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Article

Poverty and mental health among migrants: When is ingroup exposure more protective than social ties?

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Introduction

Migrant mental health issues are a serious concern in light of increasing migration rates worldwide. Even though the prevalence of mental health issues among migrants varies across countries of origin and destination (Ehrenstein, Priebe, Mielck, & Brähler, 2009), both the United States of America (e.g., Kirmayer et al., 2011) and European countries report more mental health issues among migrants than natives (Jayaweera & Quigley, 2010; Missinne & Bracke, 2012; Wittig, Lindert, Merbach, & Brähler, 2008). Common explanations for migrants' increased risk for mental health problems are lower socioeconomic status (SES) and/or ethnic discrimination in their destination country (Ehrenstein et al., 2009; Sternthal, Slopen, & Williams, 2011; Williams, Yan, Jackson, & Anderson, 1997).

Epidemiologists, social scientists and policy makers alike show interest in social interventions as a potential solution targeting mental health (Almedom, 2005; De Silva, McKenzie, Harpham, & Huttley, 2001; Kawachi, 2001). Often studied under the umbrella term of "social capital", existing research has repeatedly focused on two potentially stress-buffering factors for migrants specifically: (1) social ties to supportive others (Kawachi, 2001) and (2) living among an increased share of similar others, also known as the "residential ingroup exposure" or the "group density effect" (Pickett & Wilkinson, 2008). Social ties and ingroup exposure are instances of social capital, because they refer to benefits that individuals derive from being embedded in a social structure.

While the benefits of residential ingroup exposure and social ties for minority mental health have been documented (Kawachi & Berkman, 2001), it is not clear if they hold across different SES levels. SES refers to

the social standing of an individual in a hierarchically structured society and it is commonly inferred from income, occupation and/or education (Blau & Duncan, 1967). A lower SES is a strong predictor of poorer health as it is generally associated with unhealthy behaviours, unhealthy environmental exposures and less access to health care (Paxman and Lee, 1997). Migrants are overrepresented in more disadvantaged social strata and so previous research on ethnic health differences statistically adjusted for SES to capture a less biased effect of ethnic background (Williams, Priest, & Anderson, 2016). Such studies, however, do not fully acknowledge the unique struggles that might arise from the intersection of SES and migration background. We do not yet understand the moderating role of SES for the relationship between migrant mental health and social protective factors despite many studies on social capital and mental health (Almedom, 2005; De Silva et al., 2001; Kawachi, 2001).¹ This moderation is important to study as it considers the combination of two major risk factors for depression. We focus on the difference between living above and below the poverty line in particular as the relationship between SES and depression is non-linear: Moving down the income distribution is associated with increasingly more adversities, and economic losses are particularly detrimental for individuals who fall below the poverty line (Kahneman & Deaton, 2010; Martikainen, 2003). In addition, a higher SES contributes little to individual wellbeing once basic needs are satisfied (Kahneman & Deaton, 2010). If there is a difference in mental health that can be attributed to social standing, then it will be most pronounced in the comparison between those below and those above the poverty line.

Our interest is general mental health and we consider depressive symptoms as a useful indicator. According to the World Health Organization, depression is the largest contributor to mental health problems

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¹ The only studies that speak to the question are relatively dated and focus on women as the minority group (Belle, 1983) or on a general population and investigate neighbourhood level measures of social capital (Stafford, De Silva, Stansfeld, and Marmot, 2008). These studies find contradictory results and show either that social factors are an extra burden or a protective factor for the poor.

(World Health Organization, 2001) and depression is highly comorbid with the second most common psychological disorder, namely anxiety, as well as a range of other psychological disorders (Sartorius, Üstün, Lecrubier, & Wittchen, 1996). We focus on the Netherlands, a country where depressive disorders have been found to be up to three times more prevalent among first and second generation migrants² compared to Dutch natives (De Wit et al., 2008), despite its relatively low socioeconomic inequality and high intercultural tolerance (Malmusi, 2015). This allows for a conservative test that contributes to the current debate on migrant health: we show that the benefits of social capital for migrant mental health depend on socioeconomic standing even when socioeconomic differences are small.

Background and theory

Migrants in the Netherlands are at higher risk of depression and studies have explored various explanations, such as the strain of migration, economic hardship or ethnic discrimination (De Wit et al., 2008; Missinne & Bracke, 2012; Veling et al., 2007). Despite different proximate explanations, the same ultimate explanation is shared: being a minority member is stressful (Williams, Yan, Jackson, & Anderson, 1997). Ethnic minorities experience elevated stress levels in a range of life domains, such as finances, occupation, and relationships (Sterthal et al., 2011), which makes them more vulnerable to depression. If migrant mental health issues are to a large extent the result of exposure to stress, then protective factors are those that prevent or buffer against stress. Building on the broad social capital literature, we focus on residential ingroup exposure and relevant social ties.

Residential ingroup exposure

Residential ingroup exposure is a segregation concept that captures the degree of potential ingroup member contact in the proximity of home (Iceland & Weinberg, 2002).³ Exposure does not necessarily entail substantive social relationships. Instead, it captures whom migrants see as they go about their day-to-day activities. Even at the absence of realized ties, recognizing and being recognized by familiar others contributes to one's sense of belonging (Blokland & Nast, 2014). Of course, exposure can lead to stronger connections important to one's sense of belonging and safety, but residential ties are typically weak if they exist at all (Mollenhorst, Volker, & Schutjens, 2009). This makes residential areas a well-suited context for the study of ingroup exposure (i.e., weak connections) and how it differs from stronger social ties.

Previous studies demonstrate that ethnic minorities living among more ethnic minorities report better mental health than those living among fewer, even though they tend to live in lower SES areas (Pickett & Wilkinson, 2008).⁴ An often suggested explanation is that social belonging offsets the adverse effects of residential deprivation (Bécares, Nazroo, & Stafford, 2009). Additionally, higher residential ingroup exposure might reduce the likelihood of discrimination, which is an important source of poorer health (Bécares et al., 2009).

² We use the term "migrant" to refer to both 1st and 2nd generation migrants (at least one of their parents were born outside of the Netherlands). We chose to include 2nd generation migrants as migrants because several 2nd generation migrant groups are known to experience similar structural disadvantages as their parents and are therefore central to the public migration and integration debate (Algan et al., 2010; Crul & Schneider, 2013; Heath et al., 2008).

³ This does not refer to other residential-segregation concepts (e.g., ethnic enclaves or racial residential segregation) that capture additional aspects of segregation (e.g., cultural identity and economic activity) (Abrahamson, 2005). Such concepts are beyond the scope of this paper.

⁴ The group density effect has also been studied for other marginalized groups like working class ethnic majority members and has found similar effects (Small, Garidner, Barnes, Gott, Halpin, Payne, Seamark, 2012), but most studies focus on ethnic or racial minorities and migrants.

The benefits of residential ingroup exposure for mental health are usually studied for low SES rather than high SES ethnic minority groups (Pickett & Wilkinson, 2008), potentially because areas of high residential ingroup exposure are typically areas of lower SES. Theoretically, residential areas might be more salient to poor migrants than they are to more affluent migrants because they spend more time in their local surroundings (Mollenhorst et al., 2009). For example, mobility requires resources, such as access to cars and public transportation. And the unemployed, who make up a large portion of low socioeconomic status migrants, are less likely to leave their residential area every day for work like the employed do. Also, the benefits of residential ingroup exposure have typically been established for ethnic minorities rather ethnic majority members. Thus, in order to investigate if this relationship is specific to migrants, we also test if the effect is stronger for migrants than for natives.

H1a. The negative effect of residential ingroup exposure on migrant depression is stronger below than above the poverty line

H1b. The negative effect of residential ingroup exposure on depression below the poverty line is stronger for migrants than for natives.

Social ties

Unlike residential ingroup exposure, social ties are meaningful, relatively deliberate social connections that require individual investments to be created and maintained (Lin, 2001). Individuals use their ties for different types of support. Emotional support refers to reassurance or an empathic ear, and instrumental support entails concrete information or tangible resources (Lin, 2001).

Some networks are better equipped to provide support than others. We discuss four network characteristics indicative of support, namely network size, contact frequency, ties to natives, and diversity in resources. First, larger networks are indicative of social integration, which benefits mental health. Having more social ties also increases the likelihood of having at least one tie that is available for support at a given moment. Knowing that support is available, even if never mobilized, is a valuable asset for mental health.

Second, ties of higher contact frequency benefit mental health because face-to-face interaction induces relaxation and reduces blood pressure and heart rate (Uvnäs-Moberg, 1998). Compared to communicating via email or phone, socializing in person can be twice as effective in reducing the risk of depression (Teo et al., 2015).

Third, ties to natives can provide a gateway to benefits of the dominant culture. For example, discrimination is known to discourage migrants from engaging in destination country institutions, such as health care facilities (Lamkaddem, Essink-Bot, Deville, Foets, & Stronks, 2012). Being friends with natives might aid in increased utilization of health care.

Fourth, having social connections with various socioeconomic positions is indicative of better instrumental social resources (Lin & Dumin, 1986; Van der Gaag, 2005). In a hierarchical society, structural positions (e.g., occupations or education backgrounds) reflect access to different types of resources. Ties to others located in different social strata, imply access to a wider variety of resources, such as information on health care providers or health knowledge, but also practical help, such as doing groceries, taking up household tasks or taking care of the kids (Song & Lin, 2009). This benefits mental health.

It is theoretically ambiguous how the relationship between these four types of social ties and mental health varies by poverty status. On the one hand, poverty might amplify the positive relation between social ties and mental health. The social ties of poor migrants could be well-suited to provide empathy as shared levels of disadvantage provide the possibility for unique understanding of each other's problems. Moreover, the need contingency argument suggests that support provided by one's social ties is especially helpful for individuals in need (Song & Chen, 2014). Relative to natives, migrants are more likely to be

in need of help, especially if they are poor. We therefore suggest the following hypotheses:

H2a. The negative effect of relevant social ties on migrant depression is stronger below than above the poverty line

H2b. The negative effect of relevant social ties on depression below the poverty line is stronger for migrants than for natives.

On the other hand, it is also possible that social ties of migrants below the poverty line are less able to provide support as they are struggling with problems of their own. Or put differently, the cumulative advantage of homophily might apply such that valuable resources are shared only within wealthier social circles (Lin, 2000; Lin & Erickson, 2008). We then expect that migrants above the poverty line and natives benefit more from their social ties. Accordingly, we formulate competing hypotheses to H2a and H2b:

H3a. The negative effect of relevant social ties on migrant depression is weaker below than above the poverty line

H3b. The negative effect of relevant social ties on depression below the poverty line is weaker for migrants than for natives.

Methods

Data

We analyzed the Longitudinal Internet Studies for the Social sciences (LISS) Immigrant panel (Scherpenzeel & Das, 2010) combined with population register data from Statistics Netherlands. The panel is based on monthly online household surveys among 2,400 respondents who are split into roughly equal numbers of natives, 1st and 2nd generation migrants who are proportionally representative of the Dutch population.

Recruitment and sampling. First, a sample of immigrants stratified by ethnicity and weighted by household size was drawn from the population register of Statistics Netherlands.⁵ The aim of stratifying the sample by ethnicity was to build a proportionally representative sample of the six most important ethnic minority groups in the Netherlands (Moroccan, Turkish, Surinamese, Antillean, Indonesian and South African) as well as a control group of Dutch natives. All sampled individuals received an invitation letter and a phone or a home visit follow-up. Participants without a computer or Internet connection, were provided with a PC and a broadband Internet connection.

We combined two LISS surveys: the personal network (August 2010) and the health survey (November 2010). Twelve hundred and four respondents completed both surveys. Sixty-seven percent of respondents agreed to have their data linked with population register data from Statistics Netherlands, leaving a sample of 810 respondents with complete information. To understand the impact of attrition, we compared our analytical sample to the complete LISS Immigrant panel in 2010 (see Table A in the Supplemental Material). The samples were similar with regard to ethnicity, gender, age and income, and cell sizes were sufficiently large to produce meaningful predictions. Still, we deal with missing information by employing multiple imputation (see Analytical strategy). Descriptive statistics of respondents and districts in our analytical sample are displayed in Table 1.

Dependent variables

Our outcomes variable is self-rated depressive symptoms as measured with the 5-item Mental Health Inventory (MHI-5). The MHI-5 is a short version of the 38-item Mental Health Inventory. Several studies compared the psychometrics properties of the MHI-5 with longer

⁵ The population register contains personal information of all individuals registered in the Netherlands.

Table 1
Descriptive statistics for natives and migrants.

	Natives		Migrants		% missing
	Mean	SD	Mean	SD	
Respondent level					
Depressive symptoms	2.38	0.84	2.59	0.92	.26
Monthly household income (x 1000)	1.57	3.73	1.59	6.19	.10
Poverty (60% of median)	0.26	0.44	0.41	0.49	.10
Poverty (50% of median)	0.15	0.35	0.31	0.46	.10
Poverty (40% of median)	0.07	0.26	0.20	0.40	.10
Gender	0.49	0.50	0.55	0.50	0
Age	45.05	15.30	41.56	15.38	0
Marital status	0.83	0.59	0.78	0.72	0
Education level					0
Primary	0.01	0.11	0.04	0.19	
Intermed. secondary	0.19	0.39	0.16	0.37	
Higher secondary	0.09	0.29	0.09	0.29	
Intermed. vocational	0.25	0.43	0.22	0.41	
Higher vocational	0.28	0.45	0.23	0.42	
University	0.16	0.37	0.20	0.40	
No education or other	0.02	0.13	0.05	0.22	
# household members	2.90	1.26	2.73	1.50	0
Network size	2.94	1.61	2.73	1.70	.41
Contact frequency	2.31	1.37	2.19	1.48	.41
Native alters	2.15	1.56	2.10	1.66	.43
Network resource diversity	1.83	1.00	1.73	1.04	.41
District level					
Residential ingroup exposure					.02
Low	0.20	0.40	0.06	0.23	
Moderately low	0.12	0.32	0.16	0.37	
Moderately high	0.16	0.37	0.15	0.36	
High	0.52	0.50	0.63	0.48	
Income per resident	22.18	4.20	21.70	4.88	.43
Degree of Urbanization					0
Very strongly urban	0.15	0.35	0.32	0.47	
Strongly urban	0.31	0.46	0.31	0.46	
Moderately urban	0.23	0.42	0.18	0.39	
Somewhat urban	0.20	0.40	0.13	0.34	
Not urban	0.11	0.31	0.06	0.23	
N	704		1602		

versions of the MHI as well as related scales, such as the 30-item General Health Questionnaire (e.g., Berwick et al., 1991; Rumpf, Meyer, Hapke, & John, 2001). These studies document good predictive validity of the MHI-5 for detecting depression, with areas under the curve ranging from 0.88 (Rumpf et al., 2001) to 0.89 (Berwick et al., 1991).

Sample items of the MHI-5 are “I felt so down that nothing could cheer me up” or “I felt calm and peaceful” (reverse-coded). On a 6-point Likert scale (1 = never, 6 = continuously), respondents indicated to what extent they had experienced these emotions in the past month. We averaged across the five items (Cronbach’s alpha = .84). To test whether this measure captured the same construct across ethnic groups, we tested for measurement invariance (for details, see Supplemental Material pages 2–3). Our measure fulfilled the criteria for strong measurement invariance.

Independent variables

Poverty. We coded poverty as a dichotomous variable (above (0) vs. below the poverty line (1)). We rely on a common definition of poverty, which views individuals as being poor if their income is below a certain percentage of a measure of central tendency in the population (e.g., mean or median; Hageaars, De Vos, & Zaidi, 1994). The median is often preferred because it is the most stable measure of central tendency, and common cut-off lines range from 40% to 60% of the population median. In line with this, we present results for different cut-offs, namely 60%, 50% and 40% of the Dutch population median in 2010 (i.e., €1692).

Migration background. We measured migration background as a binary variable (native (0), migrant (1)). Respondents are considered

migrants if they or at least one of their parents were born outside of the Netherlands. Even though knowing the birth place of respondents and parents allowed for more fine-grained measures of migration background (e.g., Western versus non-Western background), we settled on the binary distinction between natives and migrants because we expected our theoretical predictions to apply across different migrant groups.

Residential ingroup exposure. Statistics Netherlands (2010) provides residential composition data, such as the percentages of natives, Western migrants, and non-Western migrants at the district level. Districts had a median of 12,790 residents (min = 235; max = 107,845) and a mean surface of 12.84 km² (SD = 13.40 km²).

To measure *residential ingroup exposure*, we first constructed a variable capturing the percentage of district residents who had the same ethnicity (i.e., natives, Western migrants, or non-Western migrants) as the respective respondent. We then recoded *residential ingroup exposure* into four categories, because the continuous measure produced an analytical problem: The continuous measure strongly intersected with respondent ethnicity, such that residential ingroup exposure was on average much higher among natives (*Mean* = 81%) than migrants (*Mean* = 15%). This resulted in multicollinearity in our regression analyses. We attempted to resolve this by centering the variable around the group means. This did improve the multicollinearity problem, but did not fully remove it because the distributions were skewed in opposite directions for natives versus migrants, which would bias our estimates (i.e., the distribution of natives was skewed to the left and the distribution of migrants was skewed to the right).

We categorized residential ingroup exposure by first centering it around the group means. Because the distribution of natives was skewed to the left, and the distribution of migrants to the right, we then constructed a categorical variable capturing *residential ingroup exposure* at four levels (low, moderately low, moderately high, and high) which successively increased by roughly 5%. For natives, low *residential ingroup exposure* meant that less than 79% of residents were ingroups. Moderately low, moderately high and high meant that 80 and 84%, 85–89% and more than 90% were ingroups, respectively. For migrants, the categories from low to high *residential ingroup exposure* were split at less than 5% ingroups, 5–9%, 10–14%, and more than 15%.

Social ties

Social ties were obtained with the name generator question “Most people discuss important things with people they know. If you look back at the last six months, with whom did you discuss important things?”. Respondents could name up to five alters and answered follow-up questions such as alters’ ethnicity, education, and contact frequency.

Network size is the total number of alters named. *Contact frequency* is an aggregate measure (range: 0, 5) counting the number of alters that ego meets at least once a week.⁶ *Ties to natives* are alters who were born in the Netherlands. *Network resource diversity* is an adaptation of the position generator, which typically captures alters who occupy different professional positions in the social hierarchy (Lin & Dumin, 1986). Since we lack information on alter occupations, we settled on an adaption of the position generator which captures education levels (Van der Gaag, 2005). We thus capture *Network resource diversity* as the number of alters with different education backgrounds (range: 0, 5). Higher numbers mean access to a wider range of educational levels, which indicates access to a wider range of socioeconomic resources.

Control variables

At the respondent level, we controlled for gender, age, education,

⁶ Coding alters that ego meets at least once a month produced the same pattern of results in the regression analyses, but smaller effect sizes.

marital status, and household size. At the district-level, we controlled for SES (i.e., average yearly income per resident x €1000) and degree of urbanization measured in five categories (1 = not urban, 5 = very strongly urban).

Analytical strategy

We performed chained multiple equation analyses to impute missing values for key variables using the *mi* package in Stata (i.e., depressive symptoms; residential ingroup exposure and migration background).⁷ The imputation model included all predictor and control variables for which we had complete information and was executed 10 times. We then conducted our regression analyses for the 10 datasets and combined the results as proposed by Rubin (1996).

Our data included several respondents living in the same residential area, meaning that our observations were not independent. Therefore, we violated the independency assumption of OLS regression (Raudenbush & Bryk, 2002; Snijders & Bosker, 2011) and needed to adjust our standard errors for clustering of respondents within residential areas as specified by Rogers (1993).

Our main population of interest are migrants, but we also report results for respondents without a migrant background in order to better understand whether our findings are unique to migrants. To this end, we interacted our predictors of interest (i.e., residential ingroup exposure; social ties) with migration background. We also present results of the full sample, non-poor respondents and poor respondents alongside each other and show results for different cut-off points of poverty (40%, 50% and 60% of the median income in the population).

Results

Descriptive results

On average, natives (*M* = 2.38, *SD* = 0.84) and migrants (*M* = 2.59, *SD* = 0.92) reported that they seldom to sometimes experienced depressive symptoms. Descriptively, migrants experienced depressive symptoms somewhat more often than natives. Migrants were also more likely to be located below the poverty line than natives. When defining poverty as earning less than 40% of the median population income, 7% of natives and 20% of migrants in our sample were below the poverty line. These numbers are 14% of natives and 31% of migrants for the 50% cut-off point, and 26% of natives and 41% of migrants for the 60% cut-off point. Lastly, natives lived among 81% ingroup members and migrants lived among 15% ingroup members on average.

Residential ingroup exposure

Table 2 shows little evidence for associations between residential ingroup exposure and depressive symptoms. The associations were not significant among non-poor (Table 2, Models 2a-c) and poor migrants (Table 2, Models 3a-c), so we did not find evidence for Hypothesis 1a and 1b. Among natives, we found that those below the 40% poverty line were significantly less depressed if residential ingroup exposure was moderately low compared to low (*B* = - 1.19, *SE* = 0.45, 95% *CI* = -2.09; -0.29, *p* = .01, see Table 2, Model 3c), but this effect was marginally significant for the 50% cut-off (Table 2, Model 3b) and not significant below the 60% poverty line (Table 2, Model 3a). Moderately high or high residential ingroup exposure was not associated with significantly fewer depressive symptoms among natives.

⁷ We aimed to also impute missing values for poverty status and social tie variables. However, these imputation models did not converge because of very high correlations between our different poverty status variables, as well as very high correlations between social tie variables.

Table 2
Depressive symptoms regressed by residential ingroup exposure.

	All	Non-poor			Poor		
	(1)	(2a)	(2b)	(2c)	(3a)	(3b)	(3c)
		60% of median	50% of median	40% of median	60% of median	50% of median	40% of median
Migrant	0.10 (0.14)	0.04 (0.16)	0.16 (0.16)	0.18 (0.15)	0.35 (0.31)	-0.14 (0.34)	-0.50 (0.43)
Residential Ingroup Exposure							
Low	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Moderately low	-0.22 (0.14)	-0.11 (0.16)	-0.10 (0.14)	-0.08 (0.14)	-0.49 (0.29)	-0.78 ⁺ (0.43)	-1.19* (0.45)
Moderately high	-0.05 (0.13)	-0.13 (0.14)	-0.03 (0.13)	0.04 (0.13)	0.37 (0.35)	0.38 (0.45)	-0.44 (0.77)
High	-0.13 (0.14)	-0.14 (0.17)	-0.09 (0.15)	-0.04 (0.14)	-0.00 (0.29)	-0.20 (0.38)	-0.70 (0.54)
Migrant x Moderately low	0.05 (0.19)	-0.03 (0.21)	-0.10 (0.20)	-0.11 (0.20)	0.10 (0.39)	0.62 (0.53)	0.96 (0.58)
Migrant x Moderately high	-0.07 (0.19)	0.04 (0.21)	-0.11 (0.20)	-0.16 (0.20)	-0.66 (0.49)	-0.41 (0.56)	0.31 (0.84)
Migrant x High	0.14 (0.19) (0.13)	0.13 (0.24) (0.15)	0.02 (0.22) (0.14)	-0.01 (0.21) (0.13)	-0.14 (0.42) (0.26)	0.32 (0.48) (0.31)	0.86 (0.65) (0.40)
Constant	3.49*** (0.28)	3.44*** (0.37)	3.16*** (0.33)	3.25*** (0.31)	3.01*** (0.48)	3.36*** (0.55)	3.40*** (0.72)
Observations	1373	896	1034	1152	477	339	221

Note: Standard errors in parentheses + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. All models are adjusted for respondent gender, age, education, marital status, household size, and district level of urbanization and average income per district resident.

Social ties

We found no significant associations between social ties and depressive symptoms in the poor sample among either migrants or natives.⁸ Thus, the data did not support Hypothesis 2a and 2b.

We did find a negative marginally significant association for network size and depressive symptoms among migrants who were above 40% cut-off point ($B = -0.08$, $SE = 0.04$, $95\% CI = -0.16; 0.01$, $p = .07$, Table 3, Model 4c). Associations between network size and depressive symptoms for migrants above the 50% and the 60% line were in the expected direction, but were not significant (Models 4a and b, respectively). We also found that compared to natives, migrants with higher contact frequency reported fewer depressive symptoms when they were above the poverty line at 60% ($B = -0.11$, $SE = 0.06$, $95\% CI = -0.22; -0.002$, $p = .047$, Model 5a), as well as 50% ($B = -0.12c$, $SE = 0.05$, $95\% CI = -0.23; -0.02$, $p = .02$, Model 5b), and 40% of the population median income ($B = -0.13$, $SE = 0.05$, $95\% CI = -0.23; -0.03$, $p = .01$, Model 5c).

We found that migrants above the 50% cut-off point reported fewer depressive symptoms compared to natives if they had ties to more natives ($B = -0.07$, $SE = 0.04$, $95\% CI = -0.16; 0.01$, $p = .09$, Model 6b). A similar association was found for migrants above the 40% cut-off point ($B = -0.07$, $SE = 0.04$, $95\% CI = -0.15; 0.01$, $p = .07$, Model 6c).

Network resource diversity was also negatively associated with depressive symptoms among non-poor migrants compared to natives, with marginal significance levels. This was found for all cut-off points of poverty ($B = -0.16$, $SE = 0.08$, $95\% CI = -0.32; 0.01$, $p = .06$, Model 7a; $B = -0.13$, $SE = 0.08$, $95\% CI = -0.28; 0.02$, $p = .09$, Model 7b; $B = -0.13$, $SE = 0.07$, $95\% CI = -0.27; 0.01$, $p = .07$, Model 7c).

Overall, these findings are in line with Hypothesis 3a. The benefits of social ties were found for non-poor rather than poor migrants. The results do not support Hypothesis 3b, because social ties were positively related to depressive symptoms among natives across all levels of poverty (Table 3, Models 4a-6c).

⁸ For reasons of brevity, results for social ties among poor respondents (all non-significant) are not reported in tables, but they can be obtained from the first author upon request.

Discussion

We aimed to show how poverty relates to the buffering properties of residential ingroup exposure and social ties for mental health among migrants. The need contingency argument predicts that poor migrants benefit more from protective factors relative to non-poor migrants or natives, because protective factors are most helpful when individuals are in need (Fernandez et al., 2015; Moskowitz, Vittinghoff, & Schmidt, 2013). The cumulative advantage of homophily argument, however, states the opposite: a more disadvantaged SES position limits access to protective factors (Lin, 2000; Lin & Erickson, 2008; McPherson, Smith-Lovin, & Cook, 2001).

Our results show some evidence for the cumulative advantage of homophily argument, but only regarding the protective factor of social ties. Whereas social ties do not seem to alleviate depression among migrants below the poverty line, non-poor migrants did report better mental health when they have larger networks, higher contact frequency, and more natives and diversity in their network resources. This supports previous work showing that those who are better off are also better equipped to build up support systems. Interestingly, we found these benefits for migrants above the poverty line, but not for natives above the poverty line. Still, effect sizes were very small and some only marginally significant. It remains to be shown whether observed associations correspond to meaningful differences.

The data did not corroborate the expectation that residential ingroup exposure is related to depression symptoms among migrants. This null result might be explained by our use of a Dutch sample, whereas most previous studies were conducted in the US or the UK. Compared to the US and UK, inequality and residential segregation are relatively low in the Netherlands (Musterd, 2005). The Netherlands provides generous social welfare benefits, has relatively low levels of crime, and relatively high prosperity, such that even areas of higher migrant concentration provide their residents with good public services. Also several others document that neighbourhood effects found in the UK and US only partly replicate in the Netherlands (Miltenburg, 2017; Musterd, De Vos, Das, & Latten, 2012). Our findings highlight the importance of cross-cultural comparisons to clarify what aspects of the social structure produce the benefits of residential ingroup exposure in some countries but not in others. Relatedly, it also calls for more research on the specific mechanisms that link residential ingroup exposure to mental health.

Table 3
Depressive symptoms regressed by social ties.

	Network size			Contact frequency			Ties to natives			Network resource diversity		
	(4a)	(4b)	(4c)	(5a)	(5b)	(5c)	(6a)	(6b)	(6c)	(7a)	(7b)	(7c)
	60% of median	50% of median	40% of median	60% of median	50% of median	40% of median	60% of median	50% of median	40% of median	60% of median	50% of median	40% of median
Migrant	0.24 (0.23)	0.47* (0.23)	0.52* (0.22)	0.28 (0.22)	0.53* (0.23)	0.57* (0.22)	0.11 (0.20)	0.37+ (0.21)	0.40+ (0.20)	0.31 (0.22)	0.48* (0.22)	0.51* (0.21)
Social ties												
Network size	0.07* (0.03)	0.08** (0.03)	0.07* (0.03)									
Migrant x Network size	-0.07 (0.05)	-0.07 (0.04)	-0.08+ (0.04)									
Contact frequency				0.08* (0.04)	0.09* (0.04)	0.08* (0.04)						
Migrant x Contact frequency				-0.11* (0.06)	-0.12* (0.05)	-0.13* (0.05)						
Native alters							0.07* (0.03)	0.07* (0.03)	0.07* (0.03)			
Migrant x Native alters							-0.06 (0.04)	-0.07+ (0.04)	-0.07+ (0.04)			
Diversity in network resources										0.12* (0.06)	0.11* (0.05)	0.09+ (0.05)
Migrant x Diversity in network resources										-0.16+ (0.08)	-0.13+ (0.08)	-0.13+ (0.07)
Residential Ingroup Exposure												
Low	Ref.	Ref.	Ref.									
Moderately low	0.04 (0.20)	0.01 (0.17)	0.06 (0.17)	0.03 (0.20)	0.01 (0.18)	0.06 (0.17)	0.02 (0.20)	-0.00 (0.18)	0.05 (0.17)	0.02 (0.20)	-0.00 (0.18)	0.05 (0.17)
Moderately high	-0.14 (0.16)	-0.05 (0.15)	0.03 (0.15)	-0.15 (0.16)	-0.06 (0.15)	0.03 (0.15)	-0.19 (0.16)	-0.09 (0.15)	0.00 (0.15)	-0.17 (0.16)	-0.08 (0.16)	0.02 (0.15)
High	-0.11 (0.19)	-0.06 (0.17)	0.03 (0.16)	-0.12 (0.18)	-0.07 (0.17)	0.02 (0.16)	-0.19 (0.17)	-0.11 (0.16)	-0.02 (0.16)	-0.12 (0.19)	-0.08 (0.17)	0.01 (0.16)
Migrant x Mod. low	-0.13 (0.26)	-0.29 (0.26)	-0.30 (0.25)	-0.10 (0.27)	-0.26 (0.26)	-0.27 (0.25)	-0.11 (0.25)	-0.26 (0.25)	-0.27 (0.24)	-0.10 (0.26)	-0.26 (0.26)	-0.28 (0.25)
Migrant x Mod. high	0.11 (0.24)	-0.16 (0.26)	-0.20 (0.25)	0.13 (0.24)	-0.15 (0.26)	-0.19 (0.25)	0.19 (0.24)	-0.09 (0.25)	-0.13 (0.25)	0.15 (0.24)	-0.14 (0.26)	-0.18 (0.25)
Migrant x High	0.22 (0.29)	-0.05 (0.28)	-0.10 (0.26)	0.24 (0.29)	-0.04 (0.28)	-0.09 (0.27)	0.36 (0.27)	0.06 (0.27)	-0.00 (0.26)	0.24 (0.29)	-0.03 (0.28)	-0.08 (0.27)
Constant	3.29*** (0.35)	2.63*** (0.48)	2.73*** (0.39)	3.31*** (0.38)	2.62*** (0.50)	2.70*** (0.41)	3.37*** (0.34)	2.71*** (0.47)	2.81*** (0.38)	3.42*** (0.35)	2.67*** (0.49)	2.77*** (0.40)
Observations	554	638	706	554	638	706	540	624	692	554	638	706

Note: Standard errors in parentheses $p < .10$, $*p < .05$, $**p < .01$, $***p < .001$. All models are adjusted for respondent gender, age, education, marital status, household size, and district level of urbanization and average income per district resident. Results presented are for non-poor respondents. Ties to natives refers to ties to Dutch natives, meaning that they were born in the Netherlands and that both their parents were born in the Netherlands.

A recent discussion in social network research is whether support can be found in weak or strong ties. Traditionally, support was thought to be primarily offered by strong ties (see: Granovetter, 1973), but recent work shows that individuals also avoid strong ties and confide in weak ties that underwent similar experiences, happen to be available, and are most likely to provide empathy (Small, 2017). We expected that residential areas of many ingroup members offer a large pool of potentially empathic others who are readily available. Our results do not corroborate this idea. Instead, they show that among migrants, stronger ties are beneficial to mental health. This is in line with recent work highlighting the mental health benefits of family ties, which are among the strongest type of social ties (Löbel, 2019).

Limitations and future research

A current issue in the debate around migrant status is the question of

how many generations researchers should include to define migration background. We chose to include second-generation migrants as migrants instead of natives. This is because several second-generation migrant groups are known to suffer from similar structural disadvantages as their parents and are therefore central to the public debate on migration and integration (Algan, Dustmann, Glitzi, & Manning, 2010; Heath, Rethon, & Kilpi, 2008). The same can be said for migrants of different ethnic backgrounds: while migrants of different ethnic backgrounds have their unique struggles, they also experience similar structural disadvantages. Unfortunately, our data do not allow for further distinction between first- and second-generation migrants and specific ethnic groups. It would be valuable if future research could address the diverse experiences of different types of migrants. For example, first-generation migrants experience the strain of migration and several barriers that second-generation migrants are less likely to experience (e.g., language proficiency). In addition, better data can help

to disentangle poverty and generation effects. If first-generation migrants are more likely to be poor, then it is unclear if our results reflect the effect of poverty status or of being a first-generation migrant.

A second set of limitations stems from the data collection design, which might have introduced selection bias. Even though the panel was carefully selected and supplemented to reduce selection bias, respondents were free to opt in or out of individual surveys, which led to a relatively large number of missing data on key variables. To minimize attrition bias, we performed multiple imputations where possible. We also reported similarities and differences between characteristics of the analytical sample and the population. Additional biases that we were unable to account for can be addressed in future research by estimating individual-level fixed effects.

A third avenue for future research is to examine varying tie strengths. Our conclusions about the relationship between depressive symptoms and social ties concern relatively strong social ties. While strong ties could be more willing to provide the types of support needed when suffering psychologically, weak ties might also matter, because they contribute to a sense of belonging to a larger social group. Even though we touched on such a sense of belonging by our inclusion of residential ingroup exposure, we suggest more direct measures of weaker social ties. Previous research, however, has shown that migrants do not suffer from a lack of strong ties. Their overall networks are smaller, in part because they contain fewer weak ties (Lin, 2000; Marsden, 1988). If it is true that networks of migrants and natives differ primarily with regard to weak ties and that weak ties matter for mental health, then future research could also include data on ties of varying strength.

Conclusions

The above results enable reconciling the contrasting views that more disadvantaged groups benefit more from protective factors (need contingency argument) versus that those who are more disadvantaged are less equipped to build up support systems (cumulative advantage of homophily argument). We show that migrants below the poverty line do not benefit from either residential ingroup exposure or social ties. Our findings regarding residential ingroup exposure are particularly surprising, because this type of protective factor does not require individual investments in the form of relationship formation, maintenance and extending or returning favors, which means that this type of protective factor should benefit migrants in poverty. Unlike much previous research conducted in the US and UK context, however, we were unable to establish benefits of residential ingroup exposure in the context of the Netherlands. Our findings imply that the benefits of residential ingroup exposure for migrants (or the group density effect) might be context-dependent. We do find that social ties are beneficial for mental health, but only among migrants who are non-poor. This suggests that migrants who are better equipped to invest in protective factors are more likely to reap benefits for their mental health. This lends support to the cumulative advantage of homophily, suggesting that those who already occupy advantaged positions are able to reap more benefits from their networks. We conclude that policies aimed at reducing health inequalities that stem from intersections of poverty and ethnic minority status should pay special attention to cumulative (dis)advantages emerging from homophily.

Ethics statement

We used secondary data from the Longitudinal Internet Studies for the Social Sciences (LISS) Immigrant Panel which was collected by CentERdata: Institute for data collection and research, Tilburg, the Netherlands. CentERdata confirms that all respondents provided informed consent and further states that in the Netherlands, ethics approvals is not required for questionnaire research among adults. However, CentERdata abides by the European General Data Protection Regulation (GDPR). More information on ethics and consent can be

obtained on the website of the LISS: <https://www.lissdata.nl/faq-page/how-are-ethics-and-consent-organized-liss-panel> or via info@lissdata.nl.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ssmph.2020.100599>.

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