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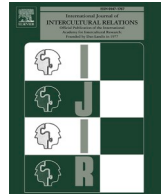
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Acculturation, adaptation, and loneliness among Cape Verdean immigrants

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A B S T R A C T

Loneliness is a major public health concern, yet little is known in migrants. Therefore, understanding the risk factors for loneliness is relevant. The current study explores acculturation and sociocultural adaptation factors predicting loneliness regarding immigration. While little previous research has examined sociocultural adaptation as a mediator intervening between other predictors and psychological adaptation, this study tested the mediating role of sociocultural adaptation between perceived discrimination and loneliness. Cross-sectional data on 418 Cape Verdean immigrants (47.4% women) with an average age of 35 years were analyzed. The average length of living in Portugal was 18 years. Participants completed scales to evaluate acculturation strategies, ethnic identity, perceived discrimination, sociocultural adaptation, and a short form of the Revised UCLA Loneliness Scale (ULS-6). As expected, the results showed that greater levels of integration, greater ethnic identity, and lower perceived discrimination were related to lower levels of loneliness. Furthermore, our findings suggest that sociocultural adaptation indeed mediates the relationship between perceived discrimination and loneliness. Despite low levels of perceived discrimination experienced by Cape Verdean immigrants in Portugal, this antecedent plays an essential role in their experience of loneliness. The findings are discussed in terms of the conceptional context.

Introduction

Migrants may experience challenges in terms of acculturation strategies, ethnic identity, perceived discrimination, and sociocultural adaptation (Neto, 1992; Safdar, Struthers, & van Oudenhoven, 2009; Sam & Berry, 2016), which may induce loneliness. Yet, research on whether and how the experience of migrants is related to loneliness is sparse (Madsen et al., 2016). This paper addresses this gap by exploring acculturation and sociocultural adaptation as risk factors of loneliness among Cape Verdean immigrants.

The research about acculturation and its outcome, adaptation, has produced extensive cross-cultural research (Hofhuis et al., 2019; Nguyen & Benet-Martinez, 2013; Sam & Berry, 2016). Researchers have developed several models of acculturation that examine key factors in the psychosocial adaptation of people to the recipient society (Arends-Toth, & van de Vijver, 2006; Safdar et al., 2009; Safdar

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& van de Vijver, 2019). Acculturation concerns the process of cultural and psychological changes that happen following intercultural contact (Redfield et al., 1936; Berry, 1997). This process of change concerns both the dominant and non-dominant individuals and groups that are in contact and various changes may occur during acculturation. Living and working abroad may involve ways to live interculturally in the settlement country, the sense of belonging to an ethnocultural group, the experience of discrimination, and obtaining culturally appropriate skills in the new context. These modifications may affect the loneliness experienced by immigrants.

Concerning the adaptation of newcomers, acculturation researchers make a distinction between sociocultural and psychological adaptations (Ward et al., 2001). Sociocultural adaptation refers to obtaining culturally appropriate skills in order to operate effectively in a particular cultural context and is interpreted within the social learning paradigm (Ward & Rana-Deuba, 1999). On the other hand, psychological adaptation concerns the feelings of well-being in the new cultural context and is interpreted within a stress and coping framework. Psychological adaptation is assessed through measuring well-being or psychological distress. Hence, loneliness can be utilized as an indicator of psychological adaptation (Neto et al., 2017; Neto & Pinto, 2021).

Loneliness

Loneliness is a universal phenomenon, as evidenced by investigation within a variety of cultural contexts (e.g., Kapikiran, 2013; Luhmann, & Hawkley, 2016; Mund, Freuding, Mobius, Horn & Neyer, 2020; Quintana-Orts et al., 2021; Rokach & Neto, 2005; Serrano-Sanchéz, Zimmermann, & Jonkman, 2021). Anyone can feel lonely in any cultural context. Loneliness is prevalent. About 15–30% of persons experience prolonged feelings of loneliness (Hawkley & Cacioppo, 2010).

Most of the definitions of loneliness outline perceived deficiencies in one's social relationships. For instance, Ascher and Paquette (2003, p. 75) defined loneliness as "the cognitive awareness of a deficiency in one's social and personal relationships, and ensuring affective reactions of sadness, emptiness, or longing". Understanding the determinants of loneliness is important for several motives, among which is its relationship with physical and mental health problems (Quintana-Orts et al., 2021). Research shows that loneliness yields not only an enhanced risk of morbidity but also of mortality later in life (Hawkley & Cacioppo, 2010). It has been demonstrated that loneliness has deleterious consequences on well-being (Holt-Lunstad, Smith, Baker, Harris & Stephenson, 2015; Masi, Chen, Hawkley & Cacioppo, 2011).

Considering the negative consequences of loneliness, it is relevant to know what contributes to it. Stavrova and colleagues (2021) argued that "while research on the consequences of loneliness has been prolific, the antecedents of loneliness have received much less empirical attention" (p. 1). Rokach and Neto (2005) pointed out five potential reasons for loneliness: personal inadequacies, developmental deficits, unfulfilling intimate relationships, relocation/significant separation, and social marginality. Many of these insights are likely to concern people living and working abroad. Indeed, migration provides an opportunity to research antecedents of loneliness. For Ponizovski and Ritsner (2004, p. 408) "newly immigrated persons find themselves in a drastically different network of social relationships and experience multiple stressors, including losses". Nevertheless, in contrast to what might be expected, studies on migrant loneliness are scant (Neto, 2016). For instance, in the Cambridge Handbook of Acculturation Psychology (Sam & Berry, 2016) there is no reference to this construct. The current study aims to fill this gap by exploring potential antecedents of loneliness among Cape Verdean immigrants.

Cape Verdean immigrants in Portugal

Intercultural relations have been taking place for centuries in Portugal from its foundation in the twelfth century until the present day. Portugal has a long history of emigration (Godinho, 1978), and it has become a country of mixed migratory patterns (Rocha--Trindade, 2014). In 2015, Portuguese migrants across the world numbered more than 2.3 million (Observatório da Emigração, 2015), which corresponds to about 20 per cent of the population living in Portugal. Portuguese nationals evidence positive and protective attitudes towards immigrant people (Neto & Wilks, 2017). The overall ranking of the "Migrant Integration Policy Index" (MIPEX, 2020) places Sweden in the first place, Finland in the second place, and Portugal in the third place among 52 countries.

Cape Verdean immigrants stated to arrive to Portugal in the 1960 s (França, 1992). In those years this immigration was marked as "Portugal had not experienced a migration influx for a long time, with the exception of the movement of transitory Jewish refugees escaping Nazism during the Second War World" (Batalha, 2008, p. 68).

Several factors motivate Cape Verdeans to come to Portugal: a shared language, family and friends already living in this country, international agreements, and the possibility of better work opportunities, among others (Batalha, 2004; França, 1992). Cape Verdeans have received little attention from acculturation researchers (Fikes, 2009; Neto, 2020; Wilks & Neto, 2016).

In 2018, according to the Foreign and Borders Service (Serviço de Estangeitros e Fronteiras, 2019), 480,300 foreign people lived in Portugal, constituting 4.7% of the entire population. Cape Verdeans represented the second largest immigrant group living in Portugal, with 34,663 registered citizens. They constituted 7.2% of the foreign people residing in Portugal. However, these figures only consider Cape Verdeans nationals, "while the number of those who consider themselves Cape Verdeans is much higher" (Batalha, 2008, p. 69).

Currently, three categories of Cape Verdean people are living in Portugal: (1) an elite minority, born and instructed over the last times of colonial rule. "These educated Cape Verdeans assimilated easily within mainstream Portuguese society" (Batalha, 2008, p. 63). (2) International students attending Portuguese institutions of higher education (Wilks & Neto, 2016). (3) Immigrant workers beginning to immigrate in the 1960 s and their descendants (Neto, 2020). This is the major category of the "Cape Verdean community", and the present research focused on it.

The present study

Loneliness, being a complex negative phenomenon, can be related to interactions of personal and situational variables (Weiss, 1973). Hence, in the present study a set of acculturation and adaptation factors will be taken into account. In particular, the goal of this study is three-fold.

The first objective concerns the analyses of the relationships between acculturation strategies and loneliness. A key concept for intercultural relations is acculturation strategies, defined as "the various ways that groups and individuals seek to engage the acculturation process" (Berry, 2013, p. 58). In accordance with Berry's (1997) acculturation model, members of non-dominant groups meet two main challenges in the society of settlement: the wish to maintain one's cultural heritage ("cultural maintenance") and the wish to participate in the settlement country ("host country participation"). Four acculturation strategies result from the conjunction of these two challenges – assimilation, integration, separation, and marginalization.

Assimilation concerns an immigrant's little desire to maintain his/her own cultural identity and to have daily interactions in the larger society. Integration concerns an immigrant's wish to maintain his/her own cultural identity and to have daily interactions in the larger society. Separation refer to a person's wish to maintain his/her own cultural identity and a low interest in interacting with other cultures. Finally, marginalization concerns little desire to maintain his/her own cultural identity and to establish interactions in the larger society. The preference for integration appears to be linked to many benefits such as greater well-being (Hofhuis et al., 2019; Neto, 1995), better mental and physical health (Virta et al., 2004), more pro-social behaviors (Schwartz et al., 2007), as well as psychological and sociocultural adaptation (Nguyen & Benet-Martinez, 2013).

Integration is more fruitful for psychological adjustment than the other three acculturation strategies (e.g., Abu-Raya & Sam, 2016; Berry & Hou, 2016; Inguglia et al., 2020; Neto, 2002; Sam & Berry, 2016). For instance, Nguyen and Bennet-Martinez's (2013) meta-analysis showed that integration was significantly associated with psychological adaptation. In the present research we analyze whether integration is more beneficial for loneliness than the other acculturation strategies. Therefore, the present study intends to extend the integration hypothesis to another indicator of psychological adaptation, that is, feelings of loneliness.

The second objective is to examine the relationships between ethnic identity and loneliness. Ethnic identity is considered important in acculturation research (Kranz & Goedderz, 2020; Phinney & Ong, 2007). It concerns the sense of belonging to an immigrant eth-nocultural group and gives emotional stability and personal security to immigrants (Phinney, Horenczyk, Liebkind & Vedder, 2001). Research found positive relationships between ethnic identity and acculturation outcomes. For instance, ethnic identity was positively related to psychological adaptation in an international study from 13 countries, including Portugal (Berry, Phinney, Sam & Vedder, 2006). A stronger ethnic identity was associated with a greater psychosocial adjustment (Poyrazli, 2003). More specifically, ethnic identity may have a relevant effect on loneliness. Previous investigation evidenced negative relationships between ethnic identity and loneliness (Neto & Pinto, 2021; Neto & Wilks 2017). Most of the investigation about ethnic identity has been concentrated on studying secondary and university students (Smith & Silva, 2011). In contrast, present research concerns adults.

A gap in acculturation research is that studies have mainly analyzed the direct effects of several predictors on adjustment and neglected the indirect effects underlying the relationships between the measures (Berry, 2017; Zhang & Goodson, 2011). The third objective of the current research is to shed light on the relationships among perceived discrimination and loneliness by testing so-ciocultural adaptation as a potential mediator.

Models in the acculturation field differentiate three aspects (e. g., Ward et al., 2001; Berry et al., 2006; Te Lindert, Korzilius, Van de Vijver, Kroon & Arends-Toth, 2008): antecedent conditions, intervening conditions, and outcome variables. This study is mainly interested in the issue of examining to what extent sociocultural adaptation appears as intervening condition linking perceived discrimination as antecedent condition to loneliness as acculturation outcome. Perceived discrimination can be considered as the outcome of acculturation (e.g., Phinney et al., 1998). It can also be viewed as an intervening variable (e.g, Berry, 1997). However, according to most past research (e. g., Safdar et al., 2009; Te Lindert et al., 2008), in the present study it is considered as an antecedent variable.

The level of discrimination perceived by immigrants is a core component of their acculturation. Perceived discrimination reveals the attitude of the new cultural context toward immigrants and concerns the perception of being unfairly regarded because of prejudice and ethnocentrism. It constitutes a potentially serious acculturative stressor, adversely affecting well-being and mental health (Carter, Johnson, Kirkinis, Roberson, Muchow & Galgay, 2019; Paradies et al., 2015; Smith & Khawaja, 2011). According to the Multidi-mensional Individual Difference Acculturation (MIDA) model specific hassles (i.e., perception of discrimination) are related to psy-chophysical distress (Berger, Safdar, Spieß, Bekk & Antoni Font, 2019).

Few studies have analyzed potential mediators of perceived discrimination and well-being (Chen & Yang, 2014; Jang et al., 2008). Previous research supports a significant association between perceived discrimination and maladjustment. For instance, a meta-analysis examining over one hundred studies of discrimination toward Latina/os in the U.S.A. reported that acculturative stress was mainly strongly related to discrimination (Lee & Ahn, 2011). Berry and Hou (2016) showed that discrimination negatively impacted satisfaction with life and the mental health of immigrants. The consequences of perceived discrimination among immigrants are relevant to analyze as it is related to low sociocultural adaptation; and sociocultural adaptation has appeared related to a number of negative psychological outcomes in immigrants (Berry et al., 2006). One of the important predictors of loneliness is perceived discrimination (Neto, 2016; Neto & Barros, 2000). As a result of experiencing discriminatory events, immigrants may be at risk for loneliness in the acculturation process in the country of settlement.

The current study will examine sociocultural adaptation as a possible mediator of the level of perceived discrimination and loneliness. Little research has examined sociocultural adaptation as a mediator intervening between other predictors and psychological adaptation (Klemens & Bikos, 2009; Ng et al., 2013; Ouarasse & van de Vijver, 2005). In this research we test the mediating role of

sociocultural adaptation through path analysis. Sociocultural adaptation has appeared related to psychological adjustment (Pernice, Trlin, Henderson & North, 2000; Ward and Kennedy, 1999). There is research supporting the idea that sociocultural adaptation represents an antecedent of psychological adjustment (Berry et al., 2006). Research on the antecedents of loneliness found that poor social skills were an antecedent of loneliness. For example, young people who reported poorer social skills tended to report greater loneliness (DiTommaso, Brannen-McNulty, Ross & Burgess, 2003). Along this line it can be expected that sociocultural adaptation would be negatively related to loneliness. Furthermore, a negative association between the level of discrimination perceived by immigrants and their sociocultural adaptation can be expected.

To sum up, our hypotheses derived from the aforementioned research are:

Hypothesis 1.   Higher levels of integration will be related to lower levels of loneliness.

Hypothesis 2.   Lower levels of ethnic identity will be related to greater loneliness,

Hypothesis 3.   Greater perceived discrimination will be related to greater loneliness.

Hypothesis 4.   Greater sociocultural adaptation will be related to lower levels of loneliness.

Hypothesis 5.   Greater perceived discrimination will present an indirect positive relation with loneliness via the negative effect of sociocultural adaptation (mediation model).

No predictions were advanced about demographics, because the literature does not provide consistent results on the impact of background variables on adaptation (Ouarasse & van de Vijver, 2005; Kunuroglu, 2021).

Method

Participants and procedure

This study used a cross-sectional design and a convenience sample. The sample included 418 Cape Verdean immigrants. Fifty two percent were men. Ages ranged from 19 to 81 years ($M_{age} = 34.84$; $SD_{age} = 11.24$). The mean length of residence in the country of settlement was 18.22 years ($SD = 9.44$). About half of the participants were married. As regards work, the modal category was unskilled work (33%). Regarding the education level, forty five percent have not completed secondary education. As regards religion, most of the sample identified as Roman Catholic (61%). Demographics are presented in detail in Table 1.

Cape Verdean respondents were recruited in the Lisbon Metropolitan area by two trained research assistants. They were approached through personal networks and snowball sampling. The recruitment was done in shops, restaurants, and immigrant associations. As regards ethical considerations the study was conducted according to the legal and ethical norms of the country.

Table 1
Socio-demographic characteristics of the Cape Verdean immigrants.

	Cape Verdeans (N = 418)
Mean age (SD)	34.84 (11.24)
Gender	
Male	219 (52.4%)
Female	198 (47.4%)
Not answered	1 (0.02%)
Mean years in Portugal (SD)	18.22 (9.44)
Marital status	
Married	206 (49.3%)
Not Married	204 (48.8%)
Not answered	8 (1.9%)
Level of education	
Less than secondary school	189 (45.2%)
Secondary school	113 (27%)
Higher education	101 (24.2%)
Not answered	15 (3.6%)
Work	
Unskilled work	138 (33.1%)
Skilled work	121 (28.9%)
Managerial work	44 (10.5%)
Professional work	13 (3.1%)
Without work	84 (20.1%)
Not answered	18 (4.3%)
Religion	
No religion	79 (18.9%)
Roman Catholic	255 (61%)
Protestant	43 (10.3%)
Other	32 (7.7%)
Not answered	9 (2.2%)

Participants were informed about the purposes of the study and gave informed consent. Participants were free to withdraw from the study at any time without providing any reason. Respondents answered the questionnaire as a hard copy. Completing the questionnaire in general needed less than 30 min. Participation was anonymous and voluntary and not financially remunerated.

Measures

Demographics

    Participants provided their age, gender, country of birth, nationality, length of sojourn, marital status, education level, work status, and religion. Furthermore, the survey comprised the following instruments:

Acculturation strategies

    This scale includes 20 statements, based on Berry's Fourfold Model (Berry, Kim, Power, Young & Bujaki, 1989; Neto, 1993). It evaluated four acculturation strategies (assimilation, integration, separation, and marginalization), each one with five statements. Item exemplars are: "I feel Cape Verdeans should adapt to mainstream Portuguese society and not maintain their own traditions" (Assimilation); "I prefer to have only Cape Verdean friends" (Separation); "Cape Verdeans should have both Cape Verdean and Portuguese friends" (Integration); and "I don't want to attend either Portuguese or Cape Verdean social activities" (Marginalization). Response options ranged from 1 ("*strongly disagree*") to 5 ("*strongly agree*"). Cronbach's alpha of assimilation, integration, separation, and marginalization in the present study were.77,.65,.66, and.76, respectively.

Ethnic identity

    This scale was assessed with a measure originally created by Phinney et al. (2001). Cape Verdean identity was evaluated with 4 items. An example item is: "I am happy that I am Cape Verdean." Response choices ranged from 1 ("*strongly disagree*") to 5 ("*strongly agree*"). Cronbach's alpha of ethnic identity in this study was.91.

Perceived Discrimination

    This measure comprises 5 statements (Berry et al., 2006; Neto, 2006) assessing the experience of discrimination – negative or unfair treatment of other (e.g., "I don't feel accepted by the Portuguese."). Response choices ranged from 1 ("*Strongly disagree*") to 5 ("*Strongly agree*"). In this study, Cronbach's alpha was.89.

Sociocultural adaptation

    The Sociocultural Adaptation Scale was used in the present study (SCAS, Ward & Kennedy, 1999; Sequeira Neto, 2014). The SCAS "is focused on the skills that are required to manage everyday social situations in new cultural contexts" (Ward & Rana-Deuba, 1999, p. 430). Participants rated the level of difficulty (from "*no difficulty*", 1 to "*extreme difficulty*", 5) they had experienced in 20 social situations (e.g., "The pace of life" and "Going to social gatherings"). Statements were recoded so that greater scores suggested higher sociocultural adjustment. In this sample, Cronbach coefficient alpha was.91.

Loneliness

    The short Portuguese form of the Revised UCLA Loneliness Scale (Russell et al., 1980) was utilized (Neto, 1992, 2014). This measure comprises 6 statements (ULS-6) (e.g., "People are around me but not with me"). Response choices ranged from 1 ("*Never*") to 4 ("*Often*"). Larger scores denote greater loneliness. In this sample, Cronbach's alpha was.77.

Data analysis

    Four kinds of analyses were performed. First, we calculated descriptive statistics of all scales to provide the respondents' global picture of their acculturation; for instance, to know if their average score of loneliness would be above or below the scale midpoint. Second, analyses of variance were performed to evidence eventual demographics effects. Third, to demonstrate the acculturation strategies, the attitudes toward ethnocultural groups and ethnic identity relations to loneliness, hierarchical regression models were conducted. Demographic variables such as age, gender, level of education, length of residence, and marital status were controlled in the hierarchical regressions. Fourth, a mediation model was tested in which the antecedent variable (perceived discrimination) was related to the intervening variable (sociocultural adaptation), which in turn was related to the outcome (loneliness) by means of path analysis. Data analysis was performed utilizing IBM SPSS statistical software and IBM SPSS Amos (Version 26). The criterion for statistical significance was set at.05.

Results

    Prior to testing the five hypotheses descriptive statistics were calculated and a set of ANOVAS were carried out to examine eventual relationships between demographics and loneliness. One-sample *t* test indicated that the average score of loneliness ($M = 1.63$; *SD* $=0.65$) was significantly below the scale midpoint of 2.50 ($p < .001$). Hence, globally, this sample seemed to reveal a slight level of

loneliness. Also, the mean scores of integration ($M = 3.62$; $SD = 0.84$), and ethnic identity ($M = 4.38$; $SD = 0.88$) were significantly higher than the midpoint (3) of the scales (all $ps < 0.001$), while the mean score of assimilation ($M = 2.41$; $SD = 0.88$), separation ($M = 2.53$; $SD = 0.82$), marginalization ($M = 1.98$; $SD = 0.79$), perceived discrimination ($M = 1.56$; $SD = 0.82$) and sociocultural adaptation ($M = 2.75$; $SD = 0.62$) were significantly lower than the midpoint (3) of the scales ($p < .001$). Therefore, these results seem to reflect that this sample of immigrants experienced high levels of integration, ethnic identity, and low levels of assimilation, separation, marginalization, perceived discrimination, and sociocultural adaptation.

Next, we examined the relation between loneliness and demographic variables.

Age. Two age groups were formed: young adults (18–29 years), and adults (30–81 years). No significant differences were found between age groups, [$F(1, 411) = 1.66$, $p > .05$, $\eta^2 = .004$] on loneliness.

Gender. No significant differences were found between men and women, [$F(1, 410) = 2.85$, $p > .05$, $\eta^2 = .007$] on loneliness.

Marital status. No significant differences were found between married immigrants and those who were not married [$F(1, 403) = 1.97$, $p > .05$, $\eta^2 = .005$] on loneliness.

Education. No significant differences were found between those respondents who have less than secondary school education and those who have secondary school or attended higher education, [$F(1, 396) = 0.04$, $p > .05$, $\eta^2 = .000$] on loneliness.

Length of residence. As regards as the duration of residence two groups were formed: those with 15 years or less duration of sojourn in the country, and those with more than 15 years. There were no length of residence differences for immigrants with a shorter stay and those with a longer stay, [$F(1, 405) = 0.54$, $p > .05$, $\eta^2 = .001$] on loneliness.

Assumptions for regression analyses were conducted. The data were screened for normality of the distribution and outliers. No issues related to normality and outliers were detected as all variables appeared to fall within a good range of skewness (range: -1.56 to .97) and kurtosis values (range: -0.97 to 1.86) (Kline, 2005). Concerning multicollinearity, the Variance Inflation Factor (VIF) and tolerance values were calculated. VIF values were between 1.02 and 2.13, and tolerance values between .48 to.98, suggesting lack of multicollinearity between values (Field, 2017).

To test whether acculturation strategies were related to loneliness, hierarchical multiple regression was performed. To control for the potential confounding effects of demographics, these were entered in the first block. Acculturation strategies were added in the second block. Education level ($\beta = 0.15$, $p < .05$) emerged significantly related to loneliness in the first block. In the second block the results showed that 13% of the total variance in loneliness could be explained by the independent variables, $F(9, 376) = 5.97$, $p < .001$ (see Table 2). Loneliness appeared significantly related to greater education level ($\beta = 0.20$, $p < .001$), lower integration ($\beta = -0.23$, $p < .001$) and greater separation ($\beta = 0.17$, $p < .01$). These findings support our first hypothesis.

Next, in order to test the associations between loneliness, and ethnic identity hierarchical multiple regression was used. To control for the possible confounding effects of the demographics, these were entered in the first block. In the second block ethnic identity was added (see Table 3). In the first block education level emerged significantly related to loneliness. In the second block education level ($\beta = 0.17$, $p < .01$) remained as significant in this model, and ethnic identity ($\beta = -0.45$, $p < .001$) also emerged as significantly related to loneliness. Independent variables explained 22% of the total variance in loneliness, $F(6, 382) = 17.69$, $p < .001$. Loneliness was related to greater education level and lower ethnic identity. These findings are in line with Hypothesis 2.

Path analysis was used to test mediation effects of sociocultural adaptation on the relation between the level of perceived discrimination and the loneliness experience. Both skewness and kurtosis values of perceived discrimination, sociocultural adaptation, and loneliness were found to be within acceptable limits for a normal distribution (Table 4). These data checks support the recourse to path analysis. As expected, all pairwise correlations among the three variables were significant. Perceived discrimination was negatively associated with sociocultural adaptation ($r = -0.40$, $p < .001$, 95% [CI] $= [-0.48, -0.31]$), and positively correlated with loneliness ($r = 0.39$, $p < .001$, 95% [CI] $= [.31,.47]$). Additionally, sociocultural adaptation was negatively correlated with loneliness ($r = -0.44$, $p < .001$, 95% [CI] $= [-0.52, -0.36]$).

The findings of regression analyses testing mediation effect of sociocultural adaptation on the relationship between perceived discrimination and loneliness can be seen in Fig. 1. The beta weight when perceived discrimination was regressed alone on loneliness was.39. Thus, Hypothesis 4 was supported. The beta weight dropped from.39 to.25 when sociocultural adaptation was appended into

Table 2
Hierarchical regression models of socio-demographic variables and acculturation strategies predicting loneliness among immigrants.

Variables	Block 1, β	95% CI	Block 2, β	95% CI
Age	.14	[− 0.00,.02]	.11	[− 0.00,.02]
Gender	-0.09	[− 0.26,.02]	-0.09	[− 0.26,.02]
Level of education	.15 *	[.03,.22]	.20 * **	[.08,.26]
Length of residence	.01	[− 0.01,.01]	-0.03	[− 0.01,.01]
Marital status	.03	[− 0.13,.21]	.03	[− 0.12,.21]
Assimilation			.08	[− 0.04,.17]
Integration			-0.23 * **	[− 0.28, − 0.11]
Separation			.17 * *	[.06,.24]
Marginalization			.05	[− 0.08,.16]
R^2	.03		.13	
Adjusted R^2	.02		.11	
F change	2.58 *		9.91 * **	

Note. Values in square brackets indicate the 95% confidence interval.

* $p < .05$; * * $p < .01$; * ** $p < .001$.

Table 3

Hierarchical regression models of socio-demographic variables, and ethnic identity predicting loneliness among immigrants.

Variables	Block 1, β	95% CI	Block 2, β	95% CI
Age	.14	[− 0.00,.02]	.12	[− 0.00,.02]
Gender	-0.09	[− 0.26,.02]	-0.09	[− 0.25,.01]
Level of education	.15 *	[.03,.22]	.17 * *	[.06,.23]
Length of residence	.01	[− 0.01,.01]	-0.08	[− 0.02,.00]
Marital status	.03	[− 0.13,.21]	.05	[− 0.09,.22]
Ethnic identity			-0.45	[− 0.44, − 0.29]
R^2	.03		.22	
Adjusted R^2	.02		.21	
F change	2.58 *		91.14 * **	

Note. Values in square brackets indicate the 95% confidence interval.
* $p < .05$; * * $p < .01$; * ** $p < .001$.

Table 4

Descriptive statistics and correlations among perceived discrimination, sociocultural adaptation, and loneliness.

	Mean	SD	Sk	Ku	1	2	3
Perceived discrimination	1.56	.82	.89	-0.34			
Sociocultural adaptation	2.75	.62	-.28	-.43	-0.40 * ** [− 0.48, − 0.31]	1	
Loneliness	1.63	.65	.45	-.87	.39 * ** [.31,.47]	-0.44 * ** [− 0.52, − 0.36]	1

Note. Values in square brackets indicate the 95% confidence interval for each correlation. $N = 418$; * ** $p < .001$.
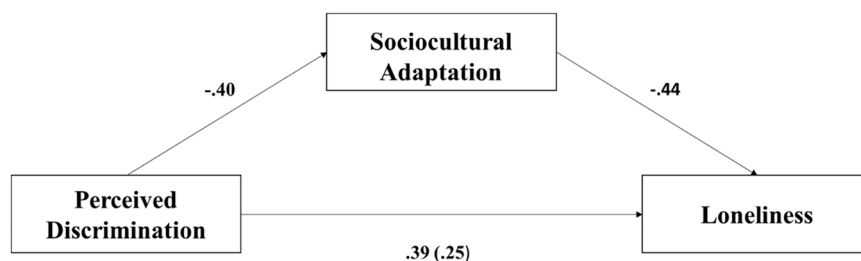SD = Standard deviation; Sk = Skewness; Ku = Kurtosis

Fig. 1. Model of the mediating role of sociocultural adaptation in the relationship between perceived discrimination and loneliness. Value in parenthesis is the reduced beta coefficient when the mediator is presented. Note: All beta coefficients are significant at the.001 level.

the equation. The indirect effect was tested by means of a percentile bootstrap estimation approach with 1000 samples, implemented with IBM SPSS Amos. These findings showed that the indirect coefficient was significant, β = 0.25, 90% CI = 0.08,.15 (Fig. 1). In accordance with Baron and Kenny (1986), full mediation is achieved if the antecedent variable (perceived discrimination) has no significant effect on the outcome variable (loneliness) when the mediator (sociocultural adaptation) is controlled. Hence, our findings evidenced that sociocultural adaptation only partially mediated the relationship between perceived discrimination and loneliness.

Discussion

As loneliness presents negative effects being equated to a pandemic (Palgi et al., 2020), it is relevant to identify potential risk and protective factors. In this study, we wanted to understand how certain contextual and individual features ease or obstruct the feelings of loneliness of Cape Verdean immigrants in Portugal. More specifically, we investigated the roles of acculturation strategies, ethnic identity, perceived discrimination, sociocultural adaptation, and socio-demographic variables in experienced loneliness. This study adds to the existing literature by identifying a potential mechanism, stressing the important role of perceived discrimination as a potential triggering factor for both sociocultural adaptation and loneliness. Five hypotheses were tested, and the data supported all of them.

The first hypothesis found support as higher levels of the integration strategy were related to lower levels of loneliness. Therefore, current findings coincide with those showing a favorable relationship between a preference for integration and immigrants' psychological adjustment (Abu-Raya & Sam, 2016; Berry, 2017; Inguglia et al., 2020; Neto, 2002; Nguyen & Benet-Martinez, 2013; Sam & Berry, 2016). Furthermore, we found that separation is not benefic to loneliness. When immigrants were only "engaged" with home culture, they displayed higher loneliness. This result may be interpreted as a way of "reactive identity" (Branscombe et al., 1999); the loneliness experienced may increase immigrant's attachment to home country and reduce attachment to the host country.

The second hypothesis received support as lower reported ethnic identity was related to greater loneliness. As expected, the less immigrants sought to maintain their heritage identity in the host country the more they tended to experience loneliness. This agrees with research documenting ethnic identity as a favorable personal resource (Smith & Silva, 2011) and is linked to greater psychosocial adjustment (Poyrazli, 2003). Furthermore, this is in line with past research pointing out that lonely people have lower self-regard, self-confidence and self-esteem (Tsai & Reis, 2009; Cheng & Furnham,2002; Neto, 2016; Tsai & Reis, 2009). Addressing ethnic identity constitutes a crucial factor in reducing the loneliness of the immigrant group studied.

Discrimination has been established as being one of the highest risk factors for immigrants' adaptation. In the current work, we looked into the relationship between perceived discrimination and loneliness, and also the mediating role of sociocultural adaptation. Before examining the hypothesis, the findings showed that perceived discrimination, sociocultural adaptation, and loneliness were all correlated. The results of the regression analysis showed the effect of perceived discrimination on loneliness, supporting the third hypothesis. As expected, the greater the level of discrimination perceived by Cape Verdean immigrants, the more they suffered from loneliness. This is consistent with previous studies showing that the level of discrimination perceived was connected with diminished well-being (Kunuroglu, 2021; Lee & Ahn, 2011; Neto, 2002, 2016; Neto & Barros, 2000; Te Lindert et al., 2008; Vedder et al., 2007). This is also consonant with the positive relationship found between specific hassles (i.e., in-group discrimination) and psychophysical distress (Berger et al., 2019). Current findings outline that when the deprivation of inclusion is obstructed by discrimination, the immigrants' loneliness increases. In addition, the path analysis findings indicated that perceived discrimination was related to experienced loneliness not only directly, but also indirectly via sociocultural adaptation. It can be assumed that perceived discrimination as a negative stressor not only enhances the immigrants' loneliness directly, but also has an indirect influence through the mediating effect of sociocultural adaptation. These findings supported our fourth and fifth hypotheses.

Taken together, the present results provide a new understanding of the mechanism underlying the relationship of perceived discrimination with loneliness. Cape Verdean immigrants who experienced less discrimination tended to deal with sociocultural problems in the society of settlement in a more competent way and in turn experienced less loneliness. Furthermore, the present study contributes to the acculturation literature by establishing the central role of sociocultural adaptation in explaining the relationship between perceived discrimination and loneliness which suggests that targeting programs to enhance sociocultural adaptation may help to alleviate the loneliness of immigrants.

Finally, concerning the demographics, the literature about the effects of various demographic variables on adaptation does not report coherent findings. Several studies have found that demographics did not predict sociocultural adaptation (Ouarasse & van de Vijver, 2005), and other work found inconsistent results on the predictive role of several variables such as age, gender, length of residence, and education level on adaptation (Kunuroglu, 2021). Our analyses of variance as well as regression analyses indicated that the demographic variables do not contribute prominently to the immigrants' loneliness.

Some limitations to the study should be pointed out. First, self-report scales were used in this study. Future studies should use objective (e.g., discrimination) measures. Second, Cronbach's alpha values of integration and separation were lower than usually accepted for valid statistics. However, factor analyses on data from an international study, including Portugal, evidenced that the measures were unidimensional and comparable across cultural contexts and across ethnocultural groups (Berry et al., 2006). Furthermore, these moderate values may be due to the complexities of their items (Brown & Zagefka, 2011). Third, cross sectional data does not allow identifying causality among independent, mediating, and dependent variables. For example, we have considered perceived discrimination as an antecedent variable in consonance with most past research (e. g., Te Lindert et al., 2008). However, past research has also considered perceived discrimination as the outcome of acculturation (e.g., Phinney et al., 1998) or the intervening variable (e.g., Berry, 1997). Thus, although our theoretical mediator model is rooted in theory (e.g., Te Lindert et al., 2008), future research should explore other configuration between the variables of interest by using alternative methodological designs. Future studies should employ longitudinal or experimental designs to address this issue. Fourth, our analyses were focused on only one ethnocultural group. We argue that our findings can be extended to other groups of immigrants in the same country or in other countries. However, whether this is true needs to be examined in an investigation with more heterogeneous ethnocultural groups. Finally, although the proportion of explained variance in loneliness was considerable in the current work, future research could add other determinants that might be important to immigrants' loneliness, such as the quantity and the quality of an intercultural network in the country of settlement, among others. Notwithstanding its limitations, to the best of our knowledge, the current research is the first to test the relationship and mechanism linking perceived discrimination, sociocultural adaptation, and loneliness in a sample of immigrants.

In conclusion, this research advances a framework to investigate the association of perceived discrimination with sociocultural and psychological indicators of adaptation. Current findings offer relevant insights to run subsequent investigation on the development of programs to prevent loneliness among Cape Verdeans. This work indicates that perceived discrimination is in relationship with sociocultural adaptation and loneliness. As the sociocultural adaptation is a pathway between perceived discrimination and loneliness, the present study suggests that immigrants may be helped to combat loneliness through specific interventions. Professional activity with immigrants may namely help the prevention of the negative effects of discrimination by buffering against low sociocultural adaptation.

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