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A longitudinal study on the association between financial scarcity and feelings of societal exclusion☆

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ABSTRACT

We tested the association between financial scarcity (i.e., the experience of lacking needed monetary resources) and feelings of societal exclusion using longitudinal data from a large probability sample of the Dutch population. We report preregistered analyses of two time points (almost two years apart) and exploratory robustness checks of seven time points (spanning four years). As hypothesized, results of a Cross-Lagged Panel Model indicated that financial scarcity was associated with increased feelings of societal exclusion over time and vice versa, feelings of societal exclusion were associated with increased financial scarcity over time. In addition, results showed that financial scarcity was associated with perceived lack of social participation, perceived stigmatization, and weaker social networks. These factors did not mediate the association between financial scarcity and feelings of societal exclusion. We discuss the potential implications of these findings for the temporal dynamics of financial scarcity and feelings of societal exclusion.

1. Introduction

Even in relatively rich countries, many households face financial challenges. To date, EU households have accumulated outstanding loans as high as 97 % of their gross disposable income (Data ECB, 2022). In the Netherlands, 9 % of households have strong difficulties to get by, 16 % do not have enough money to go on a one-week vacation once per year, and 18 % have no financial buffer to pay for unexpected expenses (CBS, 2023). When lacking financial resources to cope with demands, people can experience financial scarcity (Mani et al., 2013; Shah et al., 2012; Van Dijk et al., 2022).

We conceptualize financial scarcity as a psychological experience that involves two key appraisals: a perceived threat (i.e., shortage of money) and a perceived inability to adequately cope with this threat (i.e., lack of control over one's financial situation). These appraisals fit with psychological stress frameworks (e.g., Cundiff et al., 2020) and elicit specific affective and cognitive responses, such as financial worry and rumination, and increased short-term focus (De Bruijn & Antonides, 2020; Hilbert et al., 2022; Mani et al., 2013; Shah et al., 2012; Van Dijk et al., 2022). Thus, assessing the experience of financial scarcity extends beyond monetary measures of financial deprivation, such as low income. This is not to suggest that the experience of financial scarcity is entirely independent of socioeconomic status (SES). Financial scarcity is more likely among individuals with lower SES, and previous research found

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small to moderate correlations between financial scarcity and SES-indicators.[1] However, SES is a broader indicator of social and economic background, including a relative position in terms of wealth, status, prestige, and various demographics (e.g., Villalba, 2014), while the experience of financial scarcity specifically concerns one's appraisals of a lack of financial resources and the inability to adequately cope with this perceived problematic situation. Our approach thus excludes individuals for whom their limited resources are not problematic but includes those with relatively many financial resources who face too high demands (e.g., due to problematic debts, higher cost of living, or financial strain following a divorce).

The experience of financial scarcity has a range of aversive effects. It has been related to negative affect, lower well-being, impaired cognitive functioning, and poorer mental and physical health (Chetty et al., 2016; Haushofer & Fehr, 2014; McLeod & Shanahan, 1996; Ridley et al., 2020; Shankar et al., 2010; Van Dijk et al., 2022; Weinstein & Stone, 2018; Zhao & Tomm, 2018; see also Frankenhuis & Nettle, 2019). These findings have advanced the awareness of the pervasive consequences that financial scarcity can have for people. However, these insights do not address the broader context of how individuals relate to their social environment. In the current article, we aim to enrich the literature on financial scarcity by linking it to people's connectedness to the broader society in which they live. We investigated whether financial scarcity is, over time, associated with an increase in feelings of societal exclusion—the experience that one is not fully part of society. Such heightened feelings of societal exclusion could be explained by the associations between financial scarcity and fewer opportunities to participate in social life, more perceived stigmatization, and weaker social networks. We also propose that feelings of societal exclusion are, in turn, associated with an increase in financial scarcity. Using longitudinal data from a large probability sample of the Dutch population, the current study tested these prospective associations between financial scarcity and feelings of societal exclusion. Moreover, we examined the possible mediating role of perceived lack of social participation, perceived stigmatization, and social network strength.

1.1. Financial scarcity and feelings of societal exclusion

We define societal exclusion as the feeling that one is not fully integrated in or accepted by society (see also Bäckman & Nilsson, 2011; Doolaard et al., 2022; Mood & Jonsson, 2016; Scholten et al., 2023; Sagioglou & Hommerick, 2024; Zhang et al., 2019). Thus, instead of feeling alone, ignored, or isolated because of a specific group or person—the more typical interpersonal focus of exclusion studies within social psychology (William, 2007, 2009; Williams & Nida, 2011)—societal exclusion refers to a more general and broader experience of not feeling part of society. Our view of societal exclusion resembles recent social psychological research that conceptualizes societal exclusion as not feeling considered by the government, politics in general, or society at large (see Jauch et al., 2023).

Support for our proposition that financial scarcity is associated with an increase in subsequent feelings of societal exclusion can be derived from a recent study by Scholten et al. (2023) who followed people who received income assistance from their municipality. Their three-wave study, that covered more than two years, showed that financial hardship was associated with lower societal belonging a year later, although it should be noted that these effects only occurred in a sensitivity check of the last two waves and not in the main analyses across all three waves. Relatedly, several studies on poverty included a measure of feeling left out of society (from the European Quality of Life Survey; Layte et al., 2010) within larger indices of social integration. Results showed a relation between poverty (low income or material deprivation) and social isolation or disintegration (e.g., Albert & Hajdu, 2020; Böhnke, 2008). Whereas all these studies included samples based on monetary measures of financial scarcity (i.e., individuals receiving income support, facing poverty), in our current study we focus on financial scarcity. Because financial scarcity can be observed among people with different levels of financial resources, we take a broader and more psychological perspective than previous research. Moreover, we test three possible underlying reasons for the association between financial scarcity and feelings of societal exclusion.

First, people who experience financial scarcity may have fewer opportunities to participate fully in public and social life. Social activities like going to the movies, eating out, visiting friends, or joining a sports club, often cost money. While these expenses might be trivial for people who have ample financial resources, they may pose a financial challenge for those who are financially less well off (see also Shah et al., 2012). Indeed, people with insufficient financial resources are less likely to use services and take part in social activities (Gordon et al., 2000; Hjalmarsson & Mood, 2015), and interview studies suggest that this may contribute to people's lack of belonging in their local communities (Stewart et al., 2009).

Second, people who experience financial scarcity may feel stigmatized because of their financial situation. For example, there are negative stereotypes about people with financial problems and people in financial problems are therefore more likely to be evaluated negatively, avoided as exchange partner, or kept at a larger distance (Cozzarelli et al., 2001; Durante et al., 2017; Kurzban & Leary, 2001; Lott, 2002). People who experience financial scarcity may pick up on signals that others treat them differently or avoid them because of their financial situation. Such "stigma consciousness" is related to a host of negative effects (Kurzban & Leary, 2001; Pinel, 1999; Pinel et al., 2005), and can motivate people to withdraw from social interactions (Chase & Walker, 2013; Hjalmarsson & Mood, 2015; Plantinga, 2019; Reutter et al., 2009). In addition, research on the impact of being unemployed, a condition in which people may also experience financial scarcity, has shown that in younger populations expected stigmatization (in this case, of being unemployed) is related to feelings of ostracism and being an outsider (Albath et al., 2023). Accumulating experiences of (perceived) stigmatization (i.e., being stereotyped, treated differently, or avoided because of one's financial situation) may therefore make people who experience financial scarcity feel rejected and excluded by society.

Third, financial scarcity may also affect the strength of people's social networks. Here, opposing predictions can be made. When people who experience financial scarcity are less able to afford the monetary costs associated with participating in (close) social networks, they also have less opportunity to build or maintain these networks (Böhnke, 2008; Böhnke & Link, 2017; Eckhard, 2018; Mood & Jonsson, 2016). Likewise, potential interaction partners might exclude them from participating in these networks and instead choose to cooperate with others who are more affluent (Stallen et al., 2023). When stigmatization results in withdrawal or lower quality social interactions, there is less opportunity to develop or maintain one's social networks. Financial scarcity may thereby lower the strength of social networks, and without strong social networks to fall back on, this may also increase the feeling that one is not fully integrated in society. On the other hand, it has been suggested that people who experience financial scarcity are more dependent on their social networks, and that their social networks may

[1] The measure of financial scarcity that we used in the current research has been previously related to SES-indicators like income and education. In a psychometric evaluation of the financial scarcity scale, data from three independent samples documented negative relations between financial scarcity and income and education, with Spearman's rank correlations that range between −.32 and −.41 for income, and −.08 and −.16 for education (Van Dijk et al., 2022; Studies 2-4). These small to moderate correlations show that financial scarcity is related to these measures but also clearly distinct. This research also showed that the experience of financial scarcity has predictive power beyond SES-indicators, such that financial scarcity is related to lower mental health, self-esteem, and life satisfaction after statistically controlling for SES-indicators income and education (with financial scarcity also being a stronger predictor than the different SES-indicators, Van Dijk et al., 2022; Study 9).

then become tighter because of solidarity and support (i.e., turning to others in case of need; Böhnke, 2008; Gordon et al., 2000; Lubbers et al., 2020). From this perspective, financial scarcity may lead to stronger social networks and this social support may then buffer against feelings of societal exclusion. Depending on whether financial scarcity leads to weaker or stronger social networks, we thus expect it to be associated with an increase or decrease in feelings of societal exclusion, respectively.

1.2. Prospective associations between financial scarcity and feelings of societal exclusion

The main goal of the current research was to investigate whether financial scarcity is associated with an increase in feelings of societal exclusion over time, and whether this association is mediated by perceived lack of social participation, perceived stigmatization, and weaker social networks. Yet, feeling excluded may, over time, also be associated with an increase in financial scarcity.

Feeling excluded is known to cause negative mood, pain, and distress, and it threatens fundamental needs of belonging, self-esteem, control, and meaningful existence (Baumeister & Leary, 1995; Leary, 2001; Wesselmann & Williams, 2017; Williams, 2007, 2009). Moreover, feeling excluded decreases cognitive performance (Baumeister et al., 2002) and increases worrying (Eisenberger et al., 2007). While these findings have been obtained in the context of interpersonal exclusion, they likely also hold for feeling excluded by society. Societal exclusion can thus be regarded as a highly negative and taxing experience, which can increase worry and distress. For people experiencing financial hardship, feelings of societal exclusion may then also contribute to financial scarcity. The extra worries and distress, on top of the stress already associated with financial scarcity, can make it harder to regulate financial scarcity as with a mind full of concerns the capacity deal with one's finances becomes much more difficult. The fact that one has fewer social relations to rely on may further contribute to the association between societal exclusion and financial scarcity (see also Stallen et al., 2023).

Following this, we tested whether the associations between financial scarcity and feelings of societal exclusion are bidirectional, such that financial scarcity is not only associated with an increase in feelings of societal exclusion over time, but feelings of societal exclusion are also associated with an increase in financial scarcity over time. These temporal associations between financial scarcity and feelings of societal exclusion may thus trap people in a downward spiral (Haushofer, 2019).

1.3. The current research

Taken together, we hypothesized that over time, financial scarcity is associated with an increase in feelings of societal exclusion and vice versa, feelings of societal exclusion are associated with an increase in financial scarcity.[2] In a probability sample of the Dutch population, we monitored people's financial scarcity and their feelings of societal exclusion over the course of four years. We report preregistered analyses of two time points (almost two years apart) and exploratory analyses of seven time points. These data allowed us to test whether financial scarcity is positively associated with stronger feelings of societal exclusion over time, and whether, in turn, the feeling of societal exclusion is associated with more financial scarcity over time. We also tested whether perceived lack of social participation, perceived stigmatization, and social network strength mediated the temporal relationship between financial scarcity and feelings of exclusion from society.

[2] Note that in our preregistration, we described the hypotheses in a causal way (i.e., "leads to…"), but given the correlational nature of our data, we rephrased the hypotheses here to present them in terms of associations.

2. Method

2.1. Participants and design

We collected data from the LISS panel (Longitudinal Internet Studies for the Social sciences), administered by Centerdata (Tilburg University, the Netherlands). The LISS panel consists of approximately 7500 members from 5000 different households—which are a true probability sample of Dutch households drawn from the population register. The panel takes great care to safeguard the quality of the sample by recruiting new panel members to replace inactive ones. To obtain a sample that is as representative as possible, computers and internet connections are provided to households that would otherwise be unable to participate. Participants are paid approximately €15 for every hour of taking surveys (for more information, see https://www.lissdata.nl/about-panel).

Time 1 (t1, April 2018) included a total of 1114 participants (55.0 % women, 45.0 % men; $M_{\text{age}} = 53.0$ years, $SD = 17.8$). Time 2 (t2, February 2020) included a total of 839 participants (53.5 % women, 46.5 % men; $M_{\text{age}} = 56.4$ years, $SD = 16.9$). After these first two time points, we continued data collection (five times between August 2020 and August 2022; t3-t7); see the Supplement for all dates and sample characteristics of t3-t7. With $N = 839$, the current study had a power of $\beta = .83$ to detect correlations of $r > .10$, at $\alpha = .05$. The research was approved by the Psychology Research Ethics Committee of Leiden University.

2.2. Procedure and materials

Participants received an invitation to complete the survey, and they were informed that the survey was conducted on behalf of researchers of Leiden University. The survey consisted of a set of items for different research projects (see the preregistration for all items; link below). Participants first filled out the "Psychological Inventory of Financial Scarcity" (PIFS), a validated scale that measures the psychological experience of financial scarcity (Van Dijk et al., 2022; $\alpha_{t1} = .93$, $\alpha_{t2} = .94$). This scale consists of 12 items, which assess perceptions of shortage of money (e.g., "I often don't have money to pay for the things that I really need"), lack of control over one's financial situation (e.g., "I experience little control over my financial situation"), financial rumination and financial worrying (e.g., "I worry about money a lot"), and short-term financial focus (e.g., "I am only focusing on what I have to pay at this moment rather than my future expenses"). These, and all other items in the survey, were answered on a scale from 1 = *Totally disagree*, to 7 = *Totally agree*.

Participants proceeded to answer two questions on feelings of societal exclusion. To assess feelings of societal exclusion resulting from one's financial situation, and prevent that participants would report on feelings that might result from other factors (e.g., one's physical and mental health, racism, or sexism; Doolaard et al., 2022; Fryberg & Stephens, 2010; Goodwin et al., 2010; Kurzban & Leary, 2001; Ridley et al., 2020; Wesselmann & Williams, 2017) we asked them: "Because of my financial situation I feel rejected by society", and "Because of my financial situation I feel excluded by society" ($\alpha_{t1} = .97$, $\alpha_{t2} = .96$).

Participants then reported perceived lack of social participation by indicating to what extent they agreed with: "Because of my financial situation I take part in recreative or social activities less often than others do (for example, sports, being an active member of an association)", and "Because of my financial situation I sometimes cannot participate in social activities when I want to" ($\alpha_{t1} = .94$, $\alpha_{t2} = .95$). Next, participants reported whether they felt stigmatized because of their financial situation by indicating to what extent they agreed with: "Others have negative stereotypes about people in my financial situation", and "My financial situation has a negative influence on how people act towards me" ($\alpha_{t1} = .76$, $\alpha_{t2} = .81$). Finally, participants reported on the strength of their social network by indicating to what extent they agreed with: "I feel I have a close-knit social network", and "I feel like I am part of a social group that I can always rely on" ($\alpha_{t1} = .90$, $\alpha_{t2} = .92$). The survey was identical at all time points.[3] Finally, note that the survey also included eight items measuring threats to belonging, control, self-esteem, and meaningful existence (following research that shows that exclusion often relates to threats to these fundamental needs, e.g., Lelieveld et al., 2013; Williams, 2007, 2009). Full details and analyses are presented in the Supplement.

2.3. Preregistration and deviations from the preregistration

We preregistered analyses for financial scarcity and feelings of societal exclusion after wave 1 was collected (https://osf.io/9yjm6). This preregistration also contains hypotheses for a project on financial scarcity and avoidance (Hilbert et al., 2022; for transparency purposes, these projects were preregistered jointly). Like Hilbert et al. (2022), we ran our confirmatory analyses on two, instead of three, waves of data. Thus, even though in an addendum we described the third wave (https://osf.io/vye4k), we did not incorporate these data into our confirmatory analyses. The reason for this is that the COVID-19 pandemic started after data collection of the second wave. Reasoning that the pervasive and thereby potentially confounding impact of the pandemic might affect our findings (e.g., by increasing general uncertainty or affecting social relations; see e.g., Dimmock et al., 2021; Pedrosa et al., 2020; Retty & Daniels, 2021) we decided to test our confirmatory analyses with the first two waves. The confirmatory analyses are followed by exploratory robustness checks of all other available data. These available data include seven waves in total (i.e., five additional waves, collected between August 2020 and August 2022). As we did not preregister these seven-waves analyses, we treat these analyses as exploratory. Data and materials are available on https://dataverse.nl/dataverse/SocPsy.

3. Results

We present confirmatory analyses of our two-waves hypotheses followed by exploratory analyses of seven-waves. For our analyses, we used R version 4.0.4. For the model building, we used the R package lavaan. To test our hypotheses, we made use of Cross-Lagged Panel Models (CLPMs). CLPMs allow the user to test *cross-lagged effects*, reciprocal relationships between variables over time: Is financial scarcity at t1 associated with increased feelings of societal exclusion at t2, and are feelings of societal exclusion at t1 associated with increased financial scarcity at t2? Additionally, CLPMs control for correlations within time points as well as *autoregressive effects*, the association of a construct measured at an earlier time point with the same construct measured later (Kearney, 2017).[4]

To examine model fit, we used the comparative fit index (CFI), the Tucker-Lewis Index (TLI), the root-mean-square error of approximation (RMSEA), and the standardized root-mean-square residual (SRMR). CFI and TLI values $\geq .95$, and SRMR values $\leq .08$ indicate good model fit (Hu & Bentler, 1999). RMSEA values $\leq .05$ are considered good, values between .05 and .08 acceptable, and values between .08 and .10 marginal (Browne & Cudeck, 1992). We report standardized coefficients throughout the whole paper.

3.1. Pre-analyses

The variables that measured financial scarcity, feelings of societal exclusion, perceived lack of social participation, and perceived stigmatization all had a relatively large positive skew (between 0.95 and 2.35, kurtosis between 3.19 and 8.26), which indicates that a relatively large share of participants had relatively few of such experiences. Because the data of these variables did not appear to be distributed normally, we used the robust MLR estimator for model estimation for all models, which provides robust fit indices and is suitable for incomplete data (Rosseel, 2018). We report robust fit indices throughout the whole paper.

We started with confirmatory analyses to test our preregistered hypotheses using the data from the first two waves, where drop-out was still relatively low. Next, we conducted exploratory analyses to test whether associations were robust over time, by using the data of the complete cases of all seven waves. Analyses were done in two steps. In step 1, we tested the hypothesized relations between financial scarcity and feelings of societal exclusion. In step 2, we included the mediators.[5]

3.2. Confirmatory analyses

Means and standard deviations of the main variables are displayed in Table 1, including correlations between variables across waves 1 and 2. These analyses showed that financial scarcity correlated positively with societal exclusion. Moreover, both financial scarcity and societal exclusion correlated positively with perceived lack of participation and perceived stigma, and negatively with social network strength.

3.2.1. Two-waves CLPM without mediators

The number of observations in the two-waves CLPM was $N = 837$ (two participants had missing data).[6] Consistent with our hypothesis, this model showed that financial scarcity at t1 was associated with an increase of feelings of societal exclusion at t2, $\beta = .22$, $p < .001$, 95 % CI [.12, .32]. Likewise, feelings of societal exclusion at t1 were associated with an increase in financial scarcity at t2, $\beta = .12$, $p = .009$, 95 % CI [.03, .21]. These associations emerged after controlling for the autocorrelations of financial scarcity at t1 with t2, $\beta = .64$, $p < .001$, 95 % CI [.56, .71], and feelings of societal exclusion at t1 and t2, $\beta = .42$, $p < .001$, 95 % CI [.31, .53]. These findings suggest that financial scarcity and feelings of societal exclusion are positively associated over time.

3.2.2. Two-waves CLPM with mediators

The number of observations in this two-waves CLPM including mediators was $N = 835$ (four participants had missing data). The model showed very good model fit (CFI = .99, TLI = .97, RMSEA = .06, SRMR = .04). Consistent with our hypothesis (see Fig. 1), financial scarcity at t1 was associated with an increase in feelings of societal exclusion at t2, $\beta = .17$, $p = .026$, 95 % CI [.02, .32]. In addition, financial scarcity at t1

[3] With the exception that we had also included the behavioral inhibition and behavioral activation questionnaire (BIS BAS; Carver & White, 1994) in the first wave. We decided not to include this questionnaire in subsequent waves, because it does not focus specifically on a financial context and was therefore less relevant for our research interests. In addition, we added control items about the COVID-19 pandemic from the third wave on.

[4] Note that we used the standard CLPM rather than Random-Intercept CLPM (RI-CLPM), as CLPM fits with our research questions focused on between-participant processes (see Hamaker, 2023; Hilbert et al., 2022; Orth et al., 2021; Usami, 2021). The RI-CLPM is not appropriate for the current study and research question as it estimates CLPM parameters based on within-person variability, controlling for differences between participants. Thus, RI-CLPM is a different model than CLPM with distinct aims, with RI-CLPM focusing on within-person variability, effectively nullifying the between-person variability (see also Lüdtke & Robitzsch, 2021).

[5] Note that as step 3, we reran all analyses using full information maximum likelihood estimation (FIML; Enders & Bandalos, 2001). This approach provides unbiased estimates under several distributions of missing values. The results are substantially the same, except for some additional effects in the seven-waves models (results can be obtained by running the FIML code; see link in Section 2.3): Seven-waves without mediators, additional effect for SE-FS at t3 and seven-waves with mediators, additional effects for FS-SE at t2/t4 and SE-FS at t3/t4.

[6] We do not report model fit, as a two-waves model without mediators is saturated.

Table 1
Means (*SDs*) for the main variables and Pearson correlations (*r*) Between the main variables across two waves (t1-t2).

	M (SD)			*r*	
Variable	*t1*	*t2*	Variable pair	*t1*	*t2*
FS	2.0 (1.1)	1.9 (1.1)	FS - SE	.59	.63
SE	1.6 (1.2)	1.6 (1.2)	FS - PART	.68	.67
PART	2.2 (1.8)	2.2 (1.7)	FS - STIG	.51	.49
STIG	2.3 (1.4)	2.2 (1.4)	FS - NET	−.19	−.24
NET	4.8 (1.6)	4.8 (1.6)	SE - PART	.55	.58
			SE - STIG	.53	.50
			SE - NET	−.28	−.28

Note. t1 = time 1; t2 = time 2; FS = financial scarcity; SE = feelings of societal exclusion; PART = perceived lack of participation; STIG = perceived stigmatization; NET = perceived social network strength. All correlations are significant at $p < .001$.

was associated with an increase in perceived lack of social participation, $\beta = .23$, $p < .001$, 95 % CI [.15, .32], and perceived stigmatization, $\beta = .26$, $p < .001$, 95 % CI [.18, .34], and a decrease in social network strength at t2, $\beta = -.10$, $p = .001$, 95 % CI [−.16, −.04]. Unlike our hypothesis, we did not find support for mediation effects (all *p*s > .148). Also, in the model with mediators, feelings of societal exclusion at t1 were no longer associated with an increase in financial scarcity at t2, $\beta = .07$, $p = .089$, 95 % CI [−.01, .15]. These findings confirmed the hypothesized associations between financial scarcity and perceived lack of social participation, perceived stigmatization, and social network strength, but these relations did not statistically explain the relation between financial scarcity and feelings of societal exclusion.

3.3. Exploratory robustness checks

Next, we conducted robustness checks with analyses of the data of all seven waves. Here, we present the main results of these analyses, for which the β's are included in Table 2 (all other statistics are included in the Supplement). To achieve sufficient model fit, we added time-lagged autoregressive effects, such that a variable at a given time is predicted by this same variable of the three prior waves, where present (see also Figure S2a in Supplement). So, for example, we let financial scarcity at t7 not only be predicted by financial scarcity at t6, but by financial scarcity at t4, t5, and t6; financial scarcity at t4 was predicted by financial scarcity at t1, t2, and t3 (and t3 was predicted by t1 and t2, etcetera). This t-3 logic thus only applies to the autoregressive paths and these alterations did not concern any paths involved in our hypotheses. This model selection is thus rooted in both theoretical principles (i.e., mitigation of autoregressive and carry-over effects) and model fit indicators to determine the appropriate number of previous time points, and to avoid an over-specified model that could potentially lead to biased estimates or an under-specified model that may fail to adequately account for autoregressive effects.

The analyses partly corroborated the two-waves results. Analyses *without mediators* showed that financial scarcity was associated with feelings of societal exclusion at t2, t3, and t4 (other relations *ns*). Next, feelings of societal exclusion were associated with financial scarcity at t2, t4, and t5 (other relations *ns*). Analyses *with mediators* showed that financial scarcity was associated with feelings of societal exclusion at t3

Table 2
β's for the seven-waves (t1-t7) CLPM between financial scarcity and feelings of societal exclusion, without and with mediators.

	t2	t3	t4	t5	t6	t7
FS - SE without mediators	.16*	.18**	.11*	−.04	.06	.06
SE - FS without mediators	.15**	.07	.09*	.14**	.05	.02
FS - SE with mediators	.13	.17**	.10	−.05	.10	.02
SE - FS with mediators	.10	.06	.04	.11**	.03	.02

Note. ** $p < .01$, * $p < .05$. FS = financial scarcity; SE = feelings of societal exclusion.

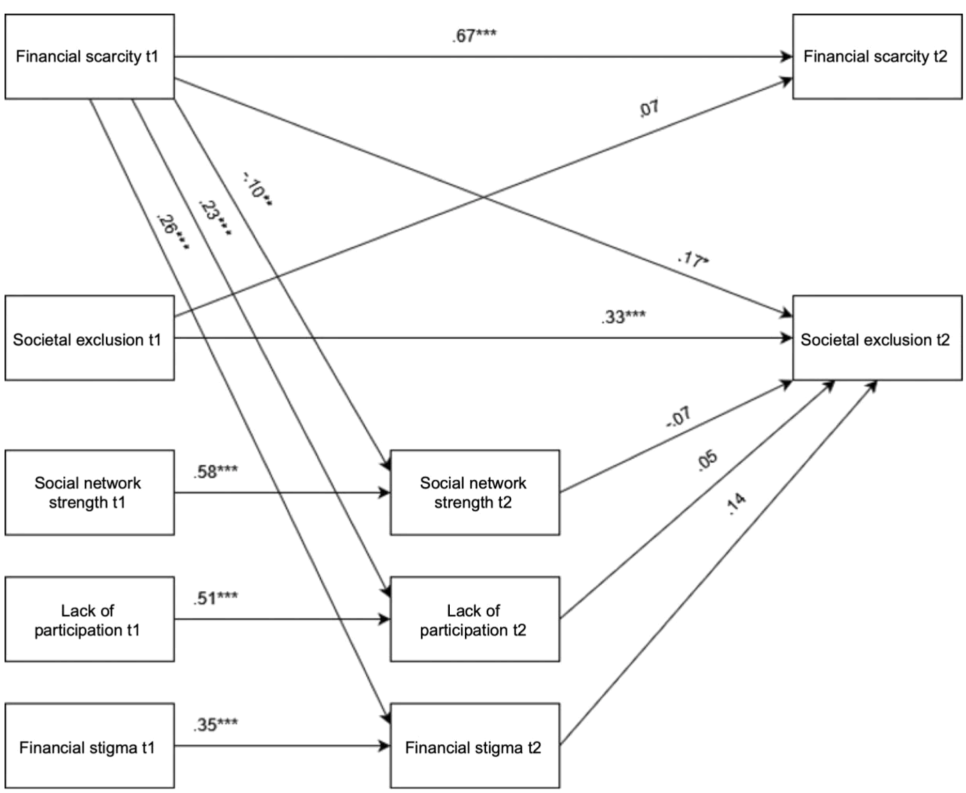

Fig. 1. *Results of the Two-Waves CLPM Between Financial Scarcity and Feelings of Societal Exclusion, Including Mediators*
Note. *** $p < .001$, ** $p < .01$, * $p < .05$. Arrows representing (co)variances are omitted for ease of display.

(other relations *ns*). Next, feelings of societal exclusion were associated with financial scarcity at t5 (other relations *ns*). Like the two-waves analyses, there was no support for mediation, except for mediation of financial scarcity on feelings of societal exclusion at t4 via perceived stigma.

The seven-waves analyses thus confirmed that financial scarcity is associated with increased feelings of societal exclusion at t2-t4, and feelings of societal exclusion are associated with increased financial scarcity at t2-t5 (except t3). In later waves, the β's become smaller and relations are no longer significant. This might be explained by a gradual reduction in statistical power, as the sample size more than halved at t7 as compared to t1.

Taken together, these results showed that financial scarcity was positively associated with feelings of societal exclusion over time. Vice versa, feelings of societal exclusion were positively associated with financial scarcity over time. Results further showed a positive relation between financial scarcity and perceived lack of social participation and a positive relation between financial scarcity and perceived stigmatization, whereas results showed a negative relation between financial scarcity and social network strength. These measures, however, did not mediate the relation between financial scarcity and feelings of societal exclusion. Results of the seven-waves analyses suggests that the associations were relatively robust in the first waves but not in later waves. According to the values as specified in Orth et al. (2024; with β's of .03, .07, and .12 for small, medium, and large effects, respectively), the effects found in the two- and seven-waves analyses can be interpreted as medium to large.

4. Discussion

The current study tested the association between financial scarcity and feelings of societal exclusion. We reasoned that those with financial scarcity may perceive a lack of social participation, as going out with others, travelling to meet friends or relatives, and becoming part of a social club is more problematic because this often requires money (e.g., Gordon et al., 2000; Stewart et al., 2009). Also, those with financial scarcity may perceive more stigmatization because of their financial situation (Cozzarelli et al., 2001; Kurzban & Leary, 2001; Lott, 2002). Finally, regarding social network strength, opposing predictions could be made. Social networks may be weaker, as those in financial scarcity may lack the resources to maintain strong social networks (Böhnke, 2008; Mood & Jonsson, 2016). Social networks could, however, also be tighter because of solidarity and support (Böhnke, 2008; Gordon et al., 2000). Because of these effects, financial scarcity was predicted to be associated with feelings of societal exclusion over time.

A longitudinal study with a large probability sample of the Dutch population confirmed that over time, financial scarcity was associated with increased feelings of exclusion from society. The reverse effect was also found: over time, feelings of societal exclusion were associated with increased financial scarcity. We find these relations between two time points (t1-t2), almost two years apart. In addition, exploratory analyses of seven time points (spanning four years) suggested that the associations were robust in the first four/five waves but not in later waves, which is likely explained by a gradual reduction in statistical power. It should also be noted that in these exploratory analyses, we cannot be sure whether and how the COVID-19 pandemic affected these results. Results further showed that financial scarcity at t1 was associated with an increase in perceived lack of social participation, perceived stigmatization, and weaker social network strength at t2. Even though these factors did not mediate the relation between financial scarcity and feelings of societal exclusion, our findings did show that all three factors correlated with both financial scarcity and feelings of societal exclusion.

Our findings thus support a bidirectional relation between financial scarcity and societal exclusion. This finding suggests that financial scarcity and societal exclusion may reinforce each other, such that those who initially experience more financial scarcity may show stronger subsequent societal exclusion and those who initially experience more societal exclusion may show stronger subsequent financial scarcity. This pattern of results is in line with previous research that showed bidirectional relations between financial scarcity and financial avoidance (Hilbert et al., 2022) and between poverty and mental health issues (i.e., anxiety and depression; Ridley et al., 2020). Importantly, these temporal dynamics could contribute to a vicious cycle, making it hard to escape financial problems (cf. "poverty traps", Azariadis & Stachurski, 2005).

Next, regarding the opposing predictions on social network strength, we thus find support for the view that financial scarcity is negatively related to social network strength (Böhnke, 2008). Participants who experience financial scarcity may have been less able to afford participation in social networks (Böhnke & Link, 2017; Eckhard, 2018; Mood & Jonsson, 2016). Furthermore, these participants may have inferred that their potential interaction partners rather choose to interact with others who are more affluent (Stallen et al., 2023). Both experiences may explain why our participants reported weaker social networks. Even though the findings of the current research suggest that financial scarcity is associated with weaker social networks, we also reasoned that social networks might become tighter for people with financial scarcity (e.g., because of solidarity and support; Böhnke, 2008; Gordon et al., 2000; Lubbers et al., 2020). The data do not support this latter possibility. We hesitate, however, to conclude that this may never be the case. In this respect, it may be relevant to note that we measured social network strength by asking participants how close they were to a social group and social networks in general. If we would have asked participants about the social relations to specific groups (e.g., family or neighbors), feelings of solidarity and support would perhaps have been more salient. Future research could investigate whether such more specific social networks are tighter for those in financial scarcity.

4.1. Implications and future directions

An important contribution of the current research is the focus on societal exclusion. Previous theorizing and experimental studies have mostly addressed exclusion from specific groups (Williams, 2007; Williams & Nida, 2016). Even though these specific groups sometimes were meant to represent abstract larger groups (e.g., Sacco et al., 2014), little research has specifically addressed the effect of societal exclusion (but see Doolaard et al., 2022; Jauch et al., 2023). By showing how financial scarcity influences exclusion at the societal level, the current research thus adds to the understanding of feelings of exclusion. Although feelings of societal exclusion can form in a different way than feelings of exclusion in interpersonal contexts, their effects may be very similar. Doolaard et al. (2022), for instance, demonstrated that feeling excluded from society can induce similar threats to people's fundamental needs as feeling excluded from specific groups. Future research could directly compare the effects of financial scarcity on feelings of exclusion from society and of specific groups to examine similarities and differences between the two.

Our research also contributes to the existing literature on financial scarcity. Unlike monetary measures of financial deprivation, such as low income or low SES, the experience of financial scarcity fits within psychological stress frameworks characterized by appraisals of threat and an inability to adequately cope with this threat (Cundiff et al., 2020). It specifically addresses people who perceive their financial situation as problematic. Nevertheless, one might wonder whether SES would have similar associations with societal exclusion as financial scarcity does. While this is an empirical question, we would hypothesize that SES has comparable effects, for reasons discussed in the Introduction (e.g., for people with lower vs. higher SES, the costs of social participation may be more burdensome, and the likelihood of experiencing stigma and exclusion could be greater; Johnson et al., 2011; Link et al., 2024; Veland et al., 2009). However, consistent with psychological stress frameworks, we would also hypothesize that financial scarcity and SES interact. Low SES combined with an appraisal of low ability to cope with the situation would amplify the effects, as the perception that one cannot escape the situation intensifies the negative impact of having little or insufficient financial resources. Low SES combined with an appraisal of high ability to cope with the situation may, however, mitigate the effects of having few financial resources, as people are relatively well equipped to deal with their financial situation.

Third, it is important to point out that by including measures on perceived lack of social participation, perceived stigmatization, and social networks strength, our study primarily focused on explaining the association between financial scarcity and societal exclusion. In this context, it is also important to note that the relation between financial scarcity and societal exclusion has a stronger theoretical foundation than the reverse relation between societal exclusion and financial scarcity (see Introduction). Future research may want to explore the underlying mechanisms of the effect of societal exclusion on financial scarcity. We reasoned that societal exclusion constitutes an extra stressor to those already in financial hardship (Baumeister et al., 2002; Wesselmann et al., 2015; Williams, 2007), which makes it even harder to deal with one's financial situation. Another possible mechanism is more social, such that fewer social relations or prosperous social collaborations could contribute to the relation between societal exclusion and financial scarcity. Recent studies for example suggest that those in financial scarcity (vs. those who are more affluent) are more likely to be excluded from participating in prosperous social networks (Stallen et al., 2023). Yet, a negative relationship is also possible, such that those who feel excluded spend less money on social activities, which could alleviate some of the financial scarcity. This pattern is not supported by the current data, but taken together, additional research is needed to better understand the grounds and boundary conditions of the relation between societal exclusion and financial scarcity.

Finally, zooming out on our findings, it is interesting to note that the association between financial scarcity and societal exclusion over time can perhaps also be interpreted positively: that experiences of societal *inclusion* may protect people against some of the (psychological) impact of financial scarcity. Future research could investigate if policies and interventions aimed at increasing societal inclusion may be effective in (partly) managing financial scarcity. Policies and interventions could for instance aim to enlarge social networks of those in financial scarcity (e.g., through promoting individual mobility or participation in local activities; Cass et al. 2005; Kelly, 2011; Koopman et al., 2017), reduce the stigmas that exist about people with financial scarcity (Corrigan et al., 2012; Thornicroft et al., 2008), and create awareness in policymakers of the dynamics of societal exclusion (Cohen-Rimer, 2002).

4.2. Limitations

Our longitudinal design and large probability sample enabled us to study how financial scarcity and societal exclusion developed over time. While we consider this design and our sample strong aspects of our study, we also want to point out some of the limitations of our approach. First, it should be noted that conclusions about causality cannot be drawn based on the current data. While Cross-Lagged Panel Models provide much stronger indications of how factors influence each other over time than simple correlations as they control for autoregressive effects (i.e., the association of a construct measured at an earlier time point with the same construct measured later; Kearney, 2017), the obtained effects are still associations. Future studies could therefore take a more experimental approach, for example by tracking the social and psychological impact of (unconditional) cash transfers in randomized control trials (Gennetian et al., 2021; Sperber et al., 2023; see also Gibson et al., 2020). Such (quasi) experimental studies could then also be used to further clarify the underlying paths. Based on a literature review, we presented social participation, perceived stigmatization, and social network strength as specific underlying factors for the more general association between financial scarcity and feelings of societal exclusion. It would be interesting, however, to also investigate whether lack of social participation and weaker social networks could follow feelings of societal exclusion (e.g., through withdrawal after feeling that one does not belong). Similarly, as noted above, one could test whether initiatives that boost social participation and/or social networks would lower feelings of societal exclusion (see also the possible future direction above, on inclusion as possible protector against some of the impact of financial scarcity).

While experiments can thus further clarify the underlying paths between financial scarcity and societal exclusion, the question remains why we did not find mediation in the current data. Apart from general limitations of mediation analyses (e.g., Spencer et al., 2005), aspects of our measurement may provide a (partial) explanation. Our items regarding social participation, perceived stigma, and social networks were intentionally phrased in general terms to capture a broad range of possible effects. While this could be considered a strength, the general phrasing may make it more difficult to answer. For example, responding to an item about whether 'others' have a negative view of oneself may be difficult if these 'others' are not clearly defined. It is likely that the perceived view of 'others' on oneself depends on who these others are (e.g., others in their neighborhood, sports club, or the rich). Due to these methodological concerns, it is possible that our mediation analysis failed to detect a true mediation effect. It is also possible that other mediators not included in the current study play an important role for the effect of financial scarcity on societal exclusion. For example, financial scarcity is related to negative affect, poorer mental and physical health, and impaired cognitive functioning (Chetty et al., 2016; Haushofer & Fehr, 2014; McLeod & Shanahan, 1996; Ridley et al., 2020; Shankar et al., 2010; Van Dijk et al., 2022; Weinstein & Stone, 2018), which, in turn, could also hinder people from fully participating in society. Future research could benefit from also including such measures.

Another limitation in our measurment may concern the fact that the phrasing of the items in our study may have affected some of the results. All items, except those measuring social network strength, were specifically phrased to emphasize the participants' financial situation. As noted in the Method section, this was done to focus participants on their financial situation when responding to the questions, rather than other possible coinciding factors. However, this focused phrasing may have resulted in somewhat higher correlations between our measures. This is supported by the fact that correlations with social network strength, the variable that did not include this focus on one's financial situation, were lower. Importantly, the strength of the correlations could not have explained the longitudinal effects that we observe, as the CLPM-analysis controls for autoregressive effects of the measures. So, financial scarcity at t1 predicts an increase in the mediators and societal exclusion at t2, while controlling for the scores of the mediators and societal exclusion at t1. Any potential demand effect of the phrasing would also be present at t1 and therefore be controlled for in the analysis.

Finally, the current research sampled participants from the Netherlands, which may constrain the generality of findings (Henrich et al., 2010; Simons et al., 2017). The relation between financial scarcity and feelings of societal exclusion might partly be country specific. Sagioglou and Hommerick (2024), for example, showed that subjective SES—the perception of one's social standing—had stronger effects on feelings of societal exclusion in Japan than in Germany and the US. The authors explain their findings by arguing that lower status is particularly impactful in Japan because of the strong norms regarding living up to the expectations of society. While financial scarcity should not be equated with subjective SES, these findings do raise the possibility that the meaning and impact of financial scarcity could differ between countries, something that could be the focus of future research.

4.3. Conclusion

To conclude, the current research shows that financial scarcity is associated with increased feelings of societal exclusion over time. While financial scarcity is also associated with perceived lack of social participation, perceived stigmatization because of one's financial situation, and a weaker social network, these variables did not mediate the association between financial scarcity and feelings of societal exclusion. Over time, feelings of societal exclusion were also associated with increased financial scarcity. These bidirectional relations may contribute to a vicious cycle of financial scarcity and feelings of societal exclusion. Future research can investigate whether restoring a sense of inclusion can alleviate some of the immediate negative psychological experience of stress and may even help reduce financial problems in the long run.

CRediT authorship contribution statement

Marret K. Noordewier: Writing – review & editing, Writing – original draft, Conceptualization, Formal analysis. **Frank T. Doolaard:** Writing – review & editing, Writing – original draft, Conceptualization. **Gert-Jan Lelieveld:** Writing – review & editing, Conceptualization. **Eric van Dijk:** Writing – review & editing, Conceptualization. **Leon P. Hilbert:** Writing – review & editing, Conceptualization. **Susanne Marr:** Formal analysis, Writing – review & editing, Writing – original draft. **Ilja van Beest:** Writing – review & editing, Conceptualization. **Marcello Gallucci:** Formal analysis, Writing – review & editing. **Wilco W. van Dijk:** Writing – review & editing, Conceptualization.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.socec.2024.102319.

Data availability

Data are available on Dataverse.nl.

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