Americans with English or Spanish language preference. *Cultural Diversity & Ethnic Minority Psychology, 20*(3), 463–468. <https://doi.org/10.1037/a0036523>
- Miranda, M. M., Rao, D., Price, C., Gudino, J., Perez, G., Maurer, S., Nelson, A. K., Pérez-Solorio, S. A., & Ornelas, I. J. (2024). Amigas Latinas Motivando el Alma: Participant perspectives on an in-person and online implementation of an intervention to promote mental health in Latina immigrant women. *Community Mental Health Journal, 60*, 908–918. <https://doi.org/10.1007/s10597-024-01244-z>
- Morales, A., & Burnett-Zeigler, I. (2024). A scoping review of culturally adapted mindfulness-based interventions for communities of color. *Journal of Integrative and Complementary Medicine, 31*(2). <https://doi.org/10.1089/jicm.2023.0807>

- Muñoz Bohorquez, J., Parra, D. C., Saperstein, S. L., Aparicio, E. M., Lewin, A. B., & Green, K. M. (2023). Feasibility of implementing a mindfulness-based online program for Latina immigrants and the staff that work with them. *Mindfulness*, *14*(5), 1148–1161. <https://doi.org/10.1007/s12671-023-02123-6>
- Nagy, G. A., Cuervo, C., Ramos Rodríguez, E. Y., Plumb Vilaradaga, J., Zerubavel, N., West, J. L., Falick, M. C., & Parra, D. C. (2022). Building a more diverse and inclusive science: Mindfulness-based approaches for Latinx individuals. *Mindfulness*, *13*(4), 942–954. <https://doi.org/10.1007/s12671-022-01846-2>
- Oman, D. (2025). Mindfulness for global public health: Critical analysis and agenda. *Mindfulness*, *16*(3), 573–612. <https://doi.org/10.1007/s12671-023-02089-5>
- Ornelas, I. J., Perez, G., Maurer, S., Gonzalez, S., Childs, V., Price, C., Nelson, A. K., Perez Solorio, S. A., Tran, A., & Rao, D. (2022). Amigas Latinas Motivando el Alma: In-person and online delivery of an intervention to promote mental health among Latina immigrant women. *Journal of Integrative and Complementary Medicine*, *28*(10), 821–829. <https://doi.org/10.1089/jicm.2022.0491>
- Ornelas, I. J., Rao, D., Price, C., Chan, G., Tran, A., Aisenberg, G., Perez, G., Maurer, S., & Nelson, A. K. (2023). Promoting mental health in Latina immigrant women: Results from the Amigas Latinas Motivando el Alma intervention trial. *Social Science & Medicine*, *321*, 115776. <https://doi.org/10.1016/j.socscimed.2023.115776>
- Ornelas, I. J., Tornberg-Belanger, S., Balkus, J. E., Bravo, P., Perez Solorio, S. A., Perez, G. E., & Tran, A. N. (2021). Coping with COVID-19: The impact of the pandemic on Latina immigrant women's mental health and well-being. *Health Education & Behavior*, *48*(6), 733–738. <https://doi.org/10.1177/10901981211050638>
- Ortiz, J. A., Smith, B. W., Shelley, B. M., & Erickson, K. S. (2019). Adapting mindfulness to engage Latinos and improve mental health in primary care: A pilot study. *Mindfulness*, *10*(12), 2522–2531. <https://doi.org/10.1007/s12671-019-01229-0>
- Perreira, K. M., Gotman, N., Isasi, C. R., Arguelles, W., Castañeda, S. F., Daviglius, M. L., Giachello, A. L., Gonzalez, P., Penedo, F. J., Salgado, H., & Wassertheil-Smoller, S. (2015). Mental health and exposure to the United States: Key correlates from the Hispanic community health study of Latinos. *The Journal of Nervous and Mental Disease*, *203*(9), 670–678. <https://doi.org/10.1097/NMD.0000000000000350>
- Raes, F., Pommier, E., Neff, K. D., & Van Gucht, D. (2011). Construction and factorial validation of a short form of the Self-Compassion Scale. *Clinical Psychology & Psychotherapy*, *18*(3), 250–255. <https://doi.org/10.1002/cpp.702>
- Rios Casas, F., Ryan, D., Perez, G., Maurer, S., Tran, A. N., Rao, D., & Ornelas, I. J. (2020). “Se vale llorar y se vale reír”: Latina immigrants' coping strategies for maintaining mental health in the face of immigration-related stressors. *Journal of Racial and Ethnic Health Disparities*, *7*(5), 937–948. <https://doi.org/10.1007/s40615-020-00717-7>
- Ryan, D., Tornberg-Belanger, S. N., Perez, G., Maurer, S., Price, C., Rao, D., Chan, K. C. G., & Ornelas, I. J. (2021). Stress, social support and their relationship to depression and anxiety among Latina immigrant women. *Journal of Psychosomatic Research*, *149*, 110588. <https://doi.org/10.1016/j.jpsychores.2021.110588>
- Sarmiento Hernández, D., & Kia-Keating, M. (2024). Trauma and mindfulness approaches for Latinx communities in the United States: A systematic review. *Professional Psychology: Research and Practice*, *55*(3), 269–277. <https://doi.org/10.1037/pro0000558>
- Sharma, M., & Rush, S. E. (2014). Mindfulness-based stress reduction as a stress management intervention for healthy individuals: A systematic review. *Journal of Evidence-Based Complementary & Alternative Medicine*, *19*(4), 271–286. <https://doi.org/10.1177/2156587214543143>
- Sherbourne, C. D., & Stewart, A. L. (1991). The MOS social support survey. *Social Science & Medicine*, *32*(6), 705–714. [https://doi.org/10.1016/0277-9536\(91\)90150-B](https://doi.org/10.1016/0277-9536(91)90150-B)
- Smith, B., Metzker, K., Waite, R., & Gerrity, P. (2015). Short-form mindfulness-based stress reduction reduces anxiety and improves health-related quality of life in an inner-city population. *Holistic Nursing Practice*, *29*(2), 70–77. <https://doi.org/10.1097/HNP.0000000000000075>
- Spitzer, R. L., Kroenke, K., Williams, J. B. W., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine*, *166*(10), 1092–1097. <https://doi.org/10.1001/archinte.166.10.1092>
- Stafford, A. M., Tanna, A., Bueno, K. M., Nagy, G. A., Felsman, I. C., de Marchi, S., Cholera, R., Evans, K., Posada, E., & Gonzalez-Guarda, R. (2023). Documentation status and self-rated physical health among Latinx young adult immigrants: The mediating roles of immigration and healthcare stress. *Journal of Racial and Ethnic Health Disparities*, *10*(2), 761–774. <https://doi.org/10.1007/s40615-022-01264-z>
- Torres, J. M., Lee, A., González, H. M., Garcia, L., & Haan, M. N. (2016). A longitudinal analysis of cross-border ties and depression for Latino adults. *Social Science & Medicine*, *160*, 111–119. <https://doi.org/10.1016/j.socscimed.2016.04.018>
- Torres, L. (2010). Predicting levels of Latino depression: Acculturation, acculturative stress, and coping. *Cultural Diversity and Ethnic Minority Psychology*, *16*(2), 256–263. <https://doi.org/10.1037/a0017357>
- Vahratian, A., Blumberg, S. J., Terlizzi, E. P., & Schiller, J. S. (2021). Symptoms of anxiety or depressive disorder and use of mental health care among adults during the COVID-19 pandemic—United States, August 2020–February 2021. *Morbidity and Mortality Weekly Report*, *70*(13), 490–494. <https://doi.org/10.15585/mmwr.mm7013e2>
- Vazquez, V., Rojas, P., Cano, M. Á., De La Rosa, M., Romano, E., & Sánchez, M. (2022). Depressive symptoms among recent Latinx immigrants in South Florida: The role of premigration trauma and stress, postmigration stress, and gender. *Journal of Traumatic Stress*, *35*(2), 533–545. <https://doi.org/10.1002/jts.22768>
- Viruell-Fuentes, E. A., Morenoff, J. D., Williams, D. R., & House, J. S. (2013). Contextualizing nativity status, social ties, and ethnic enclaves: Implications for understanding immigrant and Latino health paradoxes. *Ethnicity & Health*, *18*(6), 586–609. <https://doi.org/10.1080/13557858.2013.814763>
- Walach, H., Buchheld, N., Buttenmüller, V., Kleinknecht, N., & Schmidt, S. (2006). Measuring mindfulness—The Freiburg Mindfulness Inventory (FMI). *Personality and Individual Differences*, *40*(8), 1543–1555. <https://doi.org/10.1016/j.paid.2005.11.025>
- Williams, D. R. (2018). Stress and the mental health of populations of color: Advancing our understanding of race-related stressors. *Journal of Health and Social Behavior*, *59*(4), 466–485. <https://doi.org/10.1177/0022146518814251>

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Springer Nature or its licensor (e.g. a society or other partner) holds exclusive rights to this article under a publishing agreement with the author(s) or other rightsholder(s); author self-archiving of the accepted manuscript version of this article is solely governed by the terms of such publishing agreement and applicable law.