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ABSTRACT

A CONCURRENT AND LONGITUDINAL EXAMINATION OF INTERPERSONAL RELATIONS AND DEPRESSIVE SYMPTOMS AMONG YOUNG ADULTS IN INDIA

by

Pankhuri Aggarwal

India, a middle-income country with the world's second-highest population, is home to more than 57 million individuals affected by depression (WHO, 2017). Higher rates of depression have been reported among urban, educated, young adults compared to individuals in rural areas and those that are older or younger (Joseph, 2011; Satyanarayana et al., 2017). Despite its prevalence, there is limited published literature on factors elevating the risk for depression in this population. The present study examined the cross-sectional and longitudinal (after six months) associations between poor quality of interpersonal relations (lower support and depth, higher conflict) with parents and other family members (e.g., sibling, grandparent) and youth depressive symptoms among urban, educated, young adults in India. Additionally, we examined the moderating effects of inclusion of others in one's definition of self and lack of family cohesion with parents because of COVID-19 pandemic in the association between poor quality of interpersonal relations and depressive symptoms. A total of 548 young adults (M_{age}=21.4 years, 67% women) completed online questionnaires on Qualtrics at two time points separated by six months. Slightly more than half of our sample reported clinically significant depressive symptoms at both time points (Time 1 = 52.3%, Time 2 = 55.7%). Poor quality of relations with mother, father, and other family member were associated with greater symptoms of depression within time-points, above and beyond the effects of other relations. For women, poor quality of relations with other family member at Time 1 predicted lower depressive symptoms at Time 2, controlling for Time 1 depressive symptoms, above and beyond the effects of relations with parents. There were no significant moderating effects of inclusion of others in self or lack of family cohesion. Concurrently, lower cohesion due to COVID-19 pandemic was associated with higher depressive symptoms, above and beyond poor quality of relations. Greater inclusion of parents in one's self-definition was associated with lower depressive symptoms concurrently, though these associations did not hold in a model that also included poor quality of relations. The results of this study have implications for identifying treatment targets and adapting existing psychosocial treatments for reducing depressive symptomatology in India.

A CONCURRENT AND LONGITUDINAL EXAMINATION OF INTERPERSONAL RELATIONS AND DEPRESSIVE SYMPTOMS AMONG YOUNG ADULTS IN INDIA

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

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Introduction

Depression, a common psychiatric condition (Beck & Alford, 2009), is the second-highest leading cause of disability worldwide after heart disease. With depression being the single largest contributor to non-fatal health loss around the world, the World Health Organization (2017) has declared it one of the top public health concerns. In addition to being one of the most common psychiatric disorders around the globe, symptoms of depression can often co-occur with other medical and psychological illnesses such as cancer, diabetes, and nutritional and substance use disorders, worsening the overall prognosis and quality of life (Kleinman & Good, 2004; Lépine & Briley, 2011). Moreover, with the onset of the coronavirus disease 2019 (COVID-19) pandemic, individuals (both with and without pre-existing mental health conditions) all around the world are increasingly reporting symptoms of depression and other mood-related difficulties (Ettman et al., 2020; Hyland et al., 2020; Sønderskov et al., 2020).

While the impact of depression is felt globally, it is important to recognize that the burden of depression is greater in low- and middle-income countries (LMICs). Not only do these countries bear more than 80% of the global years lost to depression (World Health Organization, 2017), but there also exists a wide gap between mental health needs and available resources and treatment in these regions (Otte et al., 2016; World Health Organization, 2017). Despite economic and technological advancements, most of the individuals with depression residing in these countries continue to face barriers to receiving appropriate and timely clinical care (Cuijpers et al., 2018). It is estimated that only 7-21% of those with mental health needs receive treatment in LMICs (Chisholm et al., 2016). Though lack of resources and stigma associated with mental illness are some of the chief factors driving these disparities, it is imperative to note that a substantial body of research focusing on etiology and treatment approaches for depression has been conducted in high-income countries in the West that might not be as applicable in other cultural contexts (Cuijpers et al., 2018; Lim et al., 2018). This is evident by comparing the proportion of the population in these regions to the research generated. While more than 85% of the world's population resides in LMICs, only 6% of the research on mental health from these countries is published in indexed journals (Saxena et al., 2006). Therefore, continuous efforts are required to better understand and subsequently treat depression, particularly in LMICs.

India is a middle-income country that accounts for around 18% of the world's total population. As per the World Health Organization, India houses one of the largest groups of

individuals with depression when examining the years of life lost due to disability or death adjusted for population size (India Today Web Desk, 2018). It is estimated that more than 57 million individuals in India are affected by depression (World Health Organization, 2017). Further, the World Health Organization (2017) predicts that 36% of the population in India will suffer from depression at some point in their lives.

Depression Among Urban, Educated, Middle-Class Young Adults in India

While depression is known to impact individuals from all age groups, gender identities, and regions (e.g., rural, urban) in India (World Health Organization, 2017), higher rates of depression have been documented among young adults, college students, and urban dwellers (Joseph, 2011; Ponnudurai et al., 1981; Satyanarayana et al., 2017). Research indicates that prevalence rates of depression among college students in urban areas in India range from 16.5% to 79.2% (Joseph, 2011; Kaur et al., 2014; Naushad et al., 2014) compared to 11%-49.2% among children and adolescents (Jha et al., 2017; Mohanraj, & Subbaiah, 2010; Nair et al., 2004; Srinath et al., 2005), 14.6%-18.0% among adults (Sahoo & Khess, 2010; Shidhaye et al., 2016), and 8.9%-62.16% among elderly (Grover & Malhotra, 2015; Jain & Aras, 2007; Pilania et al., 2019). Studies examining the extent to which college students in India report depression have found that 35.62%, 41.25%, and 6.25% of students reported feeling mildly, moderately, and severely depressed (Karmakar & Behera, 2017). Similar but slightly different prevalence rates (moderate = 37.7%, severe = 13.1%, and extreme = 2.4%) were reported in another study conducted by Deb and colleagues (Deb et al., 2016). These rates are especially alarming given that depression is one of the chief risk factors for suicide, and suicide is one of the leading factors contributing to death among adolescents and young adults worldwide, including India (Aggarwal, 2015; Vijaykumar, 2007; World Health Organization, 2017). 37.8% of deaths by suicide in India are among Indians under the age of 30 (Aggarwal, 2015). Further, despite having a high number of cases reported with depression, published scholarly literature on depression in India continues to be scanty and is limited to prevalence rates and the effectiveness of psychosocial and pharmacological treatments (Chowdhury et al., 2001). It is imperative to understand the different factors associated with depression in this high-risk population to identify prevention and treatment targets to reduce their susceptibility to experiencing depression.

Some plausible factors elevating the risk for depression among urban, educated, middle-class young adults in India include difficulties in transitioning to adulthood, loss of social support due to nuclear family setup, parent-child conflict, bullying, perceived refusal in romantic relations, academic and field related concerns (e.g., poor grades, fear of

disappointing family, dissatisfaction with one's field of study), and perceived lack of social support from significant others (Bhandary, 2017; Bohra et al., 2015; Grover et al., 2019; Kaur et al., 2014; Upreti, 2019). In a study conducted by Kaur and colleagues (2014), the presence of a history of breakup with a romantic partner or close friend, conflict with parents, and a family history of depression were some of the chief factors that helped distinguish depressed college students from those who were not feeling depressed. The salience of interpersonal difficulties (e.g., conflict, rejection) as one of the major factors associated with depression for this population (Aggarwal et al., 2020; Raghuram et al., 2001; Raval et al., 2019) makes sense given that traditionally, for many communities in India, interpersonal relations have been central in defining one's sense of self (Shweder & Bourne, 1984). While the processes of globalization are allowing middle-class, educated families residing in urban areas to get exposed to global media and technology as well as alternate models of self and self-other relations, interpersonal relationships continue to be salient in the definition of self (Mitra & Arnett, 2019; Patole, 2018). Young adults from these communities not only define themselves in relation to their immediate family (e.g., parent, sibling), but also consider their extended family (e.g., aunt, grandparent) and peers integral to their definition of self (Aggarwal & Raval, 2022).

Given the increased overlap seen between the self and others in these groups, it is not surprising that distress is also experienced interpersonally. For example, qualitative studies indicate that interpersonal conflicts and issues have been identified as a chief factor contributing to depression among urban, educated, middle-class young adults in India (Aggarwal et al., 2020; Raghuram et al., 2001; Raval et al., 2019). However, the association between interpersonal difficulties and depression has not been empirically tested in this population, either cross-sectionally or longitudinally. Additionally, no published studies have examined the relationship between the absence of positive attributes in interpersonal relations such as trust, support, and respect that are highly valued in this community (Aggarwal & Raval, 2022). Furthermore, no published work has examined the conditions under which poor interpersonal relations make some individuals more vulnerable than others to developing depression. In other words, although all young adults likely experience stressors in interpersonal relations (e.g., conflict, lack of support) at some point in their lives, not all go on to develop depression. Additionally, we know that the presence of a depressed state could make it more likely for some individuals to perceive others as less supportive and understanding (Kaur et al., 2014), further leading to more interpersonal problems. Thus, there may be bidirectional associations between interpersonal relations and depression, as well as

potential moderators that strengthen or weaken the associations. To help establish the direction of effect(s), it is important to examine the associations between quality of interpersonal relations and depression both within and across time. Given that the association between the quality of interpersonal relations and depression might not hold for all individuals, it is also important to understand the different factors that could impact the degree of association between these two variables.

Potential Moderators of the Relationship Between Interpersonal Relations and Depression

Inclusion of Others in One's Definition of Self. Inclusion of others in one's definition of self refers to the extent to which self is defined independently of others or interdependently with others. Individuals with independent self-construal tend to perceive less overlap between themselves and others and view themselves primarily within the context of their abilities, traits, preferences, and wishes (Markus & Kitayama, 1991). Others are relevant for validating one's attributes and preferences. In contrast, individuals with an interdependent self-construal perceive greater overlap between self and others, and this fundamental connectedness with others is primary in one's definition of oneself. These individuals attend to one's role in groups and social situations, others' expectations, and prioritize group goals over individual goals (Markus & Kitayama, 1991).

Traditionally, it was assumed that an independent self-construal is more commonly experienced in Western cultures (i.e., North America, Western Europe) and an interdependent self-construal is more common in Asian, African, and Latin American cultures. While such a categorization recognizes cultural differences in the definitions of self, it largely ignores the diversity of experiences both within and outside a singular culture (Giacomin & Jodan, 2016). Studies in the field of social and cultural psychology suggest tremendous within-culture variability in independent or interdependent beliefs, values, and emotional expressions (Gardner et al., 1999). In other words, individuals might incorporate attributes from both individualistic and collectivistic dimensions into their sense of self. Similarly, it is also possible for individuals to identify with both types of self-construals simultaneously, irrespective of the cultural context they belong to (Gardner et al., 1999; Singelis, 1994). In fact, scholars from India have suggested the coexistence of individualistic and collectivist orientations among individuals in India (Sinha et al., 2004). Despite the coexistence, research continues to demonstrate the salience of interpersonal relationships for young adults in India. For example, exploratory qualitative work conducted with urban, educated, middle-class young adults indicates that, in addition to immediate family, extended family and peers also

play a significant role in the way these individuals define themselves (Aggarwal & Raval, 2022). However, the construct of self-construal has not been empirically studied for this population in relation to depression and the quality of interpersonal relations.

Impact of the COVID-19 Pandemic on Interpersonal and Psychological Functioning. Similar to other realms of life, COVID-19 has penetrated and continues to impact one's interpersonal functioning. Both positive and negative impacts of COVID-19 on interpersonal relations have been reported in popular media and exploratory studies. Some positive outcomes of COVID-19 on interpersonal relations include spending more time with family members and recognizing the need to strengthen existing social bonds (Patankar, 2020). On the other hand, some individuals noted an increase in worries about family members contracting COVID-19, feelings of loneliness or an inability to be with loved ones because of the lockdown, frequent interpersonal conflicts in relationships with others, and intrusions into privacy (Dsouza et al., 2020). Even for those individuals who reported an increase in contact with family and friends during the pandemic, limited activities to participate in and greater use of digital platforms to communicate reduced overall satisfaction with interpersonal interactions (Grose, 2020; Satyarthi, 2020).

Some preliminary research findings indicate that disruptions in social functioning and interpersonal distress due to COVID-19 were reported to be chief factors contributing to feelings of loneliness, depression, and increased suicidal ideation across many communities in India (Dsouza et al., 2020). Given cultural and religious traditions of communal celebrations and close familial interactions in many urban and rural communities in India (Mufsin & Muhsin, 2020), it is not surprising that social distancing requirements related to COVID-19 continue to pose a threat to the quality of interpersonal relations and one's psychosocial well-being. However, less is known about how increased time spent together with one's family due to COVID-19 might impact the association between quality of interpersonal functioning and depression for urban, educated, middle-class young adults in India.

The Present Study

The present study examined the association between the quality of interpersonal relations and depressive symptoms among young adults from urban, educated, middle-class families in India. Focusing on the relations with parents and other family members, the first aim of the study was to assess if poor quality of interpersonal relations (with mother, father, and one other family member) was associated with higher symptoms of depression, both concurrently and longitudinally (after six months).

The second aim of the study was to examine the conditions under which the association between poor quality of interpersonal relations with parents and other family members and depressive symptoms will be stronger (e.g., is the association between poor quality of interpersonal relations and depressive symptoms stronger for those who include others in their self-definition to a greater extent?). Specifically, I examined two conditions: the inclusion of others in one's definition of self, and the lack of family cohesion brought due to the COVID-19 pandemic.

Study Hypotheses

Aim 1: Hypothesis 1. Poor quality of interpersonal relations (with mother, father, and other family member) will be associated with higher symptoms of depression both concurrently and longitudinally (after six months).

Aim 2: Hypothesis 1. The concurrent and longitudinal associations between poor quality of interpersonal relations (with mother, father, and other family member) and depressive symptoms would be moderated by the inclusion of others in one's definition of self, such that the association would be stronger when individuals included others in their self-definitions to a greater extent.

Aim 2: Hypothesis 2. The concurrent and longitudinal associations between poor quality of interpersonal relations with parents (mother and father) and depressive symptoms would be moderated by greater conflict and less family cohesion due to the COVID-19 pandemic. Specifically, the association between poor quality of interpersonal relations with parents and depressive symptoms would be stronger when there is less family cohesion due to the COVID-19 pandemic.

Method

Participants

A total of 548 young adults (M_{age}=21.4 years, 67% women) initially participated (Time 1). Of these, a little more than half (N=289, 52.7%) also provided data after six months (Time 2). See Table 1 for participant demographics. Most of the participants reported being enrolled as a student in an academic institution (71.2%), and 26.5% indicated that they were employed at the time of data collection. Participants reported living at home with parents (88.1%), with roommates/flatmates (5.8%), living on their own (3.1%), and other (2.9%). These living arrangements mostly remained unchanged during the COVID-19 pandemic, with a slightly higher number of young adults living with their parents since the start of the pandemic (91.6%). Most participants (86.3%) reported having more than one sibling, 59.9% of which had only one sibling excluding themselves. Most of the participants (81.8%)

reported growing up in states with most urbanization in the country (e.g., Delhi, Maharashtra; Ministry of Statistics and Program Implementation, 2011). For most of the participants, their parents (66.3% fathers and 61.8% mothers) had at least a bachelor's degree. The most predominant occupation among fathers was reported to be managerial position/professionals or small business owners (49.9%) and homemakers among mothers (68.4%). More than a third of our sample (37.4%) reported monthly family income ranging from ₹25,000 (≈$303.7) to ₹75,000 (≈$911.1), with another 30.6% reporting a monthly income greater than ₹1,25,000 (≈$1518.5). The Kuppuswamy scale is a commonly used tool to determine the socio-economic status of an urban family in India. This scale considers three parameters: education of the head of the family, occupation of the head of the family, and total per capital family income. Each domain obtains a corresponding score that is summed together to determine the socio-economic status of the individual/family. The Crosstabs function on SPSS was used to calculate the socioeconomic domains for the current sample. Approximately half of the participants (48.5%) who reported a monthly family income ranging from ₹25,000 (≈$303.7) to ₹75,000 (≈$911.1) also reported their fathers as having completed a graduate or postgraduate degree. Of those reporting a monthly family income in the range of ₹25,000 (≈$303.7) to ₹75,000 (≈$911.1), around one-fifth (19.0%) also reported their father's occupation to be managerial/professional or a business owner. Based on the guidelines for the Revised Kuppuswamy Socioeconomic Scale 2021 (Saleem & Jan, 2021), a majority of our sample obtained a total score of 19, corresponding to upper-middle socioeconomic class.

Procedure

The study has been approved by Miami University Institutional Review Board. The data were collected using Qualtrics software across two time points, separated by 6 months. Time 1 data were collected in June and July of 2021 and time 2 data were collected in January and February of 2022. Participants were eligible to participate in the study if they were 1) a citizen and resident of India, 2) between 18-25 years of age, and 3) a fluent speaker of English. Participants were recruited through recruitment flyers that were posted on university groups on social media websites including Facebook, Twitter, LinkedIn, and Yahoo Groups. In addition to online recruitment, the researcher contacted student unions of various colleges and universities in the country to seek permission to use their listservs to distribute fliers and inform students about the study. The researcher also employed snowball sampling (asked participants to spread the word about the study to their friends and acquaintances) for recruitment. At each time point, participants completed online measures in English. Informed consent was obtained from each participant prior to being directed to the

survey measures. Participants were compensated ₹350 (≈$4.6) and ₹500 (≈$6.5) for completing surveys at time 1 and time 2 respectively. A partial compensation of ₹150 (≈$2.0) and ₹200 (≈$2.6) was provided to those participants who completed at least half of the survey.

The process for ensuring cultural relevance of measures. Co-authors with local cultural expertise reviewed the measures prior to administering to ensure that they would be applicable for urban, educated, middle-class young adults in India. Additionally, in a pilot study conducted in 2021, participants (N=27) were asked their feedback on the cultural relevance of the study measures. Although all participants found each of the scales relevant for young adults in India, on two measures assessing quality of interpersonal relations and impact of COVID-19 on interpersonal relations respectively, they reported some difficulties going back and forth on items assessing different constructs. Participants also noted that answering "negatively worded" items before "positively worded" items skewed their perceptions of their relationships negatively. Based on participants' suggestions, items on these measures assessing different domains (e.g., support, depth, conflict) were grouped together and positive domains (e.g., support, depth) preceded negative domains (e.g., conflict).

Measures

Time 1

Demographic Markers. Demographic information was collected using a Demographic Questionnaire which included items on participants' age, gender, sexual orientation, religion, relationship status, city of residence, educational/ occupational details, grade, housing situation, number of siblings, birth order, parents' relationship status, monthly household income, and mother/father's education and occupation. Participants were also asked about prior experience(s) and/or diagnosis of depression (if any).

Time 1 and Time 2

Quality of Interpersonal Relations. The quality of interpersonal relations was assessed using the Quality of Relationship Inventory (QRI; Pierce et al., 2001). The QRI is a widely used self-report measure of perceived support, conflict, and depth in close interpersonal relations. The support subscale assesses the relationship-specific perception of social support available to an individual (e.g., "*To what extent could you turn to this person for advice about problems?*"). The conflict subscale assesses the extent to which a relationship is regarded as a source of conflict and ambivalent feelings (e.g., *"How often do you have to work hard to avoid conflict with this person?*"). The depth scale assesses the

importance of different relationships for an individual (e.g., "*How significant is this relationship in your life?*"). On the QRI, participants were asked to rate 25 items on a 4-point Likert scale ranging from 1 (not true) to 4 (almost always true). Based on prior exploratory research exploring important relations for young adults in India (Aggarwal & Raval, 2022), participants were asked to respond to each QRI item for their mother, father, and a family member other than parents (e.g., sibling, grand parent, aunt). The randomized function on Qualtrics was used to control for comparisons across relations.

Although QRI has been mostly used with United States samples, it has been administered to individuals in European and Asian countries with psychometric properties available in Belgian, Japanese, and German samples. Internal consistency estimates reported in these studies range from .79 to .95 (Nakano et al., 2002; Reiner et al., 2012; Verhofstadt et al., 2006). To our knowledge, the present study represents the first use of QRI with an Indian sample. A factor analysis of the QRI indicated a mediocre overall fit for the three-factor model both at time 1 and time 2 across the three relationships (mother, father, other). Model specifications are summarized in Table 2. Although all items loaded significantly on their respective factor, three items loaded on all three factors. These items were: "*How positive a role does this person play in your life?" "How much do you have to "give in" in this relationship?*" and "*How much would you like this person to change?*" Additionally, the item "*To what extent you can count on this person to help you if a family member very close to you died?*" loaded on both support and depth subscales. After removing the three items, allowing one cross-loading, and correlating one residual, as suggested by modification indices, fit was acceptable, though note the low CFI/TLI at Time 2. Refer to Table 2 for model specifications for the revised model. For the ease of analysis, we created a single total score for poor quality of relationship by reverse coding items measuring support and depth, and summing lack of support (7 items; T1 = .85<αs<.86; T2 = .82<αs<.90), lack of depth (6 items; T1 =.82<αs<.86; T2 = .79<αs<.90), and conflict (10 items; T1 = .87<αs<.88; T2 = .89<αs<.90) measured across the three relationships (mother, father, other). Mean scores were used for path analyses.

Depressive Symptoms. Depressive symptoms were assessed using the Indicators of Depression Inventory - Adolescent Self-Report (IDI-A; Raval et al., 2022) and the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). IDI-A is a 47-item self-report measure of depression, developed and validated for use with young adults in India. In addition to the commonly identified markers of depression, this measure assesses some culturally salient markers of depression common among youth in India. The scale measures

nine domains: Suicidal Ideation/Self-Injury (5 items), Isolation/ Burdensomeness (6 items), Social and Academic Disengagement (6 items), Low Self-Esteem (5 items), Difficulty Concentrating/ Remembering (4 items), Fatigue/ General Distress (4 items), Aggressive Behaviors (4 items), Discord with Family (4 items), and Negative Affect (6 items) (Raval et al., 2022). Example items include *I have felt like throwing or breaking things* (Aggressive Behaviors), *I have felt like not doing things my parents ask me to do* (Discord with Family), and *I have felt others (family/friends) do not seem to like me* (Isolation/ Burdensomeness). High scores on the IDI-A indicate higher ratings of symptoms of depression. Internal consistency across the nine subscales ranged from .66 to .83 in the original sample, and internal consistency for the total composite score was indicated to be high (> .90) (Raval et al., 2022). In the current study, internal consistency for the entire scale was regarded as excellent (α = .96 at time 1 and α = .97 at time 2). Two items on the Social and Academic Disengagement scale were modified to include the domain of work: *I have not felt like going to school, college, or work and I have not been attending school, college, or work*. One item on the Discord with Family scale ("*I have found myself more rebellious at home or school*") was not administered due to researcher error. Mean scores were used for path analyses.

The CES-D is a commonly used 20-item measure of depression that assessed depressed affect, presence of anhedonia, level of somatic activity, and interpersonal challenges. On the CES-D, participants rate the different symptoms of depression on a 4-point scale (0 = Rarely or none of the time; 3 = Most or almost all the time). Example items include, *I was bothered by things that usually don't bother me, I felt that I could not shake off the blues even with help from my family or friends,* and *I had trouble keeping my mind on what I was doing*. Scores on CES-D range from 0 to 60, with higher scores indicating greater symptoms of depression. Although scores >= 16 on CES-D indicate clinical levels of depression (Radloff, 1977), studies have used different cut off points to assess depression. In the present study, we use the recommended cut-off of 20 based on the results of a meta-analysis conducted by Vilagut and colleagues (Vilagut et al., 2016). High internal consistency (.85 < α < .90) has been reported for United States samples (Radloff, 1977). CES-D has demonstrated adequate internal consistency in samples from India (.74 to .92) (Gupta et al., 2006; Sinha & Manna, 2020). For the current study, internal consistency was reported to be very good (α = .82 at time 1 and α = .83 at time 2). Mean scores were used for path analyses.

Inclusion of Others in One's Definition of Self. Inclusion of others in one's definition of self was assessed using the Inclusion of Other in the Self Scale (Aron et al., 1992). The Inclusion of Other in the Self Scale is a single-item pictorial measure of closeness

in interpersonal relations important to an individual. Participants were presented with a series of two Venn diagram-like circles (one labeled as self and one labeled as other) that overlap to increasing degrees in seven stages. The picture selected by the participant translates to a score ranging from 1 to 7 with a higher score indicating a greater degree of interconnectedness between self and other. This measure has been used extensively in studies examining inclusion of others in one's sense of self, both in and outside of the United States (Mashek et al., 2007; Weidler & Clark, 2011). Although it is not possible to establish an inter-item consistency or item level analyses on a single-item measure, the test-retest reliability index for a two-week period in the original sample was found to be satisfactory (r = .83 for overall, r = .85 for family, r = .86 for friendship, r = .85 for romantic relationship; Aron et al., 1992). Based on our exploratory qualitative work on important relations for young adults in India (Aggarwal & Raval, 2022), participants were asked to rate the closeness of their relations with mother, father, and a family member other than parents (e.g., sibling, aunt, uncle).

Impact of COVID-19 on Interpersonal Relations. The impact of COVID-19 on interpersonal relations was assessed using the COVID-19 Household Environment Scale - Adolescent Report: Part 2 (A-CHES; Behar-Zusman et al., 2020). A-CHES is a self-report measure of conflict (16 items) and cohesion (13 items) between young adults and their parents brought due to the COVID-19 pandemic. Conflict is defined as an active opposition between family members that can take a wide variety of forms (i.e., verbal, physical, and psychological) (Marta & Alfieri, 2014) and cohesion is defined as a close connected relationship (Olson et al., 1983). In addition to subscale scores, the scale provides a total family cohesion score in which items on conflict score are reverse scored and added to the scores on cohesion scale. A-CHES subscales have demonstrated high internal consistency in samples from the United States (conflict: α = .85; cohesion: α = .89). Although A-CHES was developed for global use, to our knowledge, our study represents the first use of A-CHES with an Asian sample. A factor analysis of the A-CHES indicated poor overall fit for the two-factor model both at Time 1 ($\chi2(376) = 1183.597$, $p < 0.01$; CFI = 0.832; RMSEA (90%CI) = 0.064(0.060, 0.068); SRMR = 0.064) and Time 2 ($\chi2(376) = 1047.504$, $p < 0.01$; CFI = 0.760; RMSEA (90%CI) = 0.079(0.073, 0.085); SRMR = 0.74). Although all cohesion and conflict items loaded significantly on their respective factor, one item on the conflict scale loaded on both factors. This item was *Taking care of your health (e.g., taking medicines, wearing their seat belt, wearing a helmet, using sexual protection, staying safe)*. After removal of this item, and correlating six residuals, as suggested by modification indices, fit was acceptable at both time points (Time 1: $\chi2(343) = 755.927$, $p < 0.01$; CFI = 0.911; RMSEA (90%CI) =

0.048(0.043, 0.052); SRMR = 0.052; Time 2: $\chi 2(343) = 713.096$, $p < 0.01$; CFI = 0.864; RMSEA (90%CI) = 0.061(0.055, 0.068); SRMR = 0.064). In the present study, a subscale mean was calculated for each participant by adding up the relevant items and then dividing by the total number of items for each scale, only if they had responded to 75% or more of the subscale items. For those participants who had more than 25% of their subscale items missing, their subscale mean score was indicated as missing. Note that we modified the original 7-point scale (1 = much less than before; 2 = a little less than before; 3 = same as before; 4 = a little more than before; 5 = much more than before; 6 = does not apply to my household; 7 = I prefer not to answer), to exclude the "I prefer not to answer" response category as participants were allowed to skip items. Incomplete responses and "does not apply to my household" responses were indicated as missing. We reversed scored items on the cohesion scale to represent lack of cohesion (13 items, $.90<\alpha s<.91$), and summed these items together with items on the conflict scale (15 items, $.88<\alpha s<.89$) to create a single total score of lack of family cohesion (28 items, $\alpha = .85$ at Time 1, $\alpha = .87$ at Time 2).

Data Analytic Strategy

The first aim of the present study was to determine if poor quality of interpersonal relations with parents and other family members predicted depressive symptoms both concurrently and longitudinally (after six months). We hypothesized that poor quality of interpersonal relations (with mother, father, and one other family member) will predict depressive symptoms both within and across time points (after six months). The second aim was to assess the moderating role of inclusion of others in one's definition of self and lack of family cohesion due to COVID-19 in the concurrent and longitudinal associations between poor quality of interpersonal relations (with mother, father, other family member) and depressive symptoms. Our first hypothesis was that the cross-sectional and longitudinal associations between poor quality of interpersonal relations (lack of support, lack of depth, increased conflict) and depressive symptoms would be stronger when individuals included others (mother, father, and other family member) in their self-definitions to a greater extent. Our second hypothesis was that the cross-sectional and longitudinal associations between poor quality of interpersonal relations with parents (mother and father) and depressive symptoms would be stronger when individuals report a greater lack of family cohesion due to the COVID-19 pandemic.

All analyses were conducted in Mplus 7.3 (Muthén & Muthén, 1998-2017) with full information maximum likelihood to manage missing data. We conducted a series of path analyses to evaluate the direct effects of poor quality of interpersonal relations and another

series to test moderating effects of inclusion of others and lack of family cohesion. Separate models were run for depressive symptoms as measured by IDI-A and CES-D to explore differences across the two measures, if any. Additionally, the multi-group analysis was used to assess interaction effects of gender. Model fit was evaluated using chi square statistics (nonsignificant; Satorra, 2000) and several practical indices including the Tucker Lewis Index (TLI > 0.95), comparative fit index (CFI > 0.95), root mean square error of approximation (RMSEA < 0.06), and standardized root mean square residual (SRMR < 0.08) (Hu & Bentler, 1999).

To evaluate Aim One, for the first set of path models, we analyzed cross-sectional and longitudinal links between poor quality of interpersonal relations and depressive symptoms. To assess cross-sectional links, we examined associations between poor quality of interpersonal relations (assessed by lack of support, lack of depth, and increased conflict) for each relationship and mean scores on depression at both time points. To assess longitudinal links, we examined associations between mean scores on depression at Time 2 and poor quality of interpersonal relations at Time 1 for each relationship. We also added mean scores on depression at Time 1 in the model to test whether poor quality of interpersonal relations at Time 1 predicted depressive symptoms at Time 2, accounting for depressive symptoms reported at Time 1.

To evaluate Aim Two, a second series of path models were estimated to test the moderating role of inclusion of others in self and lack of family cohesion. Interaction terms including the predictor and moderating variables (e.g., poor quality of relation with mother x inclusion of mother in one's sense of self) were added to the initial cross-sectional and longitudinal model for each moderator separately. Predictors and moderators were centered for the ease of interpretation. Gender was dummy coded (0 = men, 1 = women) and multigroup analysis was used to assess interaction effects of gender. We conducted follow-up analyses for significant interaction terms using the guidelines provided by Preacher and colleagues (2016). If interaction was significant, simple slopes were probed at +1SD above the mean and -1SD below the mean for poor quality of interpersonal relations. If interaction was not significant, only main effects were analyzed and interpreted.

Results

Preliminary Analyses

Missing Data. Overall, 31.3% of the data were missing. All participants had at least one data point missing. Little's MCAR's test (Little, 1998) indicated that data were missing completely at random, $\chi 2$ (387) = 397.798, $p > .05$. Of those who completed the initial survey

(*N*=548), 47.3% did not provide data at Time 2. Additionally, of those participants who provided data at both time points (N=289), ten responses could not be matched due to missing data on the matching variable and were thus discarded. To assess attrition bias, independent sample t-tests were conducted to assess whether missingness at Time 2 was related with variables of interest at Time 1 and demographic variables (See Table 3). No differences were found (*p*s >0.05). Consistent with current recommendations, multiple imputation (Graham, 2009) was used to impute missing data and create 40 imputations to assess bivariate correlations between study variables. We reported pooled estimated of statistics, representing weighted averages of statistics across 40 imputations. The structural models were tested in Mplus version 7.3 (Muthén & Muthén, 1998-2017) using full-information maximum likelihood (FIML) to handle missing data.

Power Considerations. Experts in structural equation modelling hold that when using maximum likelihood estimation method, a sample size-to-parameter ratio of 10:1 is adequate, although a 20:1 is most ideal (Kline, 2011). Given this typical "rule of thumb" and a maximum of 30 parameters identified in any given model, a sample size of 300 would be adequate, and 600 would be ideal. The current sample size of 549 is between adequate and ideal.

Data Assumptions and Screening. First, to assess normality of data, descriptive statistics (i.e., mean, standard deviation, range) were closely examined to assess if all values were within the expected range. Next, skew and kurtosis were calculated. Data were normally distributed (skew <|3.00| and kurtosis <|10.00|). A visual inspection of histograms and box plots was conducted to help identify outliers. Additionally, multivariate outliers were examined using the Mahalanobis distance. Using this statistic and the recommended *p* value of .001 (Kline, 2010), three potentially influential multivariate outliers were identified (*p* <0.001). Analyses were conducted with and without these cases included and the direction and significance of results were the same. Thus, these cases were retained in the final analyses presented here to maximize statistical power.

Descriptive Statistics and Bivariate Associations. Bivariate correlations and t-tests were performed on SPSS Version 28 to determine if the outcome variable (i.e., depressive symptoms) was related to the demographic variables (e.g., age, gender). Bivariate correlations can be found in Table 4 and means, and standard deviations can be found in Table 5. All significant correlations among the main study variables were in the expected directions and ranged from *r*s=-.149-.795. Poor quality of relationship with mother, father, and other family member was positively correlated with symptoms of depression on IDI-A

and CES-D at both time points (*p*s<.01). There was a significant negative correlation between poor quality of relationship with mother, father, and other family member and inclusion of others (mother, father, other family member) in one's sense of self at both time points (*p*s<.01). Inclusion of mother and father in one's sense of self at Time 1 was negatively correlated with symptoms of depression on IDI-A and CES-D at both time points (*p*s<.01, *p*s<.05). Inclusion of other family member in one's sense of self at Time 1 was negatively correlated with symptoms of depression on IDI-A at both time points (*p*s<.01, *p*s<.05). Lack of family cohesion with parents at Time 1 was positively correlated with poor quality of relationship with mother, father, and other family member across both time points (*p*s<.01). Lack of family cohesion with parents at Time 1 was also positively correlated with symptoms of depression on IDI-A and CES-D at both time points (*p*s<.01).

Quality of Interpersonal Relations. Participants reported on the quality of their interpersonal relations with mother, father, and a family member other than parents and for most participants, these other family members included siblings (Time 1 = 81.9%; Time 2 = 80.6%), followed by cousins (Time 1 = 8.1%; Time 2 = 8.3%), maternal/paternal grandparents (Time 1 = 6.2%; Time 2 = 7.6%), and uncle/aunt (Time 1 = 2.9%; Time 2 = 2.4%). Within the category of siblings, more than half of the participants chose to report their relations with their brothers (Time 1 = 58.5%, Time 2 = 56.1%). The means and standard deviations for poor quality of interpersonal relations across different relationships and time points can be found in Table 5. A repeated-measures ANOVA indicated that mean scores of poor quality of interpersonal relations differed significantly across relations ($F(2, 526) = 15.005$, $p<.001$). A post hoc pairwise comparison using the Bonferroni correction indicated that participants had higher ratings of poor quality of relations with father than mother or other family member (*p*s<.001). Paired sample t tests were conducted for each relationship (mother, father, other family member) to assess whether scores on poor quality of interpersonal relations were significantly different across the two time points. No significant differences were found (*p*s>0.05).

Depressive Symptoms. Based on the recommended clinical cut-off on CES-D (>=20), 52.3% of our sample scored above this cut off at Time 1, and 55.7% at Time 2, indicating clinically significant depressive symptoms. Independent T tests were conducted to examine gender differences on scores of depression across time points. Women reported significantly higher scores compared to men on IDI-A both at Time 1 ($t(518) = -2.529$, $p<0.05$) and at Time 2 ($t(216.56) = -2.506$, $p<0.01$). See Table 5 for means and standard deviations. There was also a significant increase in scores on depression on CES-D for

women from Time 1 to Time 2 (t (185) = -1.460; p<.05). Given these findings, participant gender was included as a covariate in further analyses. Path analyses indicated that participant scores on IDI-A and CES-D at Time 1 predicted scores on IDI-A and CES-D at Time 2 for both genders (ps<.01) (See Table 6).

Inclusion of Others in Self. A repeated-measures ANOVA indicated that inclusion of others in the self differed significantly across family members (F (2, 566) = 33.302, p<.001). A post hoc pairwise comparison using the Bonferroni correction indicated that participants included their mothers and other family members in their sense of self more so than fathers, at both time points (Refer Table 5 for means and standard deviations).

Impact of COVID-19. Almost all participants (98.9%) reported some impact of COVID-19 on their day-to-day lives at Time 1 (June-July 2021). 33.4% (n=183) indicated this impact to be "very much" and 32.1% (n=176) "much." A slight increase in impact was reported at Time 2 (January-February 2022) with 34.3% (n=99) indicating "very much" and 33.9% (n=98) indicating "much" impact. A small number of participants reported no impact of COVID-19 at Time 1 (1.1%, n=6) and at Time 2 (0.7%, n=2).

Findings Pertaining to Aim 1: Quality of Interpersonal Relations and Depressive Symptoms

Cross-sectional Associations. At time 1, poor quality of relations with father at Time 1 predicted greater depressive symptoms on IDI-A for both genders and on CES-D for women above and beyond the effects of poor relations with mother and other family member (p<0.05, p<0.01). Additionally, poor relations with other family member at Time 1 predicted greater depressive symptoms on IDI-A among women above and beyond the effects of poor quality of relations with mother and father (See Figure 1). Fit indices are summarized in Table 7.

At Time 2, poor quality of relations with mother predicted greater depressive symptoms on IDI-A and CES-D for men above and beyond the effects of poor quality of relations with father and other family member (p<0.05). For women, poor quality of relations with father predicted greater depressive symptoms on IDI-A above and beyond the effects of poor relations with mother and other family member (p<0.05) (See Figure 2). Refer to Table 7 for fit indices.

Longitudinal Associations. Contrary to the hypothesis, poor quality of relations with mother and father at time 1 did not significantly predict time 2 depressive symptoms after controlling for time 1 depressive symptoms. Further, contrary to expectation, poor quality of relations with other family member at Time 1 predicted lower symptoms of depression on

IDI-A for women at Time 2 above and beyond poor quality of relations with mother and father at Time 1 (p<0.05) (See Figure 3). Fit indices are summarized in Table 7.

Findings Pertaining to Aim 2: Proposed Moderators of the Association Between Quality of Interpersonal Relations and Depressive Symptoms

Moderating Effects of Inclusion of Others in One's Sense of Self. *Cross-sectionally*, both within Time 1 and 2, there were no main effects or interactive effects of inclusion of others in one's sense of self. Thus, contrary to prediction, greater inclusion of others in one's sense of self did not moderate the cross-sectional associations between poor quality of relations with mother, father, and other family member and depressive symptoms on IDI-A and CES-D (ps>.05). There were significant main effects of poor quality of relations (with mother, father, other) and depressive symptoms within time points across gender, over and above the effects of inclusion of others in one's sense of self (See Figures 4 and 5). Fit indices are summarized in Table 8.

Longitudinally, greater inclusion of others in one's sense of self did not moderate the associations between poor quality of interpersonal relations with mother, father, and other family member at time 1 and depressive symptoms on IDI-A and CES-D at time 2 (ps>.05). There were significant main effects between poor quality of relations with other family member at Time 1 and depressive symptoms at Time 2, above and beyond the effects of inclusion of mothers and fathers in one's sense of self and depressive symptoms at Time 1 (p<.01) (See Figure 6). Fit indices are summarized in Table 8.

Additional Exploratory Analyses of Inclusion of Others in One's Sense of Self. In a path analysis model that included inclusion of mother, inclusion of father, and inclusion of other family members as predictors of depressive symptoms, greater inclusion of father in one's sense of self was associated with decreased symptoms of depression on IDI-A for women over and above inclusion of mother and other family member in one's sense of self (p<.01, p<.05). We also found a marginally significant negative association between inclusion of other family member in one's sense of self and depressive symptoms on IDI-A for women at Time 1 (p=.053), over and above the effects of inclusion of mother and father in one's sense of self. On the contrary, when longitudinal links were examined, greater inclusion of other family member in one's sense of self at Time 1 was associated with greater symptoms of depression on IDI-A for women at Time 2, controlling for depression at Time 1, above and beyond inclusion of mother and father in one's sense of self (p<.05). See Table 9 for beta coefficients.

Moderating Effects of Lack of Family Cohesion. *Cross-sectionally*, both within Time 1 and 2, lack of family cohesion with parents as a result of COVID-19 was associated with greater depressive symptoms (See Table 10 for beta coefficients and standard errors). However, lack of family cohesion with parents did not moderate the cross-sectional associations between poor quality of relations with mother and father and depressive symptoms on IDI-A and CES-D (*p*s>.05; See Figures 7 and 8). Fit indices are summarized in Table 11.

Longitudinally, there was no main effect of lack of family cohesion (Time 1) on depressive symptoms (Time 2) (See Table 10 for beta coefficients and standard errors). Further, lack of family cohesion with parents did not moderate the associations between poor quality of interpersonal relations with mother and father at time 1 and depressive symptoms on IDI-A and CES-D at time 2 (*p*s>.05) (See Figure 9). Fit indices are summarized in Table 11.

Discussion

The present study was the first to empirically test associations between poor quality of interpersonal relations (with mother, father, and another family member) and depressive symptoms among urban, educated, young adults in India. The findings show that concurrently poor quality of interpersonal relations is associated with depression among urban, educated, young adults in India, though these links do not hold longitudinally. Inclusion of others in oneself and lack of family cohesion with parents due to the COVID-19 pandemic do not moderate these associations, though they have some direct associations with depressive symptomatology.

Prevalence of Depressive Symptoms

Overall, it is noteworthy that slightly more than half of our sample scored above the clinical cutoff on the CES-D, a self-report measure of depressive symptoms, at both time points (Time 1 = 52.3%, Time 2 = 55.7%). Prevalence estimates of depression among college students in urban settings in India in prior studies have ranged from 16.5% to 79.2% (Joseph, 2011; Kaur et al., 2014; Naushad et al., 2014). Our data are within this range. Further, the current study was conducted amidst the COVID-19 pandemic during which mental health concerns have been on the rise worldwide (Choi et al., 2020; Khandemian et al., 2021; Özdin & Özdin, 2020). This has also been true for India, wherein reports of increased depressive and anxiety symptoms have been documented (Grover et al., 2020). Thus, it is not surprising that a substantial number of participants in our study endorsed symptoms of depression. Consistent with the literature on the gender differences in the prevalence of depression, in our

study, women endorsed greater scores on depression compared to men at both time points. These trends have been reported globally (Jadnanansing et al., 2022; Wang et al., 2007) as well as with Indian samples (Poongothai et al., 2009; Singhal et al., 2016).

We used two self-report measures of depressive symptoms, CES-D, which is a widely used self-report measure of depression globally, and IDI-A, which was developed and validated specifically for use with adolescents and young adults in India. In addition to items on affective, somatic, and cognitive symptoms of depression that are measured by the CES-D, the IDI-A also includes items on social and academic disengagement, aggressive behaviors, suicidal ideation, and behavior to assess the full range of depressive symptoms presented by young adults in India. Further, the IDI-A assesses symptoms within the past two weeks (Raval et al., 2022 compared to the CES-D, which assesses symptoms over the past week (Radloff, 1977). Scores on IDI-A and CES-D were highly positively correlated with each other, suggesting a high overlap in the two measures. However, there were some differential associations between these two measures. For example, we found gender differences on IDI-A at both time points (women obtained higher scores than men) but found no differences across the two gender identities on the CES-D. Similarly, bivariate analyses show that some of the inclusion of others in one's self-definition variables were associated with lower depressive symptoms on IDI-A but not CES-D. Although these differences are difficult to interpret at this time with limited data on the IDI-A, it would be helpful to continue to include multiple measures of depressive symptoms (those that were originally developed for use with Euro-American samples but validated and used globally, such as the CES-D, as well as measures that are specifically developed for the Indian population) to gather more data concerning their utility.

Quality of Interpersonal Relations

Participants rated the quality of their relations with their fathers as poorer compared to their relationships with their mothers or family members other than their parents (e.g., siblings, and grandparents). In other words, participants reported lower levels of depth and support and higher conflict in their relationship with their fathers compared to their mothers and other family members. Participants also reported including their fathers in their self-definitions the least, while mothers were included the most. Traditionally, fathers in the joint family system in India were considered to be emotionally and pragmatically less involved with their children compared to mothers and other women members of the family (Chaudhary, 2013). In many urban, middle-class families in India, the role of fathers is changing, and fathers are increasingly participating more in their children's lives. However,

everyday care continues to primarily be the mother's responsibility in urban Indian families (Chaudhary, 2013; Sriram, 2011). Studies report that fathers' participation in daily caregiving activities has been more out of necessity rather than personal choice, and often limited to times when mothers are absent (Sriram, 2011). Lesser involvement in parenting may present fathers with fewer opportunities to offer support and deepen their bonds with their children. Additionally, one of the common obstacles cited by fathers in fostering relations with their children in these families includes a constant push and pull of having supreme power and authority in family matters and the increasing demands for fathers to be more like friends (Sriram, 2008). Similarly, for young adults, achieving independence and self-sufficiency is an essential element of their journey to adulthood (Mitra & Arnett, 2019) and can lead to strained relations with fathers as head of the family, especially when independence is not permitted, potentially leading to higher conflict with fathers than mothers or other family members. Within this context, it is not surprising that young adults in our study reported the poorest quality of interpersonal relations with fathers and included fathers the least in their self-definition, compared to mothers and other family members.

Associations between Poor Quality of Interpersonal Relations and Depressive Symptoms

Our first aim was to assess cross-sectional and longitudinal associations between poor quality of interpersonal relations (mother, father, other) and depressive symptoms. Bivariate analyses indicate that poor quality of relations with mother, father, and other family member were associated with higher depressive symptoms within and across time. Path analysis models indicate that concurrently, poor quality of relations with mother (for men only), father (for both genders) and other family member (for women only) were associated with higher depressive symptoms even after accounting for the quality of relations with the other two family members. However, longitudinally, there were no significant associations for poor quality of relationships with mothers and fathers. Further, contrary to the hypothesis, poor quality of relations with other family members at Time 1 was associated with lower depressive symptoms at Time 2 among women, when scores on depression at Time 1 were accounted for.

Overall, our cross-sectional findings build on the existing exploratory work that posits interpersonal difficulties as relevant for depressive symptoms among urban, educated, young adults (Aggarwal et al., 2020; Kaur et al., 2014; Raghuram et al., 2001; Raval et al., 2019). Our findings also highlight the importance of examining the different relations (mother, father, other) and their qualities separately across gender, given their unique associations with

symptoms of depression cross-sectionally and longitudinally. The finding that poor quality of relations with fathers was associated with greater depressive symptoms for young men and women is important in light of the other findings from this study that relationships with fathers were rated as the poorest and fathers were included the least in one's self definition. The findings suggest that even though fathers are not included in one's sense of self to a great extent in comparison to other relationships, they are influential for youth well-being. This finding is consistent with studies conducted in North America and Southern Europe. Perceptions of increased support/depth and decreased conflict with fathers were predictive of less depressive symptomatology among adolescents and college students (Brito et al., 2015; Pierce et al., 1997).

Findings also indicated that for young men, poor quality of relations with their mother was associated with greater depressive symptoms and for young women, poor quality of relationship with other family members, which were mostly siblings (brothers) was associated with greater depressive symptoms over and above other relationships. The salience of mother-son relationship in the Indian context has been documented in several Hindu epics and folksongs (Upadhyaya, 1969). Scholars argue that some of the factors associated with a close mother-son relationship in urban Indian families include 1) birth of a son enhances mother's status substantially in family; 2) mother is not his primary disciplinarian; and 3) a son often resides with the maternal household after marriage (Ross, 1962). Distinctions between mother-son relations compared to other parent-child dyads (e.g., mother-daughter, father-son) have also been documented by scholars in the West (Bassoff, 1994; Caron, 1995; Rowland & Thomas, 1996) with descriptions of relations between mother and son to be "intense and passionate." With respect to sibling relations among urban Hindu families in India, the bond between a brother and sister is particularly considered to be reverent and celebrated through festivals such as *rakhshabandhan* and *bhai dooj* (Segal, 1999). Whether older or younger, brothers are primarily responsible for ensuring the safety and care of sisters (Segal, 1999). Therefore, it is not surprising that poor quality of relations with other family members (mostly brothers) for women was strongly tied to depressive symptoms.

Longitudinally, it is unclear why the quality of relations with mothers and fathers did not predict depressive symptoms after controlling for baseline depressive symptoms. It is possible that poor quality of interpersonal relations with parents and depressive symptoms co-occur for this population and that poor quality of interpersonal relations may be a correlate but not a predictor of depressive symptoms. Prior qualitative research shows that difficulties in interpersonal functioning may be a marker of depression for youth in India (Aggarwal et

al., 2021), much like in some other Asian communities (Koh et al., 2007). In this way, poor quality of interpersonal relationships with parents may be a part of the experience of depressive symptoms rather than a predictor per se. Alternatively, it is also possible that six months may not be an adequate time frame to assess longitudinal relations. Data collection for both time points in this study occurred during the COVID-19 pandemic when mental health concerns were high among people globally. Baseline depressive symptoms at Time 1 in this study were high and were highly predictive of later depressive symptoms. A longer time frame and/or a time when there is no major global crisis affecting people's lives might yield different findings that are not currently being captured in this study.

In terms of the quality of relations with other family members, the longitudinal finding was in the opposite direction to our prediction. Although concurrently, poor quality of relations with other family members, namely brothers, is associated with greater depressive symptoms for women whereas longitudinally, the direction of the association flips. This finding is puzzling, and clearly, there seems to be something qualitatively different about poor relations with family members other than parents, particularly brothers, for women over time. There may be elements that are unique to poor quality of relations with brothers for young women that initially contribute to greater depressive symptoms but make them less prone to experiencing depressive symptoms over time. A shortage of family resources has been commonly reported in urban middle-class families in India (Ramu, 2006), resulting in siblings often competing with one another. Young women would often forgo their goals and desires for the well-being of their brothers or compete with them for those very goals, either of which could produce feelings of guilt and sadness. Given this, it is possible that needing to compete for resources may compromise the quality of relations with brothers, which contributes to depressive symptoms, though over time, poor relations with brothers matter less for young women's well-being as they learn to navigate the competition and access resources. Another explanation may be related to household arrangements after marriage in urban, educated, middle-class families. In these families, it is a common practice for women to reside with their in-laws after marriage, while for men to continue to stay with their parents along with their families (Rami, 2006). Given the natural separation of brother and sister dyads, the quality of sibling relations may lose its importance over time and therefore be less likely to be associated with worsened mental health outcomes.

Some scholars have documented cross-cultural differences in sibling relations (Beals & Eason, 1993; Ramu, 2006). In North America, though hostility and rivalry between siblings are expected in childhood, they practically disappear in adulthood. On the other

hand, in South Asian communities, young siblings are not given the space to express rivalry or quarrel, though these processes become much more prevalent later in life (Beals & Eason, 1993). Therefore, it is possible that sibling relations and their quality likely matter less over time in these communities.

Proposed Moderator: Inclusion of Others in One's Sense of Self

We did not find any moderating effects of inclusion of others (mother, father, other family member) in one's sense of self in the cross-sectional or longitudinal links between poor quality of interpersonal relations and depressive symptoms. Although there was no main effect of inclusion of others in self-definition in the path analysis model testing moderation, when a separate model was tested that only included inclusion of mother, father, and other family member as predictors of depressive symptoms, greater inclusion of father in self-definition predicted lesser depressive symptoms within both time points for women. This finding is in line with the literature that highlights the salience of interpersonal relations for young adults in India when conceptualizing depression (Aggarwal et al., 2020, Raval et al., 2022). For urban, educated, young adults, in addition to the relations with parents, relations with other family members (e.g., siblings, cousins, grandparents, aunts, and uncles) are also important in defining oneself and overall enhancing well-being (Aggarwal & Raval, 2022). Consistent with our findings, Sharma and colleagues (2022) found significant bivariate correlations between a lack of social connectedness and greater depressive symptoms among college students in the age range of 16-35 years in India. Despite the processes of globalization and variations within communities, educated, urban, middle-class families in India value familial interdependence where family members view themselves in relation to others (Mitra & Arnett, 2019; Patole, 2018). Our findings suggest that within this broader cultural community that values interdependence, the inclusion of others in one's sense of self is beneficial and may buffer against depressive symptoms concurrently.

Interestingly, for young women in our sample, the direction of the concurrent association between inclusion of other family members, namely brothers, in one's self-definition, and lower depressive symptoms was reversed when examined longitudinally. Greater inclusion of other family members (mainly brothers) in one's sense of self at Time 1 was associated with greater depressive symptoms on the IDI-A for women at Time 2, above and beyond the effects of inclusion of mother and father in one's sense of self. Clearly, when examining longitudinal associations, there is something unique about young women's relationships with other family members, namely brothers, and how these relationships associate with depressive symptoms. Considering the unexpected findings together for young

women in our sample, poor quality of relations with other family members, namely brothers, predicts lower depressive symptoms 6 months later but greater inclusion of brothers in one's self predicts greater depressive symptoms 6 months later. There are no interactive effects of quality of relations with brothers and inclusion of brothers in one's sense of self but two independent effects. Considering limited family resources that siblings compete for (Ramu, 2006), as discussed earlier, for young women, including their brothers in their sense of self might put them in a conflictual relationship wherein they balance their desires for well-being and happiness for their brothers while also navigating their own dreams. It is also possible that including brothers to a greater extent in one's sense of self also translates into considering their stress as one's distress, which may over time, contribute to greater depression.

Proposed Moderator: Lack of Family Cohesion due to COVID-19 Pandemic

Lack of family cohesion due to COVID-19 pandemic did not moderate the association between quality of interpersonal relations and depressive symptoms. However, in the path analysis model testing the moderation, there was a main effect of lack of family cohesion: lack of cohesion with parents predicted increased symptoms of depression across both genders, over and above poor quality of relationships. These findings are consistent with the emerging literature on the effects of the COVID-19 pandemic on families and mental health. For example, in a study conducted during the early phases of the COVID-19 pandemic in the United Kingdom, Stevenson, and colleagues (2020) found that family cohesion promoted well-being and resilience among community members. Therefore, one could argue that a lack of family cohesion could result in negative mental health outcomes. Some exploratory work has been conducted on the strains of the COVID-19 pandemic on parent-child relations in India as parents continue to navigate school closures, work remotely from home, and ensure financial stability (BR et al., 2020). Parents reported increased feelings of stress and burnout during the pandemic, and difficulties being emotionally present for their family (BR et al., 2020). Within the context of these findings from other studies, it is not surprising that lack of cohesion with parents due to COVID-19 predicted concurrent depressive symptoms in our sample, over and above poor quality of relationships, highlighting the added negative effects of the pandemic on depressive symptoms.

Limitations and Directions for Future Research

Some limitations of the study should be noted. First, our sample consisted of young adults who were attending college, were from mostly urbanized states, and were from upper middle-class families in India. Thus, our findings may not generalize to young adults in rural

areas, those who do not attend or have not attended college, and those from lower socioeconomic groups. Second, young adults provided self-reports of all study variables, and thus, the results could be impacted by reporter bias and shared method variance that may inflate associations among variables. Future researchers could consider employing clinician-rated scales for depression, as well as multi-informant ratings or behavioral observations of the quality of interpersonal relations. Third, we utilized the QRI, a measure developed and validated with Euro-American samples that demonstrated face validity for use with young adults in India, to assess three interpersonal constructs: support, depth, and conflict. There may be additional dimensions of quality of interpersonal relations in this population that were not captured by the QRI. Therefore, it is recommended that future investigators also examine other interpersonal constructs that might be equally important when measuring quality of interpersonal relations (e.g., non-judgementalness, transparency, mutual growth, and respect). Fourth, we utilized a longitudinal design and collected data on all study variables at two time points, six months apart, however, our cross-sectional findings did not hold over time. Future researchers may consider a longer time frame (e.g., one year) to examine whether quality of familial relations predicts depression, as this may allow greater variability in depressive symptoms from baseline to the second time point. Lastly, almost all participants in our study reported some impact of COVID-19 on their day-to-day lives at baseline. Though we examined the role of COVID-19 related cohesion and conflict among relations with parents, we did not assess the impact of COVID-19 on other relationships (e.g., siblings, grandparents) or other aspects of life. It is possible that the ongoing pandemic impacted participants' well-being and functioning in multiple domains that were beyond the scope of the current study. Future research may replicate current findings after the global pandemic is over to explore if the findings hold.

Clinical Implications

The findings of this study highlight the relevance of familial relationships for depressive symptoms among urban, middle-class, young adults in India. Our findings highlight the importance of systematically assessing the quality of clients' relationships with parents, and other family members such as siblings, aunts, uncles, and grandparents. When assessing the different relations and their quality, clinicians may consider asking open-ended questions exploring the presence or absence of support, depth, and conflict, in each relationship. Prevention and intervention approaches and recommendations for self-help strategies may focus on reducing conflict and facilitating depth and support in interpersonal relations. Given the potential for the protective role of inclusion of parents in one's sense of

self, clinicians may also ask about the extent to which various family members are included in one's definition of oneself. For young women in our sample, some unexpected findings emerged longitudinally pertaining to their relationships with other family members (mainly brothers) and their depressive symptoms. Clinicians may consider being particularly attuned to young women's relationships with their siblings and monitor how these might contribute to their depressive symptoms over time. For young men, poor quality of relationship with mothers was particularly influential in predicting depression concurrently, further highlighting the salience of client's gender identity in understanding their interpersonal relationships and depressive symptoms.

Our sample was predominantly Hindu, from urban areas, attending college or college educated, and from mainly upper-middle-class families. These various social identities are critical to attend to for understanding the role of quality of interpersonal relationships in contributing to depression. The Relational Ecological Model of Identity (Aggarwal et al., 2021) that provides a framework to conceptualize the links between self and others within broader social and political contexts in India may be helpful for clinicians as they explore familial relations and depressive symptoms for young adults. Given the concurrent association of lower family cohesion related to the COVID-19 pandemic and depressive symptoms in our study, it is imperative that families, community organizations, and educational institutions focus on ways in which family cohesion could be strengthened to buffer against depression and other mental health conditions.

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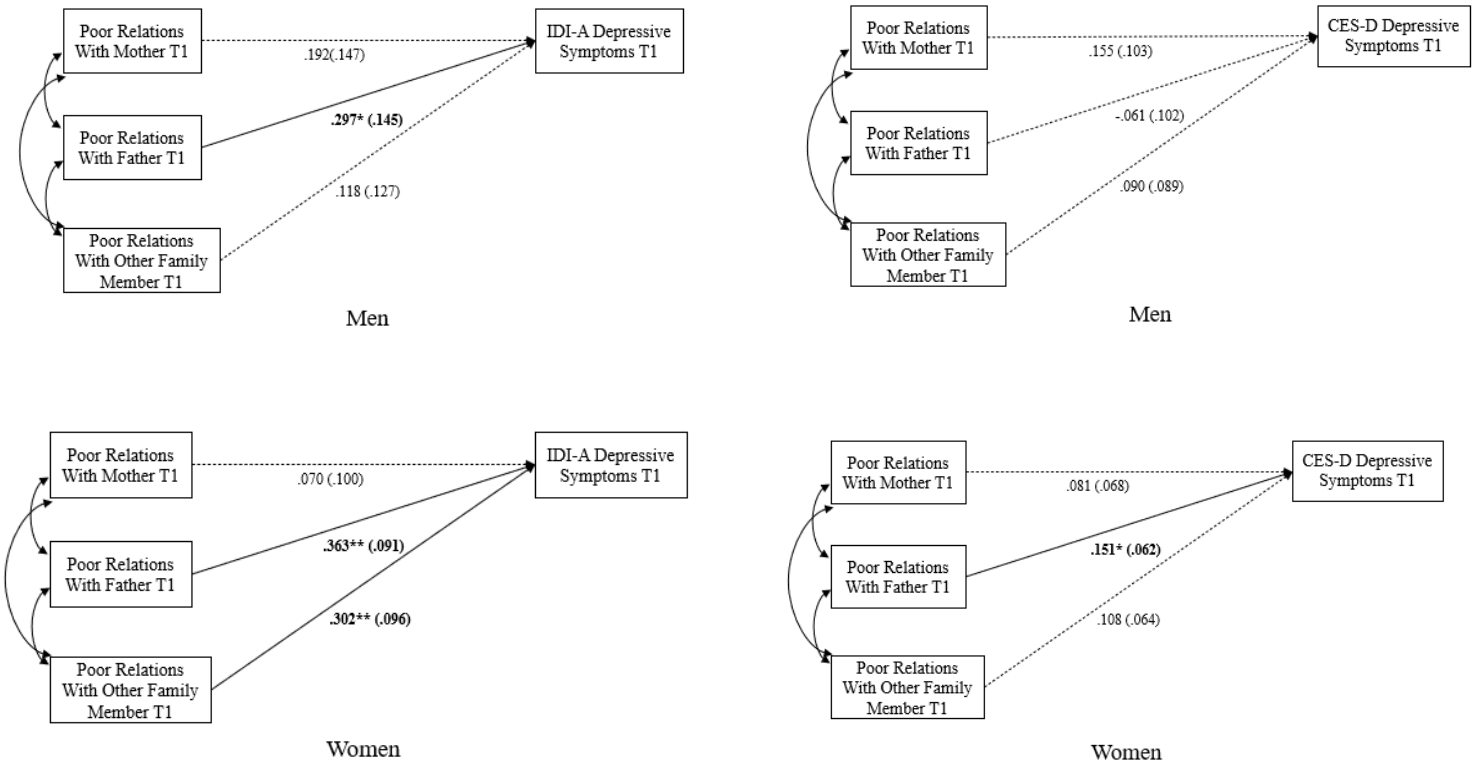
Figures

Figure 1

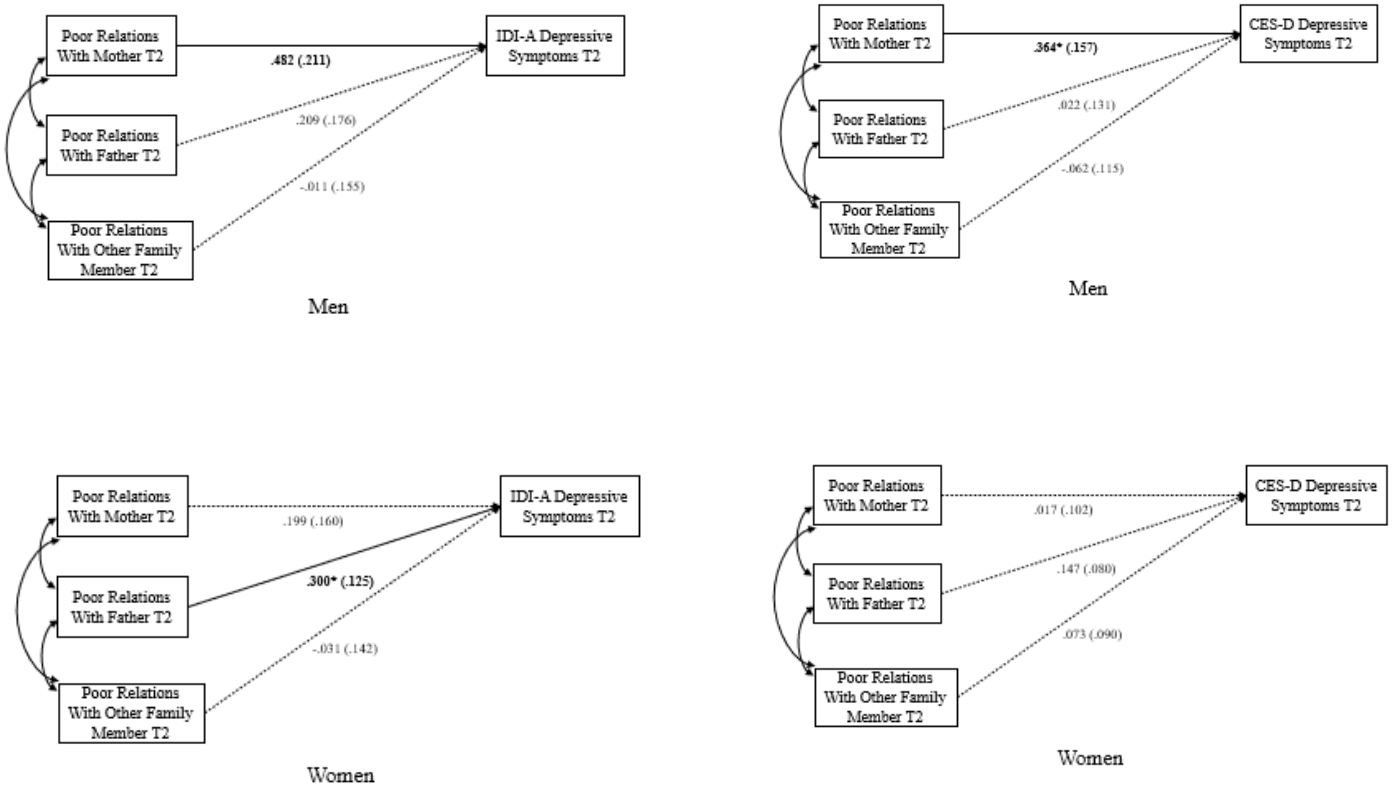
Path Analysis Models for Cross-sectional Associations at Time 1 Between Poor Quality of Interpersonal Relations and Depressive Symptoms as Measured by IDI-A (left panel) and CES-D (right panel) Among Men (top panel) and Women (bottom panel)



Note. **p<.01, *p<.05; Number in paratheses are standard errors; Bold lines represent significant paths; Dotted lines represent non-significant relations

Figure 2

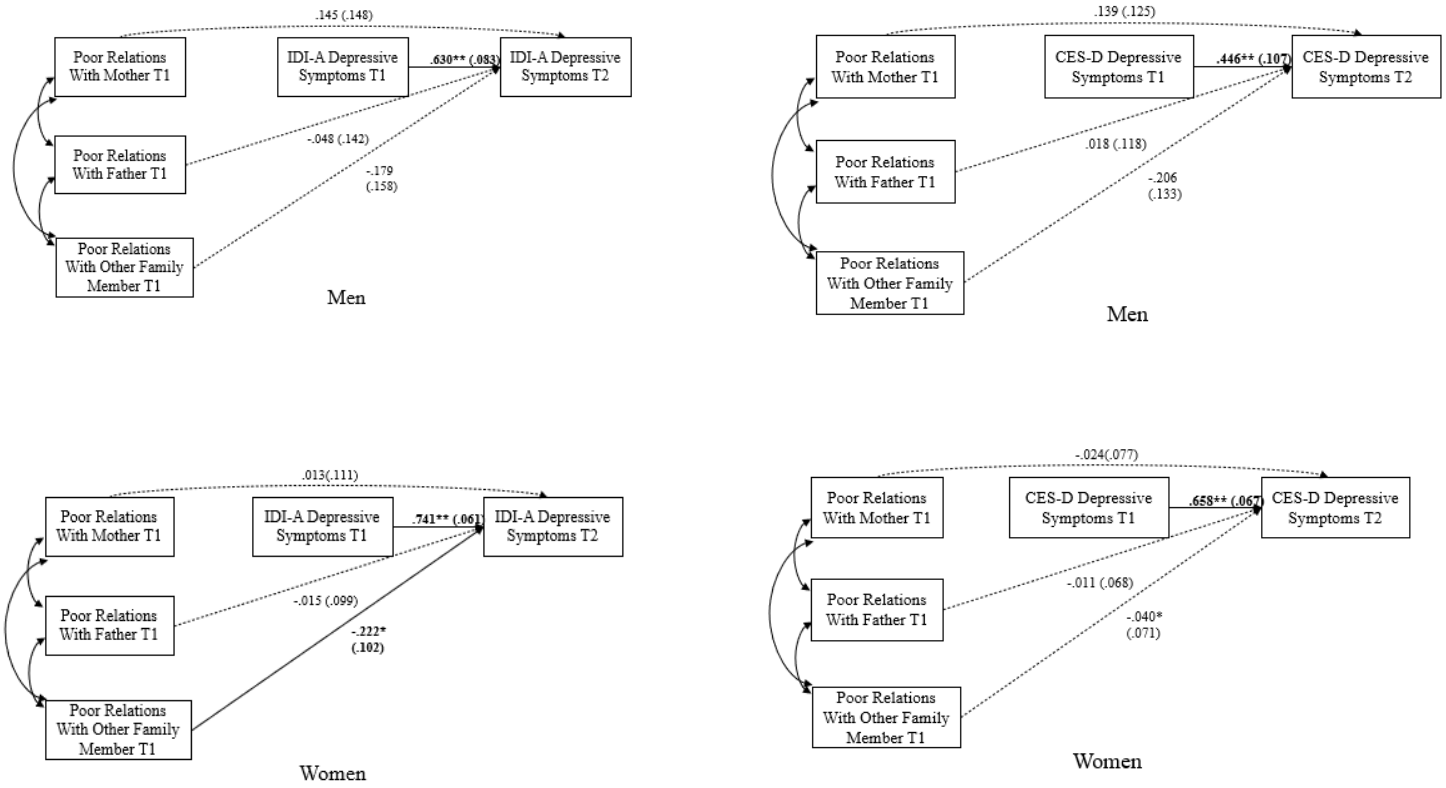
Path Analysis Models for Cross-sectional Associations at Time 2 Between Poor Quality of Interpersonal Relations and Depressive Symptoms Measured by IDI-A (left panel) and CES-D (right panel) Among Men (top panel) and Women (bottom panel)



Note. *p<.05; Number in paratheses are standard errors; Bold lines represent significant paths; Dotted lines represent non-significant relations

Figure 3

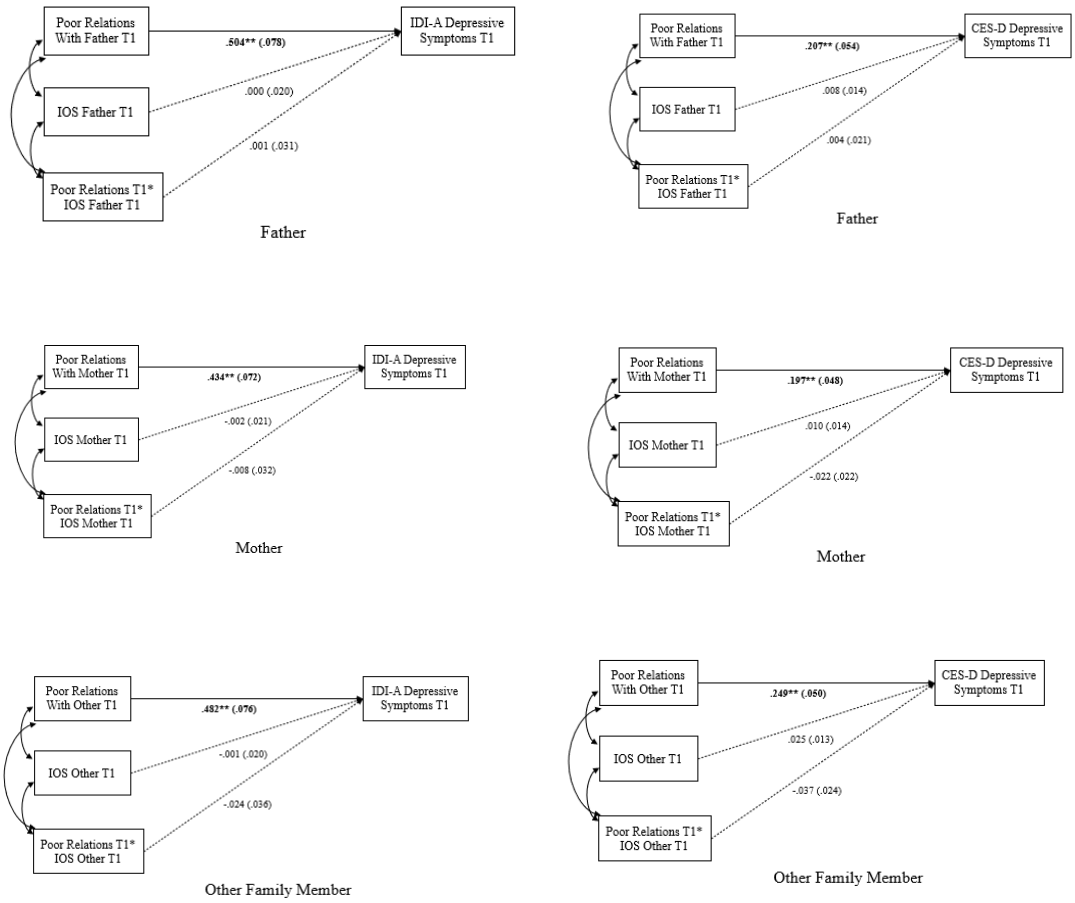
Path Analysis Models for Longitudinal Associations Between Poor Quality of Interpersonal Relations and Depressive Symptoms Measured by IDI-A (left panel) and CES-D (right panel) Among Men (top panel) and Women (bottom panel)



Note. **p<.01, *p<.05; Number in paratheses are standard errors; Bold lines represent significant paths; Dotted lines represent non-significant relations

Figure 4

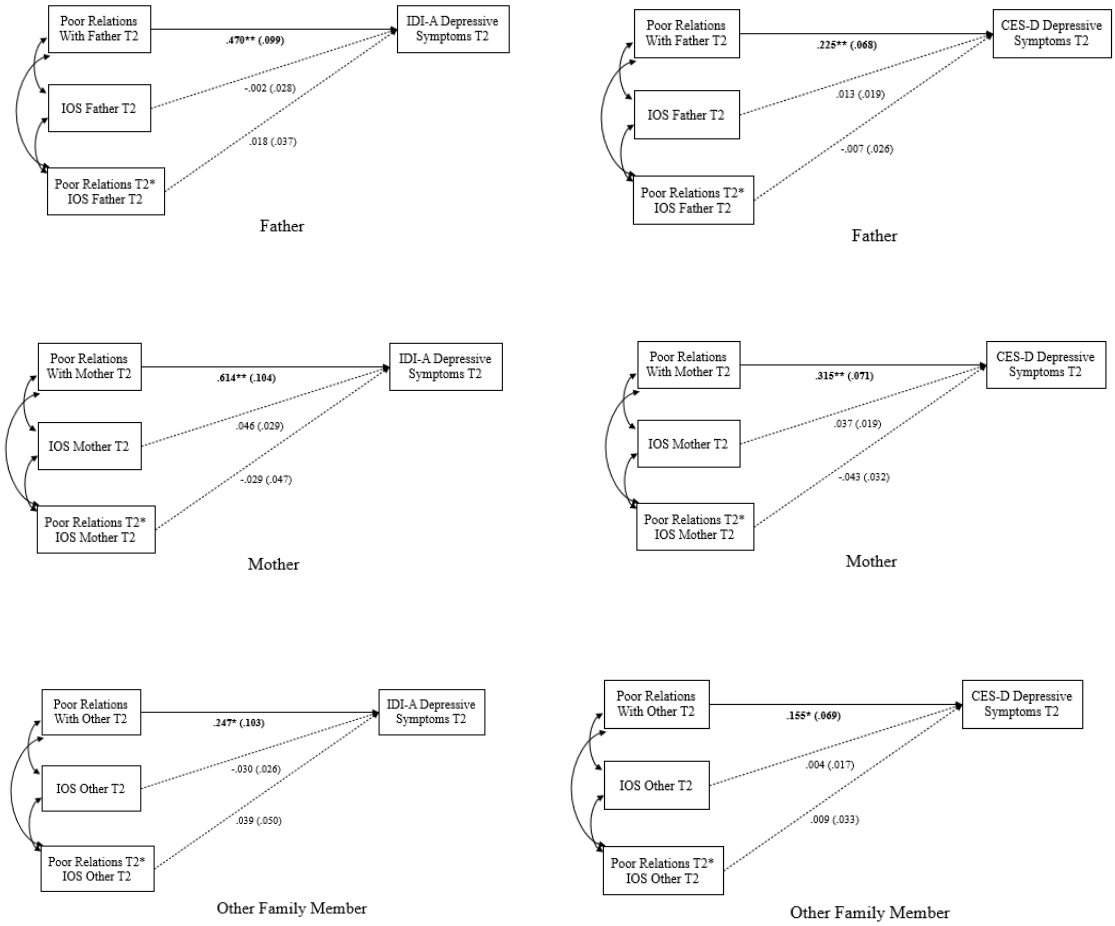
Path Analysis Models for Cross-sectional Associations at Time 1 Examining the Moderating Effects of Inclusion of Others Between Poor Relations with Father (top panel), Mother (middle panel) and Other Family Member (bottom) and Depressive Symptoms on IDI-A (left panel) and CES-D (right panel)



Note. **p<.01; Number in paratheses are standard errors; Bold lines represent significant paths; Dotted lines represent non-significant relations

Figure 5

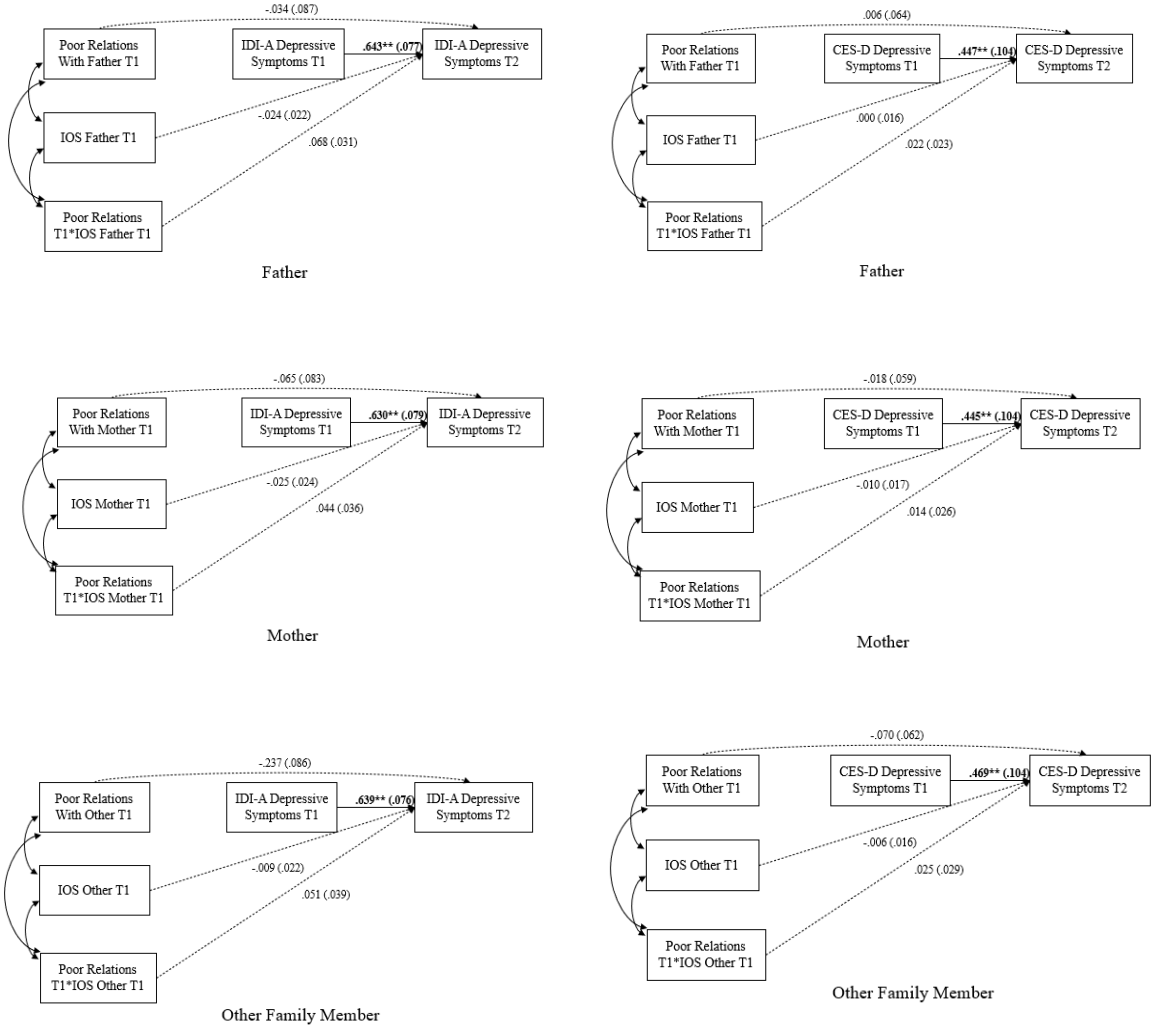
Path Analysis Models for Cross-sectional Associations at Time 2 Examining the Moderating Effects of Inclusion of Others Between Poor Relations with Father (top panel), Mother (middle panel) and Other Family Member (bottom) and Depressive Symptoms on IDI-A (left panel) and CES-D (right panel)



Note. **p<.01, *p<.05; Number in paratheses are standard errors; Bold lines represent significant paths; Dotted lines represent non-significant relations

Figure 6

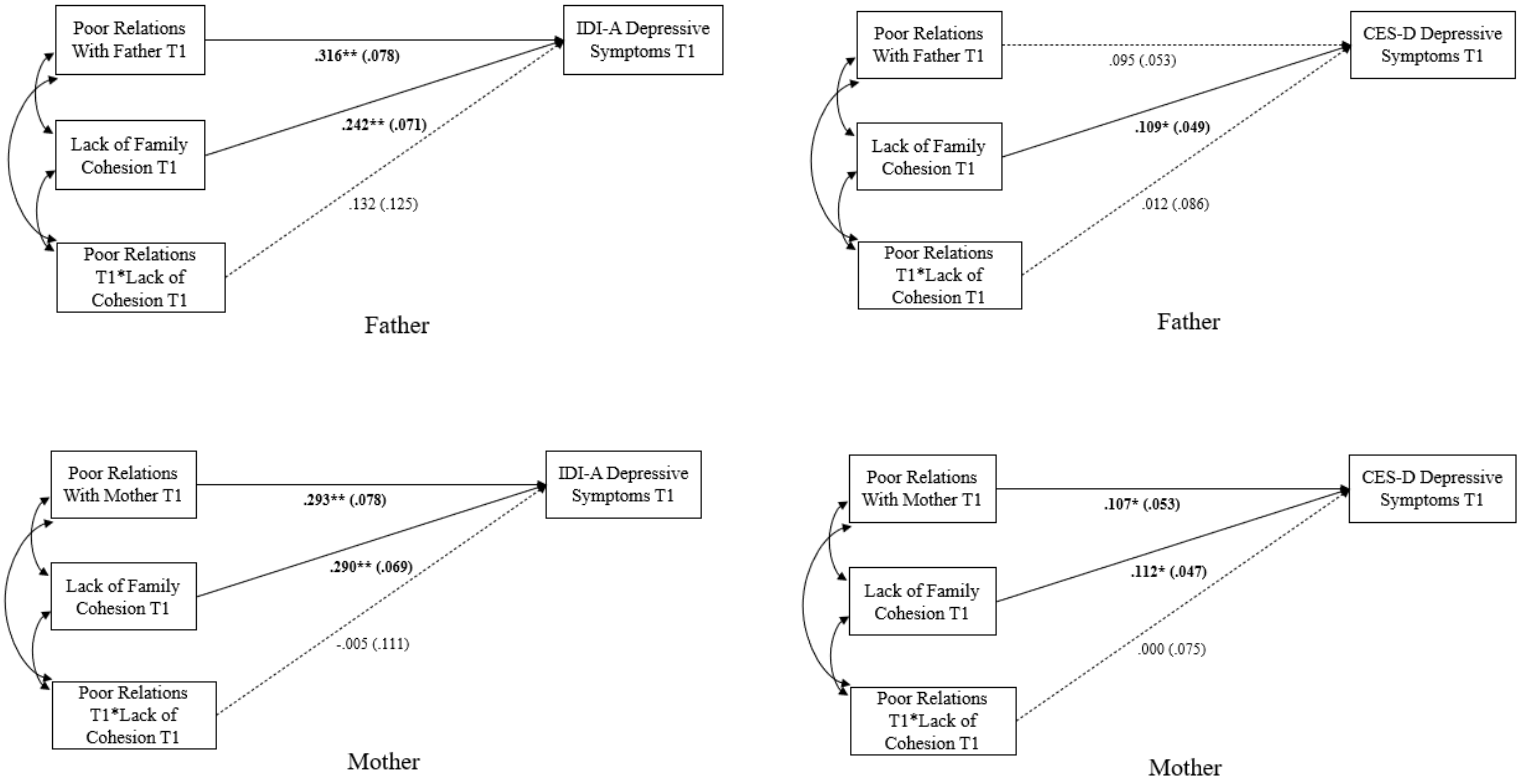
Path Analysis Models for Longitudinal Associations Examining the Moderating Effects of Inclusion of Others Between Poor Relations with Father (top panel), Mother (middle panel) and Other Family Member (bottom) and Depressive Symptoms on IDI-A (left panel) and CES-D (right panel)



Note. **p<.01, *p<.05; Number in paratheses are standard errors; Bold lines represent significant paths; Dotted lines represent non-significant relations

Figure 7

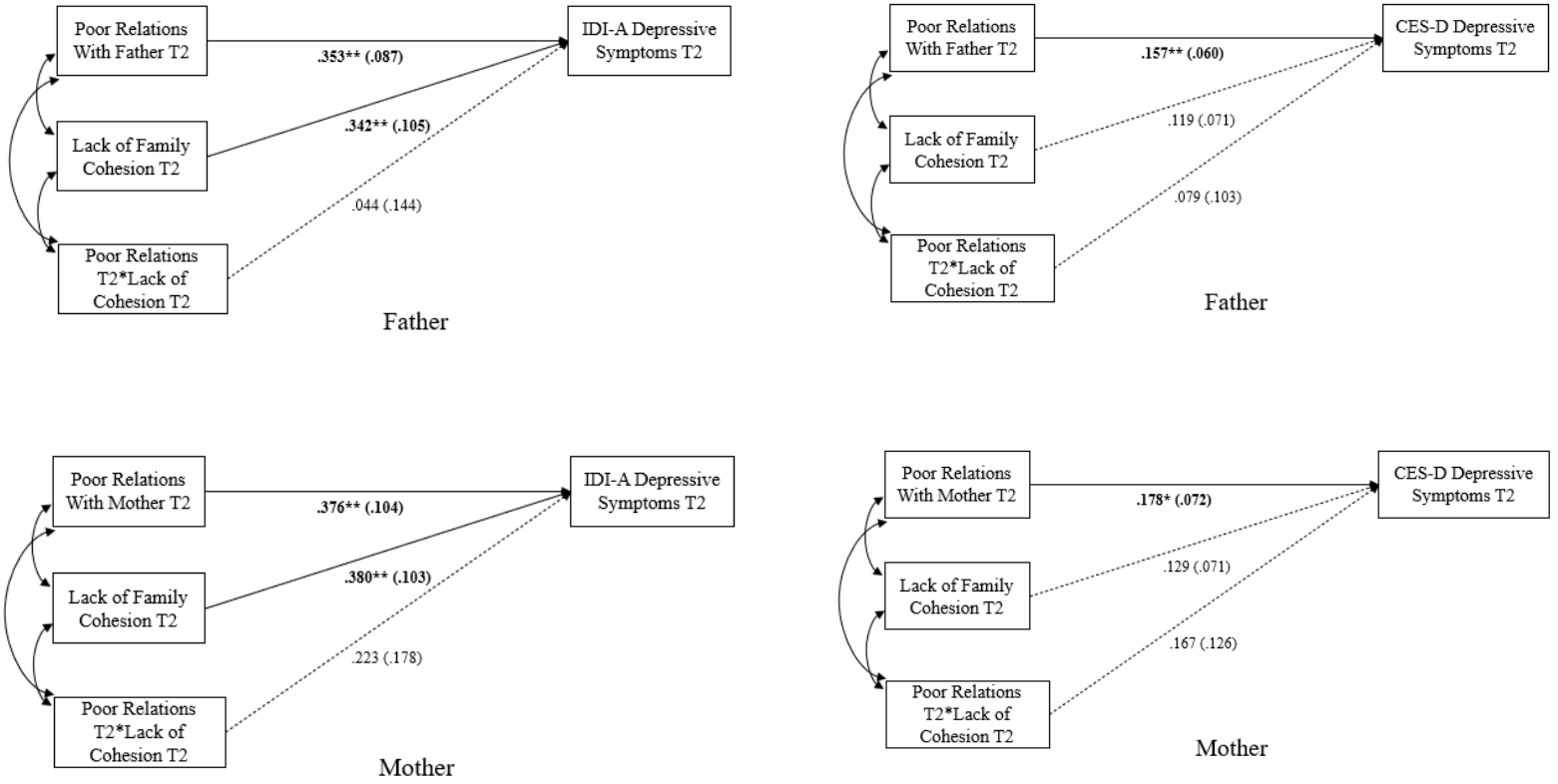
Path Analysis Models for Cross-sectional Associations at Time 1 Examining the Moderating Effects of Lack of Cohesion Between Poor Quality of Relations with Father (top panel) and Mother (bottom panel) and Depressive Symptoms on IDI-A (left panel) and CES-D (right panel)



Note. **p<.01, *p<.05; Number in paratheses are standard errors; Bold lines represent significant paths; Dotted lines represent non-significant relations

Figure 8

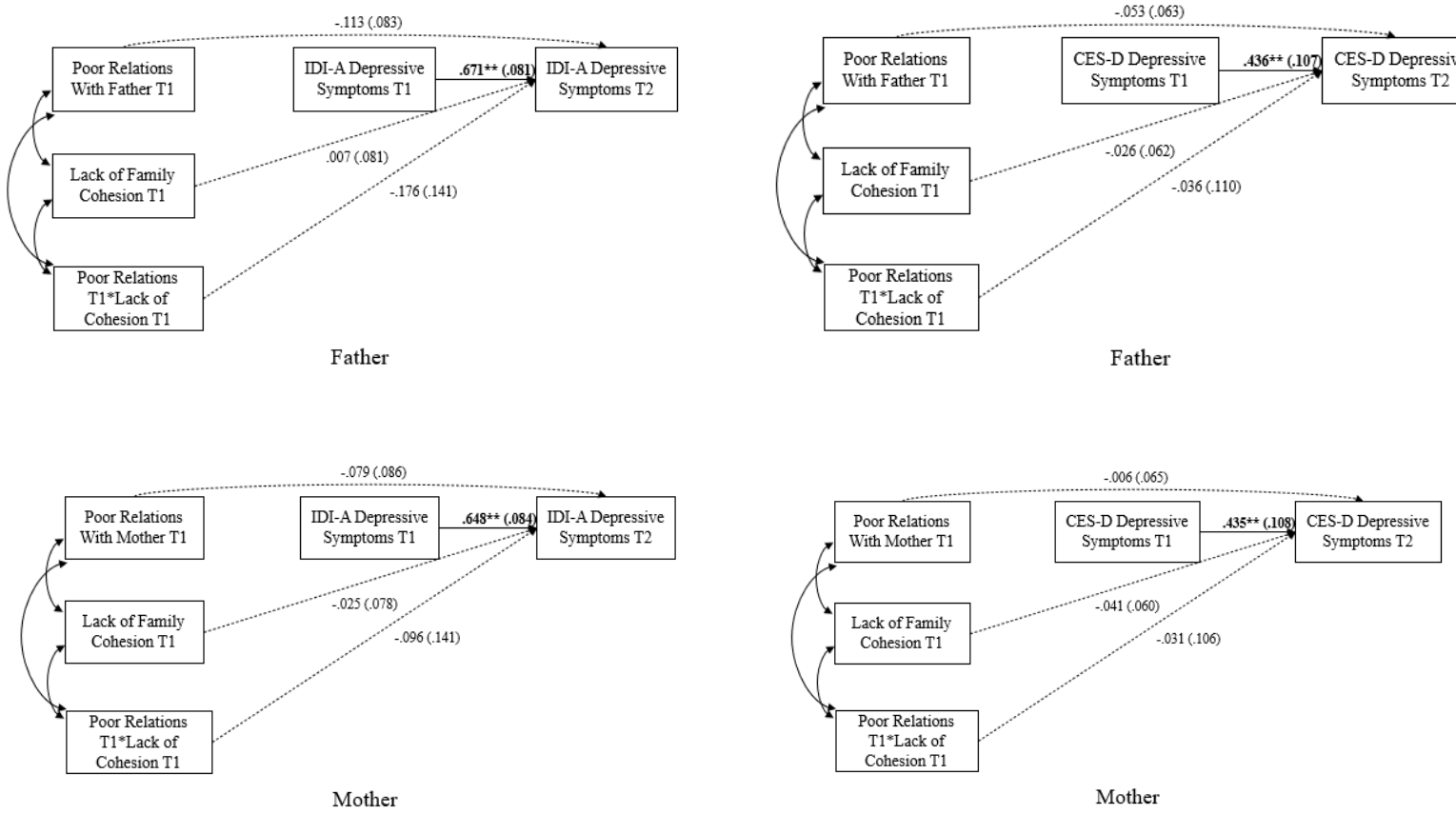
Path Analysis Models for Cross-sectional Associations at Time 2 Examining the Moderating Effects of Lack of Cohesion Between Poor Quality of Relations with Father (top panel) and Mother (bottom panel) and Depressive Symptoms on IDI-A (left panel) and CES-D (right panel)



Note. **p<.01; Number in paratheses are standard errors; Bold lines represent significant paths; Dotted lines represent non-significant relations

Figure 9

Path Analysis Models for Longitudinal Associations Examining the Moderating Effects of Lack of Cohesion Between Poor Quality of Relations with Father (top panel) and Mother (bottom panel) and Depressive Symptoms on IDI-A (left panel) and CES-D (right panel)



Note. **p<.01; Number in paratheses are standard errors; Bold lines represent significant paths; Dotted lines represent non-significant relations

Tables

Table 1

Demographic Characteristics

	%	N
Gender		
Men	33.0%	179
Women	67.0%	364
Gender Non-Binary	0%	0
Transgender	0%	0
Other	0%	0
Sexual Orientation		
Heterosexual	87.5%	471
Bisexual	6.7%	36
Questioning or unsure	2.4%	13
Other	2.4%	13
Gay	0.7%	4
Lesbian	0.2%	1
Religion		
Hinduism	65.8%	360
Spiritual but not religious	12.8%	70
Atheism	4.9%	27
Islam	4.6%	25
Agnosticism	3.7%	20
Jainism	3.3%	18
Christianity	2.2%	12
Sikhism	1.8%	10
Other	0.9%	5
Highest Education		
10^{th} grade passed	0.9%	5
12^{th} grade passed	33.2%	182
Bachelor's degree	47.8%	262
Master's degree	13.9%	76
Diploma/certificate course	1.5%	8
Other	2.7%	15
Family Monthly Income		
< ₹25,000 (≈$303.7)	13.6%	72

₹25,000 (≈$303.7) – ₹50,000 (≈$607.4)	17.5%	93
₹50,000 (≈$607.4) - ₹75,000 (≈$911.1)	19.9%	79
₹75,000 (≈$911.1) - ₹1,00,000 (≈$1214.8)	11.3%	60
₹1,00,000 (≈$1214.8) - ₹1,25,000 (≈$1518.5)	12.1%	64
₹1,25,000 (≈$1518.5) - ₹1,50,000 (≈$1822.2)	6.4%	34
> ₹1,50,000 (≈$1822.2)	24.2%	128

Table 2

Confirmatory Factor Analysis of Quality of Relations Inventory (QRI)

Relationship	Model	RMSEA		SRMR		CFI		TLI		AIC		$X^2(df)$, p	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
Mother	Original	.062	.065	.062	.064	.906	.898	.896	.886	27811.716	14296.254	843.865 (272), 0.00**	607.401 (272), 0.00**
Father	Original	.069	.084	.078	.085	.884	.874	.872	.861	29429.468	15803.727	955.492 (272), 0.00**	819.562 (272), 0.00**
Other	Original	.065	.074	.073	.072	.891	.870	.880	.856	28526.998	15601.241	884.349 (272), 0.00**	694.347 (272), 0.00**
Mother	Revised	.054	.055	.047	.050	.937	.936	.929	.927	24378.727	12450.514	526.932 (204), 0.00**	379.573 (204), 0.00**
Father	Revised	.059	.072	.059	.070	.923	.916	.913	.905	25858.296	13927.943	584.323 (204), 0.00**	504.253 (204), 0.00**
Other	Revised	.061	.072	.060	.065	.915	.888	.904	.874	25169.757	13757.430	609.134 (204), 0.00**	510.621 (204), 0.00**

Note. $^{**}p<.01$

T1= Model fit information at time 1; T2= Model fit information at time 2

Revised model: Items 8 (depth), 17 (conflict), and 20 (conflict) were removed; residuals of items 21 (conflict) and 23 (conflict) were correlated; and a cross-loading on depth was added from item 4 (support)

Table 3

Mean Differences on Baseline Level Quantitative Variables Based on Missingness

Baseline Variable	Mean (SD)		*t*-test
	Non-missing at Time 2	Missing at Time 2	Sig
Age	21.43(2.01); n=287	21.31(1.93); n=256	.493
Depression (IDI-A)	75.57(34.05); n=269	72.81(33.65); n=226	.368
Depression (CES-D)	20.94(9.19); n=271	21.47(9.43); n=208	.540
Poor Quality of Interpersonal Relations with Mother	50.92(12.32); n=255	50.54(12.46); n=205	.744
Poor Quality of Interpersonal Relations with Father	54.32(13.31); n=250	52.95(12.48); n=196	.266
Poor Quality of Interpersonal Relations with Other Family Member	51.19(11.22); n=252	50.95(12.02); n=199	.827

Note. Age = Participant's self-reported age (in years) at Time 1; Depression (IDI-A) = Depression measured on the *Indicators of Depression Inventory – Adolescent Self-Report* at Time 1; Depression (CES-D) = Depression measured on the *Center for Epidemiological Studies Depression Scale* at Time 1; Poor Quality of Interpersonal Relations with Mother = Poor quality of interpersonal relations with mother measured on the *Quality of Relationship Inventory* at Time 1; Poor Quality of Interpersonal Relations with Father = Poor quality of interpersonal relations with father measured on the *Quality of Relationship Inventory* at Time 1; Poor Quality of Interpersonal Relations with Other T1 = Poor quality of interpersonal relations with other family member measured on the *Quality of Relationship Inventory* at Time 1

Table 4

Bivariate Relations Between Primary Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. R/s Mother T1	1																	
2. R/s Mother T2	**.795****	1																
3. R/s Father T1	**.499****	**.640****	1															
4. R/s Father T2	**.630****	**.535****	**.792****	1														
5. R/s Other T1	**.503****	**.410****	**.296****	**.487****	1													
6. R/s Other T2	**.369****	**.501****	**.394****	**.381****	**.688****	1												
7. IOS Mother T1	**-.509****	**-.474****	**-.324****	**-.352****	**-.210****	**-.194****	1											
8. IOS Mother T2	**-.524****	**-.534****	**-.332****	**-.319****	**-.231****	**-.225****	**.758****	1										
9. IOS Father T1	**-.292****	**-.225****	**-.541****	**-.583****	**-.217****	**-.159****	**.542****	**.414****	1									
10. IOS Father T2	**-.257****	**-.315****	**-.627****	**-.532****	**-.152****	**-.184****	**.411****	**.529****	**.750****	1								
11. IOS Other T1	**-.242****	**-.255****	**-.237****	**-.255****	**-.462****	**-.404****	**.442****	**.408****	**.428****	**.361****	1							
12. IOS Other T2	**-.270****	**-.228****	**-.227****	**-.268****	**-.363****	**-.427****	**.364****	**.487****	**.364****	**.466****	**.647****	1						
13. Cohesion T1	**.363****	**.292****	**.299****	**.436****	**.244****	**.185****	**-.288****	**-.329****	**-.295****	**-.338****	**-.149****	**-.222****	1					
14. Cohesion T2	**.246****	**.408****	**.385****	**.275****	**.205****	**.304****	**-.280****	**-.296****	**-.223****	**-.331****	**-.244****	**-.184****	**.541****	1				
15. Dep IDI-A T1	**.340****	**.407****	**.391****	**.408****	**.354****	**.350****	**-.185****	**-.105***	**-.241****	**-.239****	**-.193****	**-.151****	**.336****	**.351****	1			
16. Dep IDI-A T2	**.227****	**.318****	**.325****	**.252****	**.135****	**.189****	**-.134****	-.062	**-.158****	**-.208****	-.063	**-.084***	**.202****	**.297****	**.751****	1		
17. Dep CES-D T1	**.238****	**.262****	**.219****	**.266****	**.241****	**.264****	**-.104***	-.060	**-.145****	**-.129****	-.061	-.045	**.221****	**.117****	**.773****	**.672****	1	
18. Dep CES-D T2	**.159****	**.224****	**.230****	**.175****	**.109***	**.178****	**-.105***	-.023	**-.099***	**-.125****	-.002	-.031	**.115****	**.178****	**.623****	**.834****	**.673****	1

Note. ***p*<.01, **p*<.05

R/s Mother T1 = Poor quality of interpersonal relations with mother measured on the *Quality of Relationship Inventory* at Time 1; R/s Mother T2 = Poor quality of interpersonal relations with mother measured on the *Quality of Relationship Inventory* at Time 2; R/s Father T1 = Poor quality of interpersonal relations with father measured on the *Quality of Relationship Inventory* at Time 1; R/s Father T2 = Poor quality of interpersonal relations with father measured on the *Quality of Relationship Inventory* at Time 2; R/s Other T1 = Poor quality of interpersonal relations with a family member other

than parents measured on the *Quality of Relationship Inventory* at Time 1; R/s Other T2 = Poor quality of interpersonal relations with a family member other than parents measured on the *Quality of Relationship Inventory* at Time 2; IOS Mother T1 = Inclusion of mother in self measured by IOS at Time 1; IOS Mother T2 = Inclusion of mother in self measured by IOS at Time 2; IOS Father T1 = Inclusion of father in self measured by IOS at Time 1; IOS Father T2 = Inclusion of father in self measured by IOS at Time 2; IOS Other T1 = Inclusion of other family member in self measured by IOS at Time 1; IOS Other T2 = Inclusion of other family member in self measured by IOS at Time 2; Cohesion T1 = Lack of family cohesion measured by the COVID-19 Household Environment Scale - Adolescent Report: Part 2 at Time 1; Cohesion T2 = Lack of family cohesion measured by the COVID-19 Household Environment Scale - Adolescent Report: Part 2 at Time 2; Dep IDI-A T1 = Depression measured on the *Indicators of Depression Inventory – Adolescent Self-Report* at Time 1; Dep IDI-A T2 = Depression measured on the *Indicators of Depression Inventory – Adolescent Self-Report* at Time 2; Dep CES-D T1 = Depression measured on the *Center for Epidemiological Studies Depression Scale* at Time 1; Dep CES-D T2 = Depression measured on the *Center for Epidemiological Studies Depression Scale* at Time 2

Table 5

Means and Standard Deviations

Measure	Overall		Men		Women	
	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n
Poor Relations with Mother T1	44.13 (10.82)	460	43.70 (10.47)	160	44.36 (11.02)	300
Poor Relations with Mother T2	43.50 (10.23)	266	43.75 (9.81)	89	43.37 (10.46)	177
Poor Relations with Father T1	46.83 (11.47)	449	46.04 (10.55)	157	47.25 (11.93)	292
Poor Relations with Father T2	46.65 (12.33)	260	47.32 (11.80)	87	46.31 (12.61)	173
Poor Relations with Other T1	44.65 (10.25)	454	43.80 (9.47)	153	45.08 (10.62)	301
Poor Relations with Other T2	44.29 (9.77)	259	45.59 (9.55)	85	43.66 (9.85)	174
IOS Mother T1	4.77 (1.71)	541	4.69 (1.66)	178	4.82 (1.74)	363
IOS Mother T2	4.58 (1.63)	285	4.50 (1.64)	90	4.62 (1.62)	195
IOS Father T1	4.10 (1.81)	539	4.15 (1.84)	178	4.07 (1.81)	361
IOS Father T2	3.86 (1.80)	285	4.00 (1.91)	90	3.79 (1.74)	195
IOS Other T1	4.60 (1.72)	538	4.81 (1.59)	178	4.50 (1.78)	360
IOS Other T2	4.41 (1.73)	285	4.28 (1.81)	90	4.48 (1.70)	195
Lack of Cohesion T1	77.74 (12.75)	125	78.21 (12.41)	58	79.06 (11.66)	32
Lack of Cohesion T2	77.68 (12.90)	72	77.34 (13.12)	67	76.58 (13.85)	40
Depression (IDI-A) T1	74.12 (33.88)	491	69.35 (31.09)	165	76.53 (35.01)	326
Depression (IDI-A) T2	72.74 (34.75)	270	65.63 (29.12)	88	76.18 (36.74)	182
Depression (CES-D) T1	21.09 (9.26)	475	20.46 (8.79)	161	21.42 (9.49)	314
Depression (CES-D) T2	21.84 (9.56)	274	20.20 (8.56)	89	22.63 (9.94)	185

Note. Poor Relations with Mother T1 = Poor quality of relations with mother measured on the *Quality of Relationship Inventory* at Time 1; Poor Relations with Mother T2 = Poor quality of relations with mother measured on the *Quality of Relationship Inventory* at Time 2; Poor Relations with Father T1 = Poor quality of relations with father measured on the *Quality of Relationship Inventory* at Time 1; Poor Relations with Father T2 = Poor quality of relations with father measured on the *Quality of Relationship Inventory* at Time 2; Poor Relations with Other T1 = Poor quality of relations with a family member other than parents measured on the *Quality of Relationship Inventory* at Time 1; Poor Relations with Other T2 = Poor quality of relations with a family member other than parents measured on the *Quality of Relationship Inventory* at Time 2; IOS Mother T1 = Inclusion of mother in self measured by IOS at Time 1; IOS Mother T2 = Inclusion of mother in self measured by IOS at Time 2; IOS Father T1 = Inclusion of father in self measured by IOS at Time 1; IOS Father T2 = Inclusion of father in self measured by IOS at Time 2; IOS Other T1 = Inclusion of other family member in self measured by IOS at Time 1; IOS Other T2 = Inclusion of other family member in self measured by IOS at Time 2; Lack of Cohesion T1 = Lack of family cohesion measured by the COVID-19 Household Environment Scale - Adolescent Report: Part 2 at Time 1; Lack of Cohesion T2 = Lack of family cohesion measured by the COVID-19 Household Environment Scale - Adolescent Report: Part 2 at Time 2; Depression (IDI-A) T1 = Depression measured on the *Indicators of Depression Inventory – Adolescent Self-Report* at Time 1; Depression (IDI-A) T2 = Depression measured on the *Indicators of Depression Inventory – Adolescent Self-Report* at Time 2; Depression (CES-D) T1 = Depression measured on the *Center for Epidemiological Studies Depression Scale* at Time 1; Depression (CES-D) T2 = Depression measured on the *Center for Epidemiological Studies Depression Scale* at Time 2

Table 6

Estimated Beta Coefficients of the Structural Equation Models for Relations Among Scores on Depression Across Time Points

Model	Estimate (*SE*)	R^2	Estimate (*SE*)	R^2
	Men		Women	
IDI-A	**.648** (.062)**	0.420	**.689** (.038)**	0.474
CES-D	**.460** (.085)**	0.212	**.638** (.043)**	0.407

Note. ***p*<.01; SE = Standard Error

IDI-A = Scores on depression as assessed by IDI-A at Time 1 predicting scores on depression at Time 2; CES-D = Scores on depression as assessed by CES-D at Time 1 predicting scores on depression at Time 2

Table 7

Fit Statistics for Path Analysis Models Assessing Links Between Poor Quality of Interpersonal Relations and Depressive Symptoms Concurrently and Longitudinally

Variable/ Model	R^2		χ^2 (df)	*p*	RMSEA (90% CI)	CFI	TLI	SRMR	AIC	BIC
Time 1 Cross-sectional	Men	Women								
IDI-A	0.136	0.184	86.624(6)	0.00**	0.00, 0.00	1.00	1.00	0.00	945.433	986.961
CES-D	0.031	0.097	35.242(6)	0.00**	0.00, 0.00	1.00	1.00	0.00	554.355	563.734
Time 2 Cross-sectional	Men	Women								
IDI-A	0.253	0.086	42.524(6)	0.00**	0.00, 0.00	1.00	1.00	0.00	573.805	609.863
CES-D	0.140	0.044	21.710(6)	0.01**	0.00, 0.00	1.00	1.00	0.00	355.533	391.554
Longitudinal	Men	Women								
IDI- A	0.474	0.481	168.220(8)	0.00**	0.00, 0.00	1.00	1.00	0.00	421.136	463.771
CES-D	0.225	0.375	102.377(8)	0.00**	0.00, 0.00	1.00	1.00	0.00	258.283	300.731

Note. **p<.01

Table 8

Fit Statistics for Path Analysis Models Assessing Moderating Effects of Inclusion of Others in Self Between Poor Quality of Interpersonal Relations and Depressive Symptoms Concurrently and Longitudinally

Variable/ Model	R^2		χ^2 (df)	*p*	RMSEA (90% CI)	CFI	TLI	SRMR	AIC	BIC
Mother	Men	Women								
Cross-sectional										
IDI-A Time 1	0.102	0.091	49.410(6)	0.00**	0.00, 0.061	1.00	1.100	.009	1009.878	1039.210
IDI-A Time 2	0.164	0.102	39.988(6)	0.00**	0.00, 0.169	.949	.898	.042	583.074	608.417
CES-D Time 1	0.044	0.049	24.505(6)	0.00**	0.00, 0.094	1.00	1.094	.024	579.381	608.420
CES-D Time 2	0.079	0.063	22.345(6)	0.00**	0.00, 0.148	.984	.968	.036	360.142	385.460
Longitudinal										
IDI- A	0.450	0.468	167.793(8)	0.00**	0.00, 0.153	.998	.994	.020	431.067	463.284
CES-D	0.187	0.378	103.769(8)	0.00**	0.00, 0.118	1.00	1.037	.019	259.313	291.428
Father	Men	Women	χ^2 (df)	*p*	RMSEA (90% CI)	CFI	TLI	SRMR	AIC	BIC
Cross-sectional										
IDI-A Time 1	0.134	0.132	69.481(6)	.00**	.000, .077	1.000	1.055	.017	975.239	1004.456
IDI-A Time 2	0.167	0.105	37.111(6)	.00**	.000, .082	1.000	1.139	.021	576.648	601.914
CES-D Time 1	0.041	0.048	25.837(6)	.00**	.000, .131	.914	.828	.037	573.010	601.944
CES-D Time 2	0.067	0.060	17.856(6)	.00**	.000, .038	1.000	1.434	.013	356.739	381.979
Longitudinal										
IDI-A	0.471	0.483	173.857(8)	.00**	.000, .147	1.000	1.000	.016	419.786	451.901
CES-D	0.184	0.378	101.964(8)	.00**	.000, .062	1.000	1.069	.009	257.799	289.811

Other Family Member	Men	Women	χ^2 (df)	*p*	RMSEA (90% CI)	CFI	TLI	SRMR	AIC	BIC
Cross-sectional										
IDI-A Time 1	0.087	0.101	50.809(6)	.00**	.000, .108	1.000	1.006	.026	989.186	1018.344
IDI-A Time 2	0.053	0.030	13.947(6)	.03*	.000, .159	.886	.773	.035	601.758	627.025
CES-D Time 1	0.044	0.056	29.518(6)	.00**	.000, .135	.911	.822	.029	561.664	590.537
CES-D Time 2	0.024	0.018	8.699(6)	.19	.000, .149	.904	.807	.028	366.272	391.513
Longitudinal										
IDI- A	0.457	0.481	171.392(8)	.00**	.000, .162	.995	.986	.019	420.134	452.215
CES-D	0.198	0.380	105.108(8)	.00**	.000, .140	1.000	1.012	.014	254.601	286.577

Note. **p<.01, *p<.05

Table 9

Estimated Beta Coefficients of the Structural Equation Models Assessing Links Between Inclusion of Others in Self and Depressive Symptoms

Variable/	IDI-A			CES-D		
Models	Time 1 Model	Time 2 Model	Longitudinal Model	Time 1 Model	Time 2 Model	Longitudinal Model
IOS Mother	Estimate (*SE*)	Estimate (*SE*)	Estimate (*SE*)	Estimate (*SE*)	Estimate (*SE*)	Estimate (*SE*)
Men	-.068 (.044)	.000 (.061)	-.036 (.055)	-.016 (.030)	-.014 (.044)	-.077 (.044)
Women	-.010 (.027)	.049 (.042)	.000 (.028)	-.021 (.018)	.029 (.026)	.001 (.019)
IOS Father	Estimate (*SE*)	Estimate (*SE*)	Estimate (*SE*)	Estimate (*SE*)	Estimate (*SE*)	Estimate (*SE*)
Men	-.016 (.039)	-.075 (.050)	-.003 (.044)	.004 (.027)	-.022 (.036)	.049 (.035)
Women	**-.085** (.025)**	**-.091* (.039)**	-.011 (.027)	**-.041* (.016)**	-.042 (.024)	-.008 (.019)
IOS Other	Estimate (*SE*)	Estimate (*SE*)	Estimate (*SE*)	Estimate (*SE*)	Estimate (*SE*)	Estimate (*SE*)
Men	.010 (.036)	-.041 (.041)	-.016 (.041)	.009 (.025)	.004 (.029)	.003 (.033)
Women	-.049 (.025)	.008 (.040)	**.058* (.026)**	.008 (.017)	.000 (.025)	.022 (.018)

Note. **p<.01, *p<.05; SE = Standard Error; IOS = Inclusion of Other in Self; Time 1 Model = Links between inclusion of others and depressive symptoms at Time 1; Time 2 Model = Links between inclusion of others and depressive symptoms at Time 2; Longitudinal Model = Links between inclusion of others in self at Time 1 and depressive symptoms at Time 2, controlling for Time 1 depression

Table 10

Estimated Beta Coefficients of the Structural Equational Models Examining Links Between Lack of Family Cohesion and Depressive Symptoms

Variable/ Model	IDI-A			CES-D		
	Time 1 Model	Time 2 Model	Longitudinal Model	Time 1 Model	Time 2 Model	Longitudinal Model
Lack of Cohesion	Estimate (*SE*)	Estimate (*SE*)	Estimate (*SE*)	Estimate (*SE*)	Estimate (*SE*)	Estimate (*SE*)
Men	.190 (.109)	**.738** (.145)**	**.467** (.125)**	.001 (.075)	**.302** (.112)**	.052 (.064)
Women	**.491** (.076)**	**.336** (.130)**	.023 (.097)	**.255** (.052)**	.126 (.083)	**.257* (.101)**

Note. ***p*<.01, **p*<.05; SE = Standard Error; Lack of Cohesion = Lack of Family Cohesion as a Result of COVID-19; Time 1 Model = Links between lack of family cohesion and depressive symptoms at Time 1; Time 2 Model = Links between lack of family cohesion and depressive symptoms at Time 2; Longitudinal Model = Links between lack of family cohesion at Time 1 and depressive symptoms at Time 2, controlling for Time 1 depression

Table 11

Fit Statistics for Path Analysis Models Assessing Moderating Effects of Lack of Family Cohesion Between Poor Quality of Interpersonal Relations and Depressive Symptoms Concurrently and Longitudinally

Variable/ Model	R^2		χ^2 (df)	*p*	RMSEA (90% CI)	CFI	TLI	SRMR	AIC	BIC
Mother	Men	Women								
Cross-sectional										
IDI-A Time 1	0.098	0.121	51.414(6)	0.00**	0.00, 0.163	.919	.838	.037	779.053	806.671
IDI-A Time 2	0.233	0.122	43.253(6)	0.00**	0.00, 0.156	.996	.992	.042	503.352	527.745
CES-D Time 1	0.031	0.043	22.023(6)	0.00**	0.00, 0.175	.702	.404	.041	467.698	495.149
CES-D Time 2	0.085	0.057	18.277(6)	0.00**	0.00, 0.133	1.000	1.153	.028	320.734	345.128
Longitudinal										
IDI- A	0.443	0.435	126.753(8)	0.00**	0.00, 0.199	.982	.953	.028	336.291	366.458
CES-D	0.187	0.316	68.651(8)	0.00**	0.00, 0.134	1.000	1.055	.018	217.038	247.119
Father	Men	Women	χ^2 (df)	*p*	RMSEA (90% CI)	CFI	TLI	SRMR	AIC	BIC
Cross-sectional										
IDI-A Time 1	0.109	0.129	56.591(6)	.00**	.029, .184	.882	.765	.043	763.503	790.992
IDI-A Time 2	0.229	0.129	44.349(6)	.00**	.000, .149	1.000	1.015	.028	496.368	520.674
CES-D Time 1	0.031	0.040	21.272(6)	.00**	.015, .179	.663	.326	.048	461.566	488.903
CES-D Time 2	0.082	0.056	16.963(6)	.00**	.000, .096	1.000	1.368	.013	315.916	340.222
Longitudinal										
IDI-A	0.477	0.438	128.093(8)	.00**	.000, .152	1.000	1.013	.014	329.376	359.457
CES-D	0.194	0.318	69.459(8)	.00**	.000, .147	1.000	1.035	.015	215.840	245.834

Note. **p<.01, *p<.05