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# Intergroup relations affect depressive symptoms of Indigenous people: Longitudinal evidence

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## Abstract

One thousand eight hundred thirty-five individuals who self-identified as Indigenous (with Mapuche being the largest group) participated in a two-wave longitudinal survey conducted in Chile with an 18 months lag. This was an approximately nationally representative sample of residents from culturally diverse communities. The aim of the study was to identify protective and adverse factors that are related to the development of depressive symptoms in Indigenous people. It was hypothesized that perceived social support would be negatively related to the development of depressive symptoms and that perceived discrimination would be positively associated with depressive symptoms, so that being on the receiving end of discrimination would make the manifestation of depressive symptoms more likely. Social support and perceived discrimination were themselves predicted to be affected by acculturation preferences and skin pigmentation. It was hypothesized that a positive acculturation orientation towards both the Indigenous group and members of non-Indigenous majority society would be associated with more perceived social support. Hence, preference for culture maintenance and preference for cross-group contact were expected to be positively related to social support. Further, it was hypothesized that darker skin pigmentation would be associated with more experiences of discrimination. Taken together, two processes were expected to affect depressive symptomatology: a protective effect of acculturation preferences mediated by social support and a deleterious effect of pigmentation mediated by experiences of discrimination. Results confirmed the predictions cross-sectionally but longitudinal effects were only found for the deleterious effect of pigmentation; the protective effect of acculturation preferences was notably weaker over time. These findings have both theoretical and applied implications.

**KEYWORDS**
acculturation, depressive symptoms, discrimination, ethnic minority, interethnic relations, skin pigmentation

# 1 | INTRODUCTION

Across different cultural contexts, disadvantaged groups show more negative mental health outcomes (UN, 2009). Ethnic, racial and other social minorities suffer more from depression and depressive symptoms than majority groups (Missine & Bracke, 2012). Although depression is often discussed as a pathology that must be dealt with by clinical treatment of the individual ailing person, the underlying assumption that the problem originates in the individual can be misleading, especially when referring to minority people's health. Such an individualistic view of mental health runs danger of ignoring the influence on health outcomes of group-level variables that affect not one person but whole groups of people. Systematic discrimination, power differentials and stressors associated with being a member of a stigmatized group impact on well-being (e.g., Berry & Hou, 2017). For Indigenous and other ethnic minority individuals in particular, mental health problems may not appropriately be reduced to bad luck in the biological lottery (e.g., inherited chemical imbalances in the brain) or to bad life choices having been made, but they might result from societal odds being stacked against minority members and from frequent subtle or not-so-subtle discrimination (González et al., 2022).

In this investigation, we chart the effects of intergroup variables on depressive symptoms among a large, longitudinal sample of Indigenous participants in Chile. Data were collected from close to over 1800 indigenous participants over a period spanning over 1,5 years. The aim was simultaneously to identify protective intergroup factors that would be associated with fewer depressive symptoms and to identify deleterious factors that would be associated with more depressive symptoms. For protective factors, it was predicted that a preference for culture maintenance and a preference for intergroup contact (i.e., both dimensions of the acculturation model (Berry, 2017) would be associated positively with perceived social support, which would in turn be associated with fewer depressive symptoms among Indigenous individuals. For deleterious factors, it was predicted that darker skin tone would be associated with more experiences of discrimination, which would in turn make individuals more vulnerable to developing depressive symptoms. Together, culture maintenance, contact preference and pigmentation were all expected to have indirect effects on depressive symptoms.

## 1.1 | Acculturation preferences[1] (culture maintenance and contact preference) and social support as protective factors

The theoretical construct of acculturation has a long history of explaining ethnic and cultural minority members' experiences of intergroup relations (Berry, 2017; Brown & Zagefka, 2011). Within the contextual

constraints and opportunities they are subject to, minority members can choose to maintain and protect their minority culture (or not) and they can choose to have contact with members of the non-Indigenous majority society (or not). When minority members have a positive orientation towards both the minority group (in terms of culture maintenance) and the majority group (in terms of contact seeking), then they are said to pursue an overall strategy that is described as 'integration' in Berry's framework (Berry, 2017; Zagefka et al., 2014). Within the acculturation literature, attitudes towards both culture maintenance and contact are often referred to under the umbrella term 'acculturation attitudes'. However, there is notably also a large literature on intergroup contact which studies contact in its own right (e.g., Allport, 1954; Binder et al., 2009; Çakal et al., 2021; González et al., 2017; Pettigrew & Tropp, 2006).

Much research, conducted in different settings, has suggested that a preference for integration (i.e., a desire for both culture maintenance and contact) is linked to the best psycho-social health outcomes for minority groups (Berry & Hou, 2021; Sam & Berry, 2006). A plausible explanation for this pattern is that a positive orientation to any one group renders this group as a potential source of support, increasing the social capital of the positively oriented individual. By extension, if minority members are oriented positively towards not one but two groups, that is both the minority and the majority group, then *both* groups can become sources of moral and practical support, maximizing the resources on which the individual can draw, thereby yielding the highest well-being and best adaptation overall (Brown & Zagefka, 2011). However, some work suggests that there are some caveats to this general pattern; for example, it seems that a desire for integration is only adaptive if there is general support for this approach within institutions and wider society (Phalet & Baysu, 2020).

In the Chilean context, some studies shed light on the consequences of a positive orientation towards integration: among the majority members, the more they support integration the less they exhibit negative affect towards minority groups (Zagefka et al., 2009). In addition, when minority groups perceive that the members of the majority group endorse an integrative orientation, they are more likely to support cultural integration themselves (Zagefka et al., 2011). Other studies have also highlighted the important intergroup consequences of intergroup contact (see, e.g., Häßler et al., 2019), for example for variables such as political action (Çakal et al., 2016, 2021). Although such results support the idea that acculturation orientations (in terms of both attitudes towards culture maintenance and contact) have powerful effects, they do not speak directly to the focus of this present investigation, which is the impact of these variables on social support or mental health.

There is reason to assume that, for Indigenous people in Chile, a positive orientation towards Indigenous culture maintenance would increase individuals' links with their Indigenous community, which would positively affect the social support on which individuals could rely. Those wanting to maintain their culture will seek social ties and links with other indigenous people and be higher on community involvement and such community involvement and connections will increase the degree of social support on which individuals can rely.

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[1] Minority and majority members can acculturate and they can do so towards or away from both the minority and majority cultures (Zagefka et al., 2023). 'Acculturation' therefore does not refer to minority members losing their cultural identity and it certainly does not imply that this is desirable.

Moreover, Gibson et al. (2022) found that racial and cultural pride can function as a protective factor against the detrimental effects of racism on depressive symptoms. This also suggests that a positive orientation towards the minority group can have positive consequences and even have a protective function in the face of adversity. Likewise, a positive orientation towards members of non-Indigenous Chilean society would increase the resources individuals could draw on that stem from membership in the majority society, also increasing the social support on which individuals can rely. Hence, both a preference for maintenance of the Indigenous culture and a preference for cross-group contact were expected to be positively associated with perceived levels of social support.

There is also evidence that social support (or a lack thereof) is a major factor influencing well-being and mental health, including the development of, or recovery from, depression (Buckman et al., 2021). Although the clinical treatment of depression typically involves antidepressant medication or psychological therapies (see e.g., APA, 2021; Ciharova et al., 2021), in recent decades there has been a growing awareness that a lack of a supportive social network and social connection can be an important, if not the most important, contributing factor to the development of depression (Hari, 2018; Sargent et al., 2002). This is also a central argument of social identity researchers interested in the 'Social Cure' (e.g., Jetten et al., 2012). Thus, feeling that one benefits from adequate social support can be expected to be a protective factor against the development of depressive symptoms and, indeed, there is evidence for this, not only from Western settings. For example, Zagefka and Jamir (2015) found clear evidence that perceived social support had a protective effect on well-being among members of different tribes in Nagaland, a region in Northeast India suffering from enduring political conflict. Following these findings, in this study we expected that there would be an indirect effect of culture maintenance preference and contact preference on depressive symptoms, via social support, for Indigenous peoples in Chile.

## 1.2 | Skin pigmentation and discrimination as deleterious factors

Appearance-based discrimination was investigated as a mechanism with deleterious effects on the mental health of Indigenous people in Chile. Latin America has been described as a pigmentocracy, where lighter-skinned people receive vastly more favourable treatment than their darker-skinned compatriots (Lipschutz, 1944). Colourism, that is prejudice and discrimination against people with a darker skin complexion, is widespread (e.g., Harrison & Thomas, 2009). Others are categorized, judged and stereotyped according to their skin colour or phenotype, according to a colour hierarchy with darker complexion being perceived to rank near the bottom (Gil-White, 1999; Telles, 2014; Telles et al., 2015). Skin tone is perceived to vary not only between ethnic categories, with those who are viewed as 'white' typically featuring lighter complexion, but also within ethnic categories. This means that among those who self-identify as Indigenous there can be a large range of skin complexions, with some Indigenous people appearing visually more or less dark than others.

Several contributions have demonstrated that skin tone, that is how light or dark someone visually appears to be, has strong effects on how that person is treated in Chilean society. For example, Meeus et al. (2017) found that racial phenotypicality affected expectations about school performance in Chilean students. Racial phenotypic appearance that was not consistent with a white European appearance was related to reduced perceived competence of the student, which in turn affected educational expectations. In the present study, it was therefore expected that Indigenous people would report experiences commensurate with this general pattern and that more dark-skinned participants would report higher levels of discrimination.

Experiences of discrimination were, in turn, expected to be associated with depressive symptoms. The idea that mental illness is not an expression of individual failings but must often be interpreted as an expression of contextual and societal failings is one of the arguments advanced against traditional treatment methods by the anti-psychiatry movement (Crossley, 1998). Indeed, there is sound reason to expand the search for antecedents of depressive symptoms to the broader context beyond the individual. The 'social determinants approach' to mental health highlights the relevance of social and economic factors to well-being and health outcomes, especially for lower status groups (Alegría et al., 2018; Fisher & Baum, 2010). Being the target of chronic discrimination and group-based disadvantage and prejudice can be expected to have detrimental effects on mental health (Branscombe et al., 1999). Members of stigmatized groups might engage in a range of strategies to protect their well-being in the face of systematic disadvantage (Branscombe et al., 1999; Crocker & Major, 1989) but, overall, being the target of chronic discrimination is likely to take a toll on mental health. This is, for example, what Jasinskaja-Lahti et al. (2006) found for different immigrant groups in Finland, where perceived racism and discrimination was highly predictive of the psychological well-being and general health status of immigrants. This was also found in other countries across Europe: in a large meta-analysis, discrimination was positively associated with symptoms of psychiatric disturbances, depression, psychosis, perceived stress and externalizing behaviours (de Freitas et al., 2018). Evidence is not restricted to Europe: in a large meta-analysis including data predominantly from the United States, Paradies et al. (2015) also found that racism was associated with poorer general, physical and mental health, including depression, anxiety, psychological stress and various other outcomes. In Australia, too, adverse effects of racial discrimination on the health of Indigenous children have been demonstrated, in this study even longitudinally (Shepherd et al., 2017; see also a review of this topic in González et al., 2022).

Hence, in the present context it was expected that perceived discrimination would increase the likelihood that depressive symptoms would manifest in Indigenous participants. As darker pigmentation was expected to increase the likelihood of group-based discrimination in Chile (Torres et al, 2019), we expected an indirect positive effect of skin pigmentation on depressive symptoms, mediated by greater perceived discrimination.

## 1.3 | The Chilean context

As can be inferred from the research mentioned above, Chilean society is not free from race-based struggles and inequality. Like other Indigenous groups worldwide, the Indigenous peoples of Chile suffered severely after the arrival of European colonizers, being robbed of their traditional homelands in brutal conflicts, being subjected to cultural suppression and suffering severe status asymmetry and social and economic deprivation (Carlin et al., 2022; González et al., 2022; IWGIA, 2022).

The present sample comprises different indigenous groups but the largest one in Chile is the Mapuche group and the historical context for this group will be briefly described for illustrative purposes in a little more detail. In Chile the military occupation of the Mapuche homelands by the colonizers was euphemistically called the Pacificación de La Araucanía, which concluded in 1883. At the beginning of the 20th century, about 70,000–80,000 Mapuche were reported to have survived out of a population of approximately one and a half million (Bengoa, 2006). As described early on by Guevara (1908), the defeat of the Mapuche during dual colonialization in both Chile and Argentina and subsequent racist practices and suppression has instilled in them a sense of racial inferiority and helplessness, with deleterious consequences (Anchao, 2020; Mariman et al., 2006; Paillef, 2018). The democratic transition in Chile in 1989 has coincided with a newfound strength in the Mapuche movement. However, the recent establishment of institutional frameworks to encourage positive affirmation policies to benefit Indigenous peoples are seen by many members of the non-Indigenous society as unfair favouritism and advantage. Present-day Mapuche are now often indiscriminately associated with radical leftist groups (which are supported by some parts of the Mapuche community but not by others). Some leading Mapuche political organizations are seen to be associated with terrorist activities. As with many political conflicts, one side's freedom fighters are another side's terrorists.

Despite an ongoing history of severe oppression of the Mapuche and other Indigenous groups, many have escaped extinction. The vast majority of Chileans have some degree of Indigenous ancestry (Eyheramendy et al., 2015) and in Chilean society people might identify themselves as either white, mestizo (mixed), or Indigenous. Those who do identify as Indigenous (about 12% of the total population) typically see themselves not only as Indigenous but also as belonging to a *specific* Indigenous group (e.g., Mapuche, Aymara, Quechua; Carlin et al., 2022).

Today, Chile is one of the countries worldwide with the highest inequality in the national income distribution (Rodriguez Weber, 2017; World Bank, 2022). Indigenous groups tend to rank towards the bottom of the income distribution, with social mobility being generally low (Cantero & Williamson, 2009). Deprivation and rates of poverty-related problems such as alcoholism are disproportionally high among Indigenous groups compared to the non-Indigenous population (Cantero & Williamson, 2009).

Moreover, Indigenous people in Chile are increasingly mobilizing to advance the Indigenous cause, challenge discrimination and demand recognition of Indigenous rights (Radcliffe & Webb, 2016). This includes demands for the return of Indigenous land to the Indigenous people and the recognition and representation of Indigenous people at the constitutional level. Some, but not all, of this activism is conducted peacefully. There are frequent violent clashes between police forces representing the Chilean state, non-Indigenous landowners and Indigenous people fighting to regain rights to their traditional homelands, which were taken from them during colonization (Gerber et al, 2018). Different Indigenous groups vary in terms of their preference for peaceful or violent means of protest. The long-standing conflict remains ongoing and unresolved (see also González et al., 2016).

## 1.4 | Theoretical contribution of this research

As indicated above, the present results can speak to theorization in several distinct bodies of literature. Findings have implications for the research areas of acculturation research (e.g., Berry, 2017), intergroup contact (e.g., Çakal et al., 2016, 2021), the social cure (e.g., Jetten et al., 2012) and work on anti-psychiatry (Crossley, 1998). Moreover, the non-WEIRDness (Henrich et al., 2010) of this sample belonging to a traditionally under-studied group is a strength well aligned with anti-colonialist agendas.

## 1.5 | Sum of predictions

In sum, then, it was expected that a preference for culture maintenance and a preference for contact with non-Indigenous Chileans would increase perceived social support, which in turn was expected to make the manifestation of depressive symptoms less likely. Moreover, it was expected that visibly darker skin would increase the likelihood of being a target of discrimination and that chronic and frequent discrimination would increase the likelihood that depressive symptoms would emerge. Put another way, social support was predicted to mediate the effects of acculturation preferences on depressive symptoms and perceived discrimination was expected to mediate the effect of pigmentation on depressive symptoms. These predictions were tested in Chile, a country with a sizeable Indigenous population.

## 2 | METHOD

### 2.1 | Participants

One thousand eight hundred thirty-five individuals who self-identified as Indigenous participated in a longitudinal survey first administered in 2016 (640 males, 1195 females) and then again roughly 18 months later in 2018. As noted above, in Chile people might identify as white, mestizo, or Indigenous and although the survey on which the present paper is based included all three groups, the present predictions and
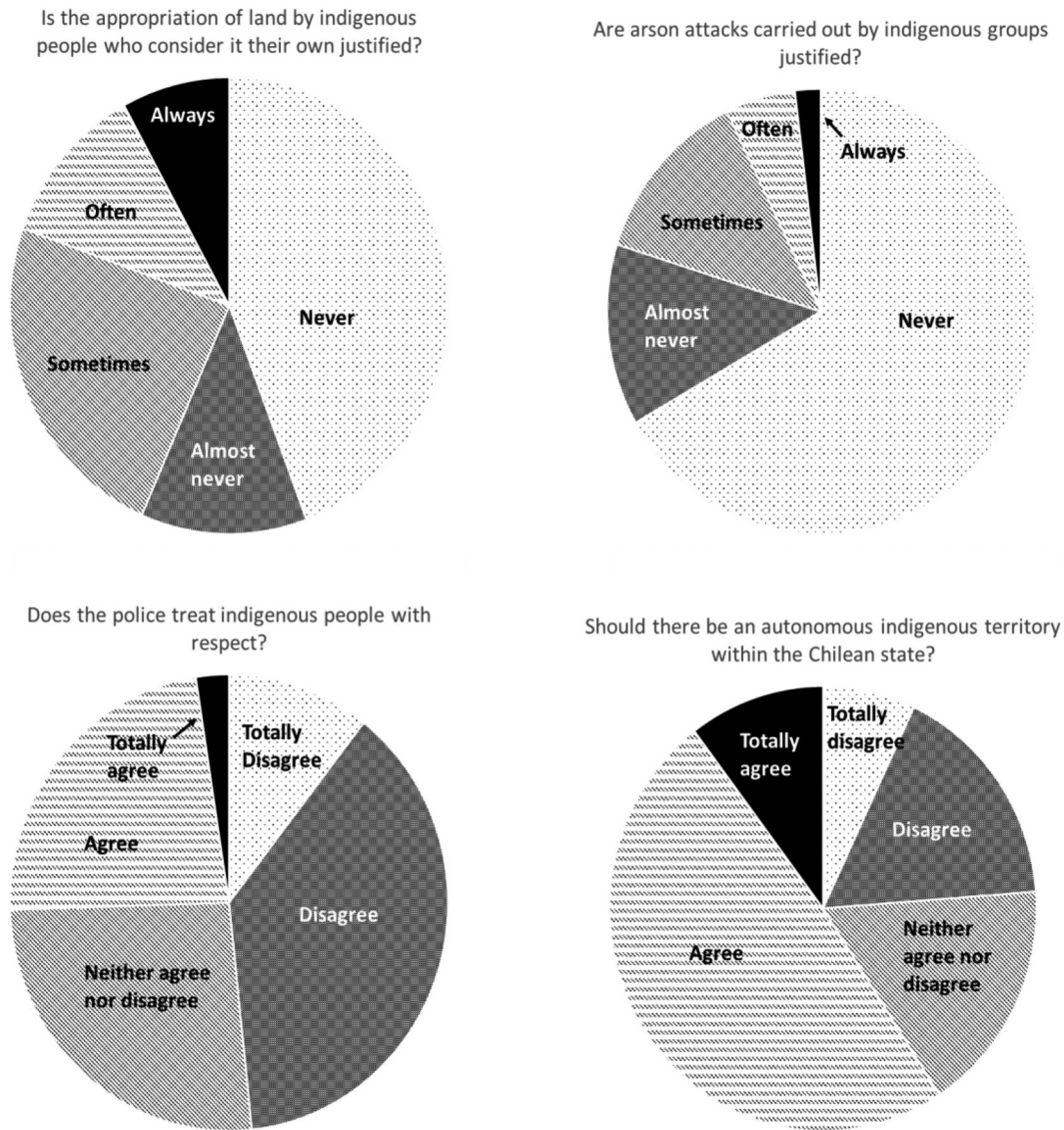
**FIGURE 1** Sample characteristics: Responses on key issues related to intergroup relations in Chile.

analyses only focussed on those people who clearly indicated at Time 1 that they considered themselves as Indigenous, with reference to their specific Indigenous group of origin. At time 1, 75% of the participants identified as Mapuche, 16% as Aimara, 5% as Likan Antai, 3% as Quechua, 2% as Diaguita and less than 1% each as Rapa Nui, Colla and Kawesqar, with 2% not specifying the group. The age ranged from 17 to 90 years ($M age$ = 46.70). The dataset is available from the ELRI management team upon written request: https://drive.google.com/drive/folders/1ij9o5uBsxUtaWIL5XU4q3Qo5VNP3y8mT?usp=sharing.

When asked how well they spoke their native Indigenous language, over 80% reported not speaking it or only speaking a few words, indicating a profound loss of ethnolinguistic vitality (Zuniga & Olate, 2017). Some further description of the sample can be gleamed from Figure 1. The pattern displayed is in line with the highly conflictual and adversarial clashes caused by disputes over traditional Indigenous homelands. When asked whether the appropriation of land by Indigenous people who consider the land their homeland is justified, 43% felt that

it is sometimes, often, or always justified and 20% felt that incendiary attacks carried out by Indigenous people in protest against land right infringements are sometimes, often, or always justified. When asked whether the police treat Indigenous people with respect, 47% disagreed or strongly disagreed and when asked about whether there should be autonomous Indigenous territories within the Chilean state, 56% were in favour of this. This preference for autonomy indicates perhaps a certain level of scepticism that Chilean society can be transformed successfully to include Indigenous peoples in ways that are fair and non-discriminatory.

## 2.2 | Procedure and measures

The data collection was carried out by the Center for Intercultural and Indigenous Research (Centro de Estudios Interculturales e Indígenas, CIIR). The practical approach to data collection can be summarized

briefly: Data collection was conducted by a reputable specialized agency in Chile, via computer-assisted face-to face-interviews in the participants' homes, in Spanish. The average interview lasted over 1 hour and a monetary incentive was offered to respondents to encourage participation. The questionnaire covered many aspects, including some not relevant to the present hypotheses (e.g., number of children, geographical mobility, etc.). The description below focusses only on the items of theoretical relevance for the present investigation. No alternative variables to tap into the constructs of interest here were included in the questionnaire, meaning that all measures relevant to the present constructs are reported. No pre-prints or already published papers related to the present variables exist and we have no plans to publish any other papers linking the present independent variables (IVs) to the present dependent variables (DVs).

The full questionnaire is available upon request from the Center for Intercultural and Indigenous Research (email: elri@uc.cl). To mitigate against drop outs, participants were re-contacted 9 months after the first wave and before the second wave (62.5% telephonically, 16.6% in-person and 20.87% were not reached) to update contact information. Prior to participation, full consent was obtained; the research passed an ethics review and all aspects of the research complied with the American Psychological Association (APA) and the British Psychological Society (BPS) ethical guidelines, for example with regard to ability to withdraw from the study, anonymity and so forth.

Several measures were taken to achieve a sample that was representative of all communities in all parts of Chile with a multicultural population. In a first step, with the census data as a starting point, different regions of the country were randomly selected and then municipalities nested within regions were randomly selected within them. Then, trained interviewers conducted a door-to-door poll of residents, to ask whether people living there would describe themselves as being Indigenous. Then, a decision was taken to include a random sample of municipalities, with the inclusion criterion being that municipalities qualified for inclusion in the study if more than 9% of the resident community was Indigenous, or if the Indigenous population in the municipality amounted to more than 0.04% of the total Indigenous population of Chile. Within the selected municipalities, random residential blocks were chosen, within that random households and within households random household members (with age below 18 being an exclusion criterion). With this approach, it was ensured that our sample would constitute a representative sample of the multicultural residential areas in Chile. In sum, representative geographical regions in the north, centre and south of Chile were included, with a focus on municipalities where a notable proportion of Indigenous people live. Respondents were offered a small monetary incentive (approximately USD14 at 2016 exchange rates) and the response rate for the first wave participants was 67.4%. The sampling approach was modelled on that used by the UN in their 2012 study of interculturality in Chile. To give a sense of the scale of the effort, it is relevant to note that Chile as a country is over 4000 km long and participants were spread throughout the entirety of the country. The measures described below are those that are relevant to the present hypotheses.

*Preference for culture maintenance*, that is maintenance of the distinct Indigenous culture, was assessed using the items described in Zagefka and Brown (2002). Participants indicated how much they thought that their Indigenous group should maintain its customs, traditions and culture (1 = strongly disagree to 5 = strongly agree; $\alpha_{T1}$ = .80; $\alpha_{T2}$ = .79, $r_{\text{test-retest T1-T2}}$ = .15, $p < .001$).

*Preference for contact* with non-Indigenous Chileans was measured by participants indicating how much they thought that members of their Indigenous group should have friendships with non-Indigenous Chileans and how much they thought members of their Indigenous group should spend their time with non-Indigenous Chileans (1 = strongly disagree to 5 = strongly agree; $\alpha_{T1}$ = .69; $\alpha_{T2}$ = .72, $r_{\text{test-retest}}$ = .09, $p < .001$).

*Social support* was measured using nine items from a scale by Zimet et al. (1988) (see also Arechabala Mantuliz & Miranda Castillo, 2002): 'There is a special person that is nearby when I'm in need', 'there is a special person whom I can share my joy and pain with', 'my family really tries to help', 'I receive the help and emotional support I need from my family', 'I have a special person who provides a source of comfort for me', 'my friends really try to help', 'I can rely on my friends when things go wrong', 'I can talk with my family about my problems' and 'I have friends who I can share my joy and pain with' (1 = strongly disagree to 5 = strongly agree; $\alpha_{T1}$ = .93; $\alpha_{T2}$ = .91, $r_{\text{test-retest}}$ = .17, $p < .001$).

*Pigmentation* was measured using a scale by Telles (2014), which instructed the interviewer to compare the interviewee's skin tone to a visual scale ranging from 1 = very fair to 11 = very dark, $r_{\text{test-retest}}$ = .41, $p < .001$.

*Perceived discrimination* was measured with six items adapted from the scale by Williams et al. (1997); see also Camp-Arias et al. (2015). Items were preceded by the question 'In your daily life, how often have you been affected by any of the following situations?' with items being 'been treated with less courtesy than others', 'received a worse service than other people in restaurants and shops', 'been treated with less respect than others', 'people thinking that they are superior to you', 'have felt rejected because of your physical appearance' and 'have felt that you've been mistreated due to your last name' (1 = never to 5 = always; $\alpha_{T1}$ = .93; $\alpha_{T2}$ = .94, $r_{\text{test-retest}}$ = .30, $p < .001$).[2]

*Depressive symptoms* were measured with nine items of the Patient Health Questionnaire (PHQ-9) scale by Baader et al. (2012), preceded by the question 'How often, during the last couple of weeks, have you felt any of the following issues?' Items were: 'Low interest or joy carrying out activities', 'decay, heaviness or despair', 'difficulty in falling asleep, sleeping through the night or excessive sleepiness', 'fatigue or the feeling of lack of energy', 'diminished or augmented appetite', 'difficulty in concentrating on tasks such as reading the newspaper or

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[2] Items were collected in a context of participants already having talked, at great length and in detail, about their Indigenous identity and issues related to Indigenous identity. It seems highly likely that the salience of Indigenous identity was very high when responding, and that participants thought of this group identity when responding to the items. Indeed, the fact that the measure of discrimination correlates with skin tone judgements in the expected way also suggests that ethnicity was at the forefront of the participants' minds when they were responding to the questions. Moreover, the items that do explicitly refer to group identity when reporting discrimination correlate well with the items that do not (high internal reliability).

**TABLE 1** Bivariate correlations and means for all variables.

| | Preference for culture maintenance | Preference for contact | Perceived social support | Skin pigmentation | Perceived discrimination | Depressive symptoms |
|---|---|---|---|---|---|---|
| Preference for culture maintenance | – | .45*** | .04 | .04 | .01 | −.01 |
| Preference for contact | .36*** | – | .05* | −.01 | −.08** | −.02 |
| Perceived social support | .14*** | .10*** | – | −.04 | −.12*** | −.11*** |
| Skin pigmentation | .01 | −.07*** | −.02 | – | .14*** | −.01 |
| Perceived discrimination | −.03 | −.08*** | −.08*** | .21*** | – | .27*** |
| Depressive symptoms | −.08*** | −.04 | −.08 *** | .09*** | .28*** | – |
| Time 1 means | 4.19 | 3.96 | 3.91 | 4.16 | 1.72 | 1.54 |
| Time 2 SDs | 0.61 | 0.57 | 0.76 | 1.59 | 0.92 | 0.59 |
| Time 2 means | 4.23 | 4.00 | 3.99 | 4.17 | 1.57 | 1.50 |
| Time 2 SDs | 0.64 | 0.58 | 0.77 | 1.59 | 0.77 | 0.60 |

*Note*:
*$p < .05$;
**$p < .01$;
***$p < .001$. Time 1 results displayed below the diagonal, Time 2 results displayed above the diagonal.



**FIGURE 2** Path model predicting depressive symptoms from acculturation preferences and skin tone. Displayed are standardized path coefficients (cross-sectional, Time 1 data). * $p < .05$; *** $p < .001$.

watching television', 'having a bad opinion of yourself, feeling like a failure or letting down your family', 'your movement and body language are impaired and this is noticeable to other people' and 'I've had thoughts related to wanting to be dead or to self-harm' (1 = never to 4 = almost every day; $\alpha_{T1} = .91$; $\alpha_{T2} = .91$, $r_{test\text{-}retest} = .29, p < .001$).[3]

## 3 | RESULTS

Bivariate correlations between all variables and means are displayed in Table 1. As a first step, a path model was built (see Figure 2) with Time

[3] It should be noted that we refer to this scale as measuring 'depressive symptoms' and not 'depression' because, even though those with clinical manifestations of depression would be expected to score highly on the scale, the scale is not a diagnostic instrument and therefore high scores on the scale cannot be interpreted as objectively indicating clinical depression. Note further that, following American Psychological Association guidelines, we capitalize designations for Indigenous people (American Psychological Association, 2021).

1 measures only to test the hypothesized mediation processes cross-sectionally. Preference for culture maintenance and contact were used as predictors of perceived social support and the interviewer-rated pigmentation of the respondent was used as a predictor of perceived discrimination. Both social support and perceived discrimination (mediators) were specified as predictors of depressive symptoms. All exogenous variables were allowed to covary. Direct paths were not included because the hypotheses were about mediation but inclusion of the direct paths would necessarily increase the model fit as it would move the model closer to a fully saturated state. Fit indices cut off levels were defined, in line with common practice, comparative fit index (CFI) > .9 and root mean square error approximation (RMSEA) < .08. Analyses were conducted with AMOS. Presented are path analyses with observed (not latent) variables.

The model fit the data well as evinced by the fit indices, $\chi^2(7) = 26.21$, $p < .001$; CFI = .97; RMSEA = .04. The standardized Root Mean Square Residual (RMR) was .03. Standardized path

coefficients are displayed in Figure 2. As presented in the figure, all relations were statistically significant and in line with our hypotheses. Unstandardized paths were .14 from culture maintenance to social support (standard error (SE) .03), .08 from contact to social support (SE .03), .12 from pigmentation to discrimination (SE .01), −.04 from social support to depressive symptoms (SE .02) and .18 from discrimination to depressive symptoms (SE .01).

Consistent with the prediction, the indirect effect of culture maintenance via social support on depressive symptoms was significant (standardized indirect effect = −.006, $p$ = .007, 95% confidence interval (CI) [−.02, −.002]). Moreover, the indirect effect of contact via social support was also significant (standardized indirect effect = −.003, $p$ = .02, 95% CI [−.008, −.001]). Supporting the second prediction, the indirect effect of pigmentation via discrimination was also significant (standardized indirect effect = .06, $p$ < .001, 95% CI [.04, .08]). Hence, as expected, both a preference for culture maintenance and a preference for contact ameliorated depressive symptoms via greater perceived social support cross-sectionally. In contrast, pigmentation was positively associated with depressive symptoms, via experiences of discrimination. It should be noted that even though all three indirect effects reached significance, the size of the effects particularly for the acculturation variables was rather modest and the deleterious path via perceived discrimination seemed comparatively stronger.

Next, we tested whether the same model could be used to predict depressive symptoms longitudinally over time. Because of the longitudinal nature of our design, we were able to test a model in which we use the predictors at time 1 (preferences for cultural maintenance, preference for contact and pigmentation) and the mediators at time 2 (perceived social support and perceived discrimination) to predict depressive symptoms at T2, controlling for this dependent variable at Time 1 (see e.g. Zagefka et al., 2014). Because bootstrapping (used to test the indirect effects, number of bootstrap samples used in the analyses = 2K) is not possible with missing data, only participants for whom data was present for all variables in the model were included, leading to a slight reduction in the overall sample size to $N$ = 1472.

Once again, as evinced by the fit indices, the model fits the data well, $\chi^2(9)$ = 54.30, $p$ < .001; CFI = .92; RMSEA = .06. The standardized RMR was .04. The standardized path coefficients for the longitudinal model are displayed in Figure 3. Unstandardized paths were .07 from culture maintenance to social support (SE = .04), .06 from contact to social support (SE = .04), .04 from pigmentation to discrimination (SE = .01), −.05 from social support to depressive symptoms (SE = .02), .18 from discrimination to depressive symptoms (SE = .02) and .25 for the autoregression (depression T1-T2, SE = .02).

Mirroring the previous analyses using time 1 data only, the longitudinal indirect effect of culture maintenance via social support was significant (standardized indirect effect = −.003, $p$ = .03, 95% CI [−.009, −.001]). However, this time the indirect effect of contact via social support was not statistically significant (standardized indirect effect = −.003, $p$ = .07, 95% CI [−.008, .000]). On the other hand, and consistent with our prediction, the indirect effect of pigmen-

tation via discrimination was again significant (standardized indirect effect = .02, $p$ = .004, 95% CI [.008, .03]). Hence, a preference for culture maintenance (but not a preference for contact) ameliorated depressive symptoms over time, via greater perceived social support. In contrast, as expected pigmentation was positively associated with depressive symptoms, via experiences of discrimination over time.[4] As in the cross-sectional analyses, again then there was evidence that the indirect deleterious path via perceived discrimination was more robust than the protective path via perceived social support.

The model was tested both cross-sectionally and longitudinally because one would theoretically expect the predicted associations to hold across both analytical approaches and testing both is therefore a way of testing the consistency of the patterns. However, because effects are harder to detect over time, it is common that patterns that appear strong in cross-sectional analyses are notably weaker in longitudinal associations (Jones, 2011).

A third wave of data was collected almost 3 years after Time 2, in 2021. Of those participants who had previously provided data in 2016 and 2018, $N$ = 320 also provided data in 2021. An additional analysis was conducted on this subsample to test whether the longitudinal effects reported based on two time points would hold over a time interval of 5 years. This model was identical to that reported in Figure 2 but this time depression at Time 2 (2018) was replaced with depression at Time 3 (2021). The model fit was not ideal, $\chi^2(9)$ = 27.46, $p$ < .001; CFI = .78; RMSEA = .08. However, when allowing for additional direct paths from T1 depression to the mediators (after all, it makes sense that those who are depressed would perceive the world in less positive terms and would perceive less social support and more discrimination), the fit was markedly improved: $\chi^2(7)$ = 12.20, $p$ < .001; CFI = .93; RMSEA = .05. This time, all three indirect effects on depression (from culture maintenance to depression, from contact to depression and from pigmentation to depression) were non-significant, including the two indirect effects that had been significant over the 2-year lag from 2016 to 2018. This is not surprising, given the much smaller sample size, which will impact on significance of effects with equal magnitude

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[4] The analyses presented here were not pre-registered, and must be interpreted as exploratory. For transparency, it should be noted that some other analytical approaches were used that did not yield results as interesting or consistent as those presented here. These are as follows: First, the results presented consider culture maintenance desire and contact desire, whereas previous acculturation work has often replaced contact with culture adoption (e.g., López-Rodríguez et al., 2014). The present study did include a measure of culture adoption, but the results for contact are presented because they were more consistent in this dataset. Second, a more stringent test than the one presented here might be to include not only the DV at Time 1, but also to include the Time 1 measures of the proposed mediators. When applying this approach to the present analyses, this significantly weakened the observed associations because auto-regressive effects were sizeable, sucking a lot of variance out of the target analyses (i.e., there was much stability of constructs over time). We would argue that an inclusion of Time 1 mediators would present a very stringent test (Binder et al, 2009), and one that is possibly too strict given the significant time lag of 18 months that was used in our design. Third, the hypotheses were about indirect effects, and direct effects were not included in the models. Of necessity, including direct effects moves the models closer to a fully saturated state and improves the model fit, but with the goal of parsimony it is not desirable to include paths for which no firm hypotheses are held. For completeness sake, it should be reported that when including the direct paths from culture maintenance, contact, and pigmentation to depression in the cross-sectional model, out of the direct paths only the path from culture maintenance to depressive symptoms reached significance (−.06, $p$ = .007) and the pattern for the paths reported above remained the same. When including the direct paths in the longitudinal analyses, none of the three direct paths reached significance.
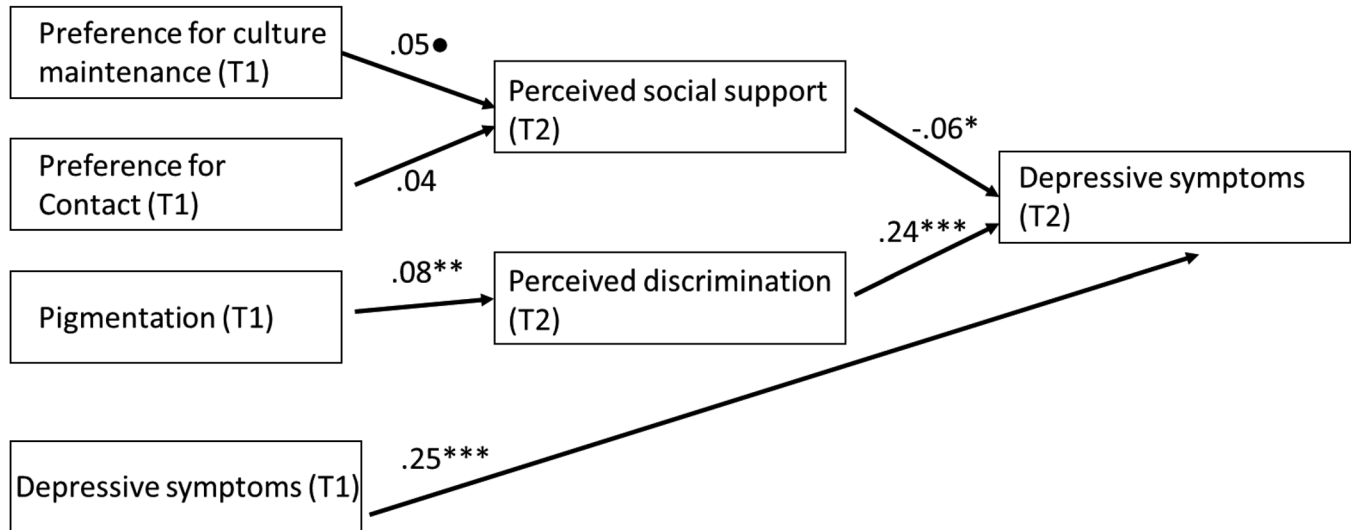
**FIGURE 3**  Path model predicting depressive symptoms from acculturation preferences and skin tone. Displayed are standardized path coefficients (longitudinal). ● $p < .07$; * $p < .05$; ** $p < .01$; *** $p < .001$.

and given that it will—by necessity—be harder to detect effects over a longer period of time.

## 4  |  DISCUSSION

Taken together, the results broadly confirmed the predictions and there was evidence of both a deleterious and protective pathway through which intergroup variables affect mental health in Indigenous people in Chile. In the following, the results regarding the protective and adverse pathways will be discussed separately in more detail.

### 4.1  |  Protective pathway

In line with previous findings from the acculturation literature (e.g., Sam & Berry, 2006), we found evidence that positive orientations towards both the Indigenous and the non-Indigenous groups were associated with better well-being, in the form of reduced depressive symptoms and that these effects were due to the greater social support afforded by positively engaging with both the minority and the majority cultural group. However, evidence for these processes diminished in magnitude in the longitudinal analyses over a 2-year lag and they were no longer detectible over a 5-year lag. Moreover, the indirect effect of preference for contact on depressive symptoms did not reach significance in the 2-wave longitudinal analyses. Hence, although cross-sectional results were in line with the predictions, the longitudinal results yielded more ambiguous results. The effects were also relatively modest in size, especially compared to the much more powerful deleterious effects that will be discussed next. Overall, these results suggest that encouraging certain types of acculturation preferences is not the best strategy for facilitating better mental health.

### 4.2  |  Adverse pathway

Clear evidence emerged, both cross-sectionally and longitudinally, that darker skin tone was associated with more experiences of discrimination, which in turn was associated with more depressive symptoms. These effects were detectible over a 2-year lag, but no longer over a 5-year lag. Having said this, these results do suggest that participants who looked less White and European are treated differently in day-to-day encounters in Chile, suggesting deep phenotype-based prejudices in Chilean society (Meeus et al., 2017). Hence, it seems that depressive symptomatology in Indigenous people in Chile should not be understood exclusively in terms of individual circumstances. On the contrary, group-based disadvantage and intergroup power relations play a significant role in individual well-being outcomes. Mistreatment of people due to their group membership and appearance takes its toll on their mental health. This has profound implications for how we should think about the treatment of mental health problems in disadvantaged minorities.

### 4.3  |  Applied implication of the findings

If the goal is to reduce depression and promote well-being, do these findings suggest, then, that acculturation preferences and the reduction of phenotype-related experience of discrimination can be useful leverage points? When it comes to effects of acculturation preferences on depressive symptoms, the effects found here were not strong, suggesting that acculturation is maybe not the best lever to improve mental health via social support and that interventions might potentially be better advised to focus on other variables not studied here. However, even though culture maintenance might not have the strongest effects on Indigenous mental health, there are other sound arguments why measures that protect Indigenous cultures are

desirable. Irreversible identity loss is threatening many first nations (González et al., 2022) and putting measures in place to prevent this is arguably a goal in its own right. As gleaned from the sample characteristics information provided above, in Chile identity loss seems to be already at an advanced stage for many communities, with the ability to speak native languages rapidly disappearing. Urgent measures to stem this development seem called for.

What about the other acculturation dimension, preference for contact? Effects for this variable were weak and non-existent longitudinally. Hence, on the basis of this data there is no good evidence to suggest that cross-group contact desire has any beneficial effect for reducing Indigenous people's depressive symptoms via social support. It should be noted, however, that our measure of social support refers to specific persons or family members and thus a person's social network. In contrast, the contact acculturation measure refers to unspecified ingroup members and is more abstract in nature. This could have played a role in the results.

Three further points are worth pondering in this context. First, it is possible that a measure of actual contact, rather than a measure of contact desire as used here, might have yielded more informative patterns. Second, the present results do not replicate previous arguments in the acculturation literature that an overall preference for integration is best for mental well-being outcomes. The present results support the view that the dictum of 'integration is always best' might need qualifying (see also Kunst, 2021; Rudmin et al., 2017). Third, cross-group contact of Indigenous with non-Indigenous communities can be theorized in relation to mental well-being outcomes as we have done here, but contact has also been connected with other outcomes (González et al., 2017). High levels of cross-group contact might in itself contribute to the cultural identity loss and its notable detrimental consequences described elsewhere and it might serve to mollify justified concerns of discriminated groups about their unfair treatment and make desirable collective action less likely (Dixon et al., 2010). At the same time, a certain degree of cross-group contact can be essential for a reasonable level of societal cohesion and reduction in intergroup tensions (Allport, 1954). The encouragement of cross-group contact and, relatedly, positive attitudes towards cross-group contact is clearly a complex issue.

If acculturation preferences did not emerge as particularly strong predictors of mental health among Indigenous Chileans, this begs the question what other variables one might focus on that might have stronger effects. Interestingly, even the direct effects of perceived social support on mental health outcomes were not particularly strong here (neither cross-sectionally nor longitudinally), despite the fact that this is a well-documented protective factor in other contexts. One might speculate that 'softer' factors such as feeling loved, connected and supported might only affect well-being once material necessities are in place and once more fundamental needs such as good nutrition, safe shelter, safety from violence and so on have been met (Maslow, 1943). For people struggling with deprivation-related social problems and a profound lack of opportunity for economic betterment, it might just be that those material issues need to be addressed before 'softer' factors such as social support have a chance to exert an effect. Express-ing this idea in statistical terms, this would imply that the proposed processes might be moderated by a third factor, which is abject poverty and/or extended deprivation and lack of opportunity. The idea would be that social support positively affects mental health but only once a certain level of material comfort has been reached. More work would be needed to test this idea.

Although evidence for the protective pathway to mental health was not strong, evidence for the detrimental pathway was. The findings with regard to skin-tone related discrimination have weighty applied implications. There was evidence that being treated unfairly on the basis of appearance reduces mental health. These results held both cross-sectionally and longitudinally over 2 years, suggesting that this effect is evident over time. Those interested in addressing mental health concerns in Indigenous communities would therefore be well advised not to focus overly on individualistic approaches to problem solving. Our results coincide with a social determinants approach (Alegría et al., 2018): poorer mental health outcomes among ethnic and racial minorities stem, to a significant degree, from social inequalities. Unless systemic injustices are addressed, peoples who experience discrimination will suffer. Initiatives that teach awareness of phenotype-based discrimination and that send a clear message that differential appearance-based treatment is unacceptable and that offer behavioural change impulses in this regard, for example delivered in educational settings, would be highly beneficial in addressing these problems.

### 4.4 | Strengths and limitations

There are many notable strengths of the present research, not least the sizeable sample, the longitudinal nature of the data where most work on acculturation has been cross-sectional (Kunst, 2021, for exceptions, see Hillekens et al., 2019; Zagefka et al., 2012), the fact that the data is representative of various regions of Chile and the fact that we present data from a traditionally understudied, non-WEIRD population (Heinrich et al., 2010) and the particular focus on Indigenous people (González et al., 2022). Having said this, some limitations must be acknowledged.

The first limitation relates to the representativeness of the data. Although efforts were made to generate a nationally representative sample in terms of geographical spread, ethnic and neighbourhood composition, the sample was skewed towards females and therefore cannot be considered truly representative.

The purpose of the present investigation was to identify factors that are associated with depressive symptomatology. Although longitudinal data are clearly better at tapping into this question than cross-sectional data, experimentation is the gold standard. Moreover, multi-wave longitudinal analyses clearly have the edge over two- or three-wave designs and would allow not only measurement of IVs, mediators and DVs at different time points but would also allow for modelling more complex processes. Having said this, usually the stability of effects is inversely related to the magnitude of the time lag, so a challenge with modelling associations across long periods of time is

that effects, even if present over the comparatively short run, might not be detectable over the long run. The conclusions must be interpreted with this in mind.

Another limitation is that the focus of this investigation is, by necessity, limited. The work is theoretically rooted mainly in acculturation research and in the work on pigmentocracies but, as noted in the introduction, there are other bodies of literature that are also relevant, in particular the intergroup contact literature and work on social identity and the social cure. In those literatures, other variables are frequently studied that might also potentially be linked to depressive symptoms (e.g., contact quality and quantity and ingroup identification and ingroup ties). Moreover, the antecedents studied here have not only been linked to depressive symptoms but also to other outcome variables (e.g., Zagefka et al., 2009). It is not possible to study all potential predictors of an outcome in a single study and we do not claim that the associations highlighted here are the only relevant ones.

## 4.5 | New research avenues

The present findings address, for the first time, the effects of acculturation and skin-tone based discrimination on mental health among Indigenous people in Chile. Many open questions remain. If previous acculturation studies have found that an overall preference for integration is associated with the best mental health outcomes, why was this not replicated here? One potential answer might be that the exact effects of integration on outcomes depend on whether the overall societal climate is permissive towards or encouraging of minority members pursuing those strategies (Phalet & Baysu, 2020). It is possible that Indigenous people's preferences for integration do not have positive outcomes in Chile because of a lack of support for integration in the wider society (Zagefka et al., 2011). Future research would be needed to test whether or not this is the case.

Moreover, while the current study charts the effects of skin-tone as a marker of otherness and perceived inferiority, clearly other markers exist, such as names, facial features, self-presentation, and facial expression (Bjornsdottir & Rule, 2021). Further research could juxtaposition the effects of such different markers as potential bases for discrimination in the Chilean context, to test which have the strongest practical effects, causing the most problems for fair and equal treatment of all members of Chilean society.

Last but not least, the present data clearly show some problematic aspects of Chilean society in revealing high levels of perceived discrimination among Indigenous Chileans that systematically vary in relation to pigmentation levels. Chile is not the only society globally struggling with racism, nor are Indigenous peoples the only minority groups at the receiving end of unfairness. Future research could test the effects established here for other countries, or indeed other minority groups.

Abstracting from the specific variables under investigation in this study, the overall take-home message of this paper is that depressive symptomatology cannot be sufficiently explained with reference to individual factors only. Socio-structural variables, power relations, systematic discrimination and societal unfairness impact on the mental health of people who belong to different social groups in society. Any attempt to improve minority mental health must consider the impact of intergroup relations and social structures, else it risks missing a significant cluster of variables that explains poor well-being among Indigenous and other minority members.

First, the presented results consider culture maintenance desire and contact desire, whereas previous acculturation work has often replaced contact with culture adoption (e.g., López-Rodríguez et al., 2014). The present study did include a measure of culture adoption but the results for contact are presented because they were more consistent in this dataset.

Second, a more stringent test than the one presented here might include not only the DV at Time 1, but also the Time 1 measures of the proposed mediators. When applying this approach to the present analyses, this significantly weakened the observed associations because auto-regressive effects were sizeable, sucking a lot of variance out of the target analyses (i.e., there was much stability of constructs over time). We would argue that an inclusion of Time 1 mediators would present a very stringent test (Binder et al., 2009) and one that is possibly too strict given the significant time lag of 18 months that was used in our design.

Third, the hypotheses were about indirect effects and direct effects were not included in the models. Of necessity, including direct effects moves the models closer to a fully saturated state and improves the model fit, but with the goal of parsimony it is not desirable to include paths for which no firm hypotheses are held. For completeness sake, it should be reported that when including the direct paths from culture maintenance, contact and pigmentation to depression in the cross-sectional model, out of the direct paths only the path from culture maintenance to depressive symptoms reached significance ($-.06$, $p = .007$) and the pattern for the paths reported above remained the same. When including the direct paths in the longitudinal analyses, none of the three direct paths reached significance.

## CONFLICT OF INTEREST STATEMENT

The authors do not have any conflict of interest to declare.

## ETHICS STATEMENT

The study received ethics approval and followed APA ethics guidelines at outlined in the manuscript.

## DATA AVAILABILITY STATEMENT

The data is available here https://osf.io/tmxfw/?view_only=83a3943babd8473497298145f4f27ab9. Additional information on the data, measures and three-wave analyses are available in the

supplementary information here: https://osf.io/xmpcg/?view_only=a148e961227a4459a64488c3ef261d9e. The dataset is available from the ELRI management team upon written request: https://www.ciir.cl/ciir/wp-content/uploads/2017/05/Protocolo-Uso-de-Datos-ELRI-Oficial.pdf.

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