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Online and Offline Social Support Deterioration: The Effect of Financial Stress Exposure on Depressive Symptoms

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Abstract

Social support is a prominent factor in mental health etiology. According to the social support deterioration model exposure to chronic stressors may over time erode people's social support, thereby contributing to increases in mental health issues. Although there is mounting evidence indicating the beneficial consequences of online social support, the extent to which social support deterioration takes place in an online context is to date not investigated. In this study we tested if exposure to financial stress is associated with depressive symptoms and whether this association can be explained by decreases in both perceived online and offline social support respectively. Using data from a 2016 survey of a representative sample of inhabitants of Ghent (Belgium) ($n = 1150$, 51.5% female, $M_{\text{age}} = 45.4$, $SD_{\text{age}} = 15.9$), we were able to confirm that a reduction in perceived online social support mediates the positive association of financial stress exposure with depressive symptoms, albeit only weakly and indirectly via its association with perceived offline social support. Our findings suggest that the association of online social support with respect to financial stress and mental health is comparable to its offline counterpart, yet its part should not be overstated.

These findings allow us to discuss the offline role of online social support.

Keywords

Financial stress; mental health; social support; social support deterioration model; social networking sites

1. Introduction

Having good social relations is generally beneficial for one's mental health. Lower rates of depression and higher rates of happiness have been found among people with larger personal social networks and higher quality social relations (Diener and Seligman 2002; Cohen and Wills 1985; Thoits 2011). This is often attributed to the availability of social support through these relations. Recently, Social Network Sites (SNSs) have become an important factor with respect to social support (Meng et al. 2017), playing a threefold role. They are used to maintain social networks from which support can be received (Ellison et al. 2014b; Park, Kee, and Valenzuela 2009; Zhang, 2017), allow users to obtain awareness of the potential social support the individual can access (Lu and Hampton 2017), and provide a means to mobilize and access social support (Ellison et al. 2014b; Lampe et al. 2014). In line with these qualities, SNS and support received through it have been successfully, yet conditionally, associated with beneficial mental health outcomes (Kraut and Burke 2015; Zhang 2017).

The associations of social support to mental health outcomes are typically explained by means of the buffering model (Cohen and Wills, 1985; Thoits, 2011), in which social support is considered to alleviate the potential detrimental effects of life stressors on one's mental health. However, continued exposure to life stressors has been found to erode the social support network, bringing about adverse mental health outcomes (Barrera 1986; Ensel and Lin 1991; Gjesfjeld et al. 2010; Hobfoll, 2001; Hobfoll et al. 2003; Holahan et al. 1999; Kanyasti, 2020; Lashari, Kaur and Awang, 2018; Lepore, Evans, and Schneider 1991; Norris and Uhl 1993; Quittner, Glueckauf, and Jackson 1990; Silva, Loureiro and Cardoso 2016). That is, higher levels of exposure to stressors such as chronic illness or enduring poverty gradually erode the amount of social support that can be relied on, thereby undermining the

buffer protecting the individuals' mental health and ultimately resulting in higher rates of psychopathologies such as depressive symptoms.

Many studies on online social support and the use of SNSs with respect to perceived social support have adopted the buffering hypothesis (Meng et al. 2017), thereby finding that online social support reduces the potential effects of stressors on experienced mental health issues (Cole et al. 2017; Fieseler, Meckel and Müller 2014; Lewandowski et al. 2011; Li and Peng 2019; Lo 2019; Ybarra et al. 2015; Zhang 2017). However, the online social support antecedents considered pertain to personal social network characteristics or personality (Meng et al. 2017), hence, there is a paucity regarding the understanding of the social dimensions affecting one's online social support and, subsequently, what downstream mental health consequences this entails. Given the importance of online social support as a stress buffering feature and the evidence that stress exposure may erode the support network, it becomes important to understand how stressors affect the perceived online support network as well. Hence, it begs the question if and to what extent exposure to chronic life stressors, such as sustained financial stress, affects one's online social support network in a similar fashion as one's offline support network. Digital inequalities research has repeatedly demonstrated that offline inequalities are replicated, if not exacerbated, online (Hargittai and Hinnant 2008; van Deursen and van Dijk 2011, 2014), thereby contributing to existing social exclusion processes (Helsper, 2012). Therefore, we investigated to what extent perceived online social support mediates the detrimental effects of financial stress on depressive symptoms as predicted by the social support deterioration model, while taking into account the association of perceived offline social support. Studying the social support deterioration model in an online context will further increase our knowledge on online social relations and the support they can provide in general, while, at the same time, nuance its roles and effects. In a society that gets increasingly digital by default, and in which the development and maintenance of existing

social relations become entwined with digital media, it is important to know to what extent digital media such as SNSs are and can be a viable means to reach out to a social support network and for who.

2. Theoretical and Conceptual Framework

2.1. Life Stressors, Mental Health Problems and the Social Support Deterioration

Model

Exposure to stressors is a prominent factor in the explanation of depression. Life stressors, such as traumatic life events, chronic illness, acculturation stress or financial adversities have been found to significantly contribute to psychological distress, lower mental health and increases in depressive symptoms (Cohen and Wills 1985; Lashari et al. 2018; Lin, Dean, and Ensel 1986; Monroe 2008; Silva et al. 2016). Rates of psychopathology and various types of mental disorders (e.g. depression, anxiety) are higher among individuals from low-income families than among individuals from middle- and high-income families (Ponnet 2014; Wadsworth and Achenbach 2005) and poor self-perceived financial conditions count among the primary risk factors for developing depression (Qiu et al. 2020). Moreover, being exposed to sustained economic hardship across decades has been found to affect a range of outcomes, such as physical, cognitive and psychological functioning, the latter including clinical depression (Lynch, Kaplan, and Shema 1997).

The social support deterioration model, developed as an alternative to the buffering model in the 1990's (Lepore et al. 1991), states that the positive association between life stressors and psychological distress can be explained by a reduction in social support (Barrera 1986; Ensel and Lin 1991; Gjesfjeld et al. 2010; Hobfoll 2001; Hobfoll et al. 2003; Kanyasti,

2020; Holahan et al. 1999; Kwag et al. 2011; Lee, Goldstein and Dik 2018; Lepore et al. 1991; Norris and Uhl 1993; Quittner et al. 1990; Zhang, Tsingan and Zhang 2013). The central contention is that repeated exposure to stressors gradually erodes individuals' levels of social support, making them more vulnerable to harmful stressors.

2.1.1. Social Support

Social support can be conceptualized as the access to resources, including emotional, informational, and instrumental forms of aid or support, that are or can be provided by an individual's social network and which may help to deal with either everyday hassles, as well as both acute and chronic stressors (Lin et al. 1986; Wellman and Wortley 1989, 1990; Sherbourne and Stewart 1991). There is an established association between social support and mental health. Most noticeably, supportive relations help individuals in coping with several stressful situations, thus buffering the psychological consequences of life stressors (Cohen and Wills 1985; Ehsan and De Silva, 2015; Lin et al. 1986; Mariani et al. 2020; Nabunya et al. 2020; Uphoff et al. 2013; Thoits 2011; Yip et al. 2007). It is argued that social support brings about better mental health outcomes through generalized perceptions of support. That is, through everyday yet hardly noticeable instances of support in the context of routine conversations or exchanges that tend to make everyday life easier to navigate, a perception of having a supportive environment is developed (Lakey and Orehek 2011; Thoits 2011).

2.1.2. The Impact of Chronic Stressors

Both acute and chronic stressors impact people's lives, yet their relation to social support is different. Acute stressors, such as the loss of a loved one, tend to mobilize the personal social network in the form of shared condolences and the provision of various kinds of instrumental support. Hence, this increase in support exchanges might increase one's perceived social support (Lin et al. 1986). Chronic stressors such as sustained poverty, however, behave differently towards social support. Longitudinal studies of Lepore et al.

(1991) and Holahan et al. (1999) found that exposure to chronic stressors results in a deterioration of the available social support. Social support can indeed initially buffer against the adverse effects of a stressor, yet if the latter persists, it gradually erodes the available support and subsequently increases psychological distress (Lepore et al. 1991). Holahan et al. (1999) found that, over a period of 10 year, resource loss induced by life events leads to an increase in depressive symptoms, while resource gains result in a decrease. Exposure to financial stress specifically has been found to negatively impact both emotional and instrumental support among poor urban women, with the reduction in social support mediating the effect of financial stress on depressive symptoms (Schulz et al. 2006). Furthermore, exposure to economic stress can lead to an increase in maternal depressive symptoms because of a reduction in social support (Gjesfjeld et al. 2010). Although a recent study in the context of a post-natural disaster situation found only a small indirect effect of reduced economic status on mental health outcomes due to support deterioration (Shiba et al. 2020), other recent studies were able to confirm that increases in mental health problems due to more general forms of perceived stress exposure can be explained by a decrease in social support (Chen and Hung, 2020; Coyle, Malecki, and Emmons, 2019; Kwag et al. 2011; Kołodziej-Zaleska and Przybyła-Basista, 2016; Lee et al. 2018; Rung et al. 2017).

Several explanations for this deterioration model have been proposed. Firstly, stressors may initially increase social support, but the constant calling upon the aid of the support network may lead to a gradual erosion of the support as fatigue among the support providers starts to set in (Hobfoll et al. 2003; Holahan et al. 1999). A second explanation looks into the cognitive processes of the support receiver. If an individual's situation is not yet improved after having received multiple instances of support, the belief may arise that the available support is insufficient (Lepore et al. 1991; Norris and Kaniasty 1996). Thirdly, it has been hypothesized that exposure to chronic stressors may lead to a lack of time to maintain existing

and developing new social relations and eventually even to refrain from social activities altogether, resulting in a decrease of resources that could encompass social support (Lepore et al. 1991). Fourthly, there is evidence that socio-economically challenged people significantly experience more negative life events, both in the short and long term, while having a smaller and less capable social support network to rely on (Gallo and Matthews 2003; Matthews and Gallo 2011; Mickelson and Kubzansky 2003), thus being more taxing to them than it would be to people with a more intact support network (Lindström and Giordano 2016).

2.2. Online Social Support Deterioration

Digital media, including SNSs, can be regarded as viable means for social support development, access and exchange (Rains and Wright 2016). Specifically, literature suggests that SNSs use can impact an individual's social support by altering the composition of the social network and by providing extra means to request and receive social support.

2.2.1. SNSs and the Structural Base of Social Support

There is evidence that SNSs may alter the importance of relational closeness in the exchange of social support and thus the role of the structural base in social resource exchanges. SNSs allow for the maintenance of larger social networks at a rather low cost (Ellison et al. 2014a; Vitak 2014; Eranti and Lonkila 2015). As such, besides strengthening existing core discussion networks and increasing the awareness of those ties and the resources they have available (Hampton, Sessions, and Her 2011), features such as liking each other posts or sending birthday wishes also allow for developing larger social networks, including a broad range of weak ties that would otherwise go dormant or dissolve (Burke and Kraut 2016). Although strong ties are predominantly indicated as sources of social support (Thoits 2011), studies have found that SNSs allow weak ties to also play an important role. Weak ties are as likely to provide support as strong ties, with no difference in the perceived quality (Rozzell et al. 2014) while *experiential others* (Thoits, 2011) can emerge as emotional,

informational and sometimes even tangible support providers in online support groups that consist of networks of weak ties (Cipolletta, Votadoro, and Faccio 2017; Silver and Matthews 2017; Wright and Miller 2010; Zhao and Basnyat 2018).

2.2.2. Online Practices that Contribute to Perceived Social Support

SNSs are also a means to query and provide social support. Besides the maintenance of larger social networks, the use of SNSs features such as liking certain posts or sending birthday wishes also signal the availability of social support (Burke and Kraut 2015; Lu and Hampton 2017; Wohn, Carr, and Hayes 2016). More explicitly, SNSs are used to mobilize social support, by asking for advice, information, or favors (Lampe et al. 2014; Ellison et al. 2014a; López and Farzan 2015). Seeing these mobilization requests resolved subsequently leads to higher levels of perceived social support (Utz and Breuer 2017; Zhang 2017). Moreover, other SNSs users can become aware of the potential social resources present in their network as the exchange of social support in their network becomes visible to them in their personal news feeds on SNSs (boyd, 2011), which indirectly adds to people's perceived social support (Hampton, Lee, and Her 2011; Lu and Hampton 2017). Thus, by impacting the structural base and providing the communicational means, SNSs affords perceived access to supportive relation, thus constituting what we call perceived online social support in this study.

2.2.3. Online Social Support and Mental Health

Mental health outcomes of SNS use are contested and subject to an ongoing debate (Verduyn et al. 2017) yet, there is growing evidence that online social support via SNSs can play a role in mental health etiology (Meng et al. 2017), albeit conditionally. For instance, a number of longitudinal studies were unable to show a direct relation between either perceived (Trepte, Dienlin and Reinecke 2015) or received (Utz and Breuer 2017; Utz and Maaß 2018) online social support and life satisfaction. However, perceived online social support was

found to lead to higher life satisfaction when recovering from a stressful life event, even though online social support yields little in terms of buffer during such a stressful event (Utz and Maaß 2018). Similarly, online social support exchanges through SNSs have been found to indirectly lower rates of depression as it contributes to people's overall perceived social support (Zhang 2017) while, the reception of online social support can alleviate the negative effects of stress related to being unemployed and one's perceived self-efficacy (Fieseler et al. 2014).

Accordingly, the association of online social support to mental health seems to be conditional. It appears to be important to engage in active and directed dyadic communication via SNSs in order to increase perceived online social support and to decreased levels of depression (Kraut and Burke 2015), thus alleviating the impact of negative life events on one's perceived mental health (Lewandowski et al. 2011), and lowering the rates of depression-related thoughts and feelings (Cole et al. 2017). The underlying assumption is that emotional support rather than informational or tangible support is required to achieve improved mental health outcomes. The more intimate environment and clearly delineated network boundaries in terms of social ties (i.e. strong ties or experiential others) that are required for emotional support exchange (Thoits 2011; Trepke et al. 2015; Vitak & Ellison 2013) might explain why there is this conditional association of online social support with mental health outcomes. Because of the context collapse in SNSs, these online networks are very well suited to exchange informational support, yet inhibit the exchange of emotional support as it would require the support seeker to self-disclose their situation (Trepte et al. 2015) which they are reluctant to do concerning sensitive issues (Vitak and Ellison 2013).

Still, provided these conditions are met, SNSs and the support perceived on it can be called upon to manage stressful life events (Cole et al. 2017; Mikal et al. 2013). However, chronic life stressors can also impact the social support buffer (cf. supra). Drawing on the

literature on the social support deterioration model, online social networks, SNSs use and digital inequalities, we can hypothesize how financial stress might affect online social support. First, people dealing with economic hardship have been found to redraw from investing in their social networks (Lepore et al. 1991). By doing so online, it will reduce the access to social resources as the social network from which support can be called upon becomes smaller while at the same time norms of reciprocity will be violated, causing others to refrain from investing in the relationship as well, leading to a loss of access to the social support they could have provided (Plickert, Côté, and Wellman 2007). Second, studies investigating digital inequalities have found that as internet use matures, it increasingly mimics the offline inequalities (van Deursen and van Dijk 2014). More specifically, people with lower income (Dutton, Blank and Groselj 2013), being unemployed (Clayton and Macdonald 2013), and having received lower education (Hargittai and Hinnant 2008; van Deursen and van Dijk 2011) have been found to be less efficacious in capturing the benefits from internet use. Accordingly, the opportunities provided by SNSs to develop broader social networks, and thus increasing the possibility of gaining access to people that may have useful information or provide emotional assistance might not be available to the person experiencing financial stress. Lastly, living with economic hardship is often experienced as a stigma (Nelson 2000), which may reduce the likelihood that people will broadcast their situation to their personal social network through a SNS (Vitak and Ellison 2013), thus missing out on the support that can thus be mobilized.

2.3. Hypotheses

Considering the evidence for the social support deterioration model, specifically the adverse consequences of financial stress, we hypothesize that the association between experiencing financial stress and depressive symptoms is mediated by a reduction in

perceived offline social support. Specifically, we expect that exposure to financial stress will be negatively associated with both perceived online and offline social support, which will subsequently lead to higher rates of depressive symptoms. Lastly, we expect that perceived online social support will be positively associated with perceived offline social support.

H1: Perceived offline social support will mediate the positive association between financial stress and depressive symptoms.

H2: Perceived online social support will mediate the positive association between financial stress and depressive symptoms via perceived offline social support.

3. Method

3.1. Procedure and Participants

This study draws upon data from the ongoing interuniversity Social CApital in Neighbourhoods (SCAN) project in which 1,792 respondents living in 41 neighbourhoods of Ghent (Flanders, Belgium) participated in the period October 2015 till November 2016. Ghent is a densely populated city with a population of approximately 250,000 residents (Hardyns et al. 2015). Face-to-face interviews were conducted during home visits using a structured questionnaire on online and offline social capital, health and risk behaviours.

The sampling design is based on a design applied by Hardyns et al. (2015). A sample of inhabitants from each neighbourhood was selected based on the municipal registry of 2012. This sample was representative of the composition of each neighbourhood and stratified by gender (male versus female), age (18–24, 25–34, 35–44, 45–54, 55–64, 65–74, 75+) and nationality (Belgian versus non-Belgian). Moreover, for every inhabitant in the sample, three substitutes with the same gender, age and nationality were randomly selected. The backup

respondents could be contacted after three unsuccessful home visits to the selected inhabitant, after a refusal to participate from the selected respondent or when the respondent did not meet the inclusion criteria (i.e., minimal age of 18, sufficient knowledge of the Dutch language and not residing in an institutional setting). When the interviewers ran out of substitutes, random inhabitants living in the same neighbourhood were contacted. This happened in 29.4% ($n = 241$) of the cases. This rather high rate might be linked to the partial mismatch that existed between the data from the municipal registry of 2012 and the situation anno 2016. Missing values were excluded from the analyses using listwise deletion, resulting in a final sample of 1150 respondents ($n = 592$, male and $n = 558$, female) with a mean age of 45.4 ($SD = 15.9$).

3.2. Measures

3.2.1. Financial Stress

Financial stress is a second order construct developed by Ponnet (2014) that includes financial need and financial insecurity. Financial need (Cronbach's $\alpha = .71$) is measured using three items, namely 'It is difficult to afford much more than the basics with our current income' (FS1), 'I feel that our current income allows me to maintain a desirable standard of living' (FS2) (reverse-scored), and 'With our current income, it is difficult to make ends meet' (FS3). The items are scored on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Financial insecurity (Cronbach's $\alpha = .85$) was measured using three items, namely 'I think that I will have to scale down my living standards in the following months' (FFS1), 'I think that I (or my household) will experience financial difficulties in the following months' (FFS2) and 'I fear that I will not be able to pay the bills in the nearby future' (FFS3). These items were rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).

3.2.2. *Depressive Symptoms*

In this study we measured mental health in terms of depressive symptoms. Respondents completed a 5-item version of the CES-D5 scale (Van de Velde, Bracke, and Levecque 2010), an abridged version of the Centre for Epidemiological Studies Depression Scale (CES-D) (Radloff 1977). Respondents are invited to reflect about the past week and to indicate how often they felt or behaved in a certain way: felt depressed (DF1), felt that everything was an effort (DF2), felt lonely (DF3), felt sad (DF4), could not get going (DF5). All items were scored on a 4-point Likert scale ranging from 0 (rarely or none of the time) to 3 (most or all of the time). Research has confirmed the reliability and validity of the inventory across biological sex and countries (Van de Velde et al., 2010). Cronbach's alpha was .82.

3.2.3. *Perceived Offline Social Support*

Perceived offline social support was measured using an adaptation of the MOS social support scale (Hardyns et al. 2015). The participants were asked to indicate on how many people they could count for four types of support. Specifically they were asked 'how many people from your personal network of family, friends or acquaintances... a) 'understand your problems' (OffSC1), b) 'would let you move into their house for a week if you temporarily could not stay at your house' (OffSC2), and c) 'make you feel good' (OffSC4). These items were rated on an 8-point scale (0, 1, 2, 3, 4, 5, 6-10, >10). Cronbach's alpha was .83.

3.2.4. *Perceived Online Social Support*

To capture the perceived access to emotional social support through online social networks, we used an abridged version of the Facebook-specific bonding social capital scale as employed by Ellison et al. (2014a, 2014b). Although this scale is typically used to assess people's perceived online access to bonding social capital, it is largely indebted to the Interpersonal Support Evaluation List of Cohen and Hoberman (1983) and has previously been used to measure online social support (Trepte et al. 2015). Moreover, as it is expected to

measure one's connection to strong ties, this scale suits our needs to measure perceived online access to emotional social support. Specifically, participants were asked to rate the following three items (Cronbach's $\alpha = .88$): 'There are several people online I trust to help solve my problems' (OnSC1), 'When I feel lonely, there are several people online I can talk to' (OnSC2), and 'There is someone online I can turn to for advice about making very important decisions' (OnSC3). These items were rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

3.3. Analytic Strategy

We applied structural equation modelling using Mplus 8 (Muthén and Muthén 2017) to investigate the association between financial stress, online social support, offline social support, and depressive symptoms. The analyses were performed in two steps. First, a measurement model was constructed in which we examined how reliably the observed variables reflected the hypothesized latent variables. Next, we estimated a structural model with both perceived online and offline social support as mediators between financial stress and depressive symptoms, the former being the exogenous variable. Age and sex were included in the model as covariates.

4. Results

4.1. Correlation Matrix and Measurement Model

Table 1 provides an overview of the zero order correlations between the latent concepts in our model. As expected, both financial need and financial insecurity are moderately positively correlated to depressive symptoms and negatively correlated to both perceived online and offline social support. In addition, perceived offline social support is

also moderately negatively correlated to depressive symptoms, while perceived online social support is not. Lastly, perceived online and offline social support are moderately positively correlated to each other. The magnitude of the found correlation coefficients are in line with the literature (Holohan et al. 1999; Hobfoll et al. 2003; Lepore et al. 1991; Ponnet et al. 2014), showing that both financial stress exposure and perceived support access are prominent factors in mental health etiology.

**** insert Table 1 about here ***

The measurement model showed a good fit to the data: $\chi^2 (127) = 414.832$, RMSEA=.044, CFI=.967, TLI=.960 and SRMR=.036. All factor loadings were statistically significant and above .70, with the exception of the factor loading of the reversed scored item of financial stress (.463), and two items of depressive symptoms (.629 and .543). Accordingly, it is justified to estimate the theoretical model and test the hypothesized relationships.

4.2. Structural Model

The fit statistics showed a good model fit of our structural model: $\chi^2 (137) = 472.681$, RMSEA = .046, CFI = .959, TLI = .949 and SRMR = .034. Figure 1 presents the results of the structural model.

*** insert Figure 1 about here ***

Our model, together with the covariates, explains a total variance in the experienced depressive symptoms of 17.4%. With respect to the direct associations, we found that financial stress is positively associated with depressive symptoms ($\beta = .27, p < .001$), and negatively to online social support ($\beta = -.10, p < .005$), explaining 17.7 % of the variance, adjusted for the covariates. Furthermore, financial stress is negatively ($\beta = -.31, p < .001$) and

perceived online social support is positively associated to perceived offline social support ($\beta = .30, p < .001$), together explaining 22.2% of the variance, adjusted for the covariates. Lastly, we found that perceived offline social support is negatively ($\beta = -.23, p < .001$) associated with depressive symptoms, while perceived online social support was not significantly associated with it ($\beta = .07, p = .08$).

Given the found direct associations between financial stress, perceived offline social support and depressive symptoms on the one hand, and between financial stress, perceived online and offline social support on the other hand, we used the INDIRECT command in Mplus 8 (Muthén and Muthén, 2017) to estimate the indirect pathway by which financial stress influences one's depressive symptoms. We found that perceived offline social support partially mediated the effect of financial stress on depressive symptoms (indirect $\beta = .07, p < .001$), hence we could not refute our first hypothesis. In addition, the effect of financial stress on perceived offline social support was partially mediated via perceived online social support (indirect $\beta = -.03, p < .01$). The effect of financial stress on depressive symptoms was also mediated via the association between perceived online and offline social support (indirect $\beta = .01, p < .05$), meaning we could also accept our second hypothesis. Given that the direct effect of financial stress on depressive symptoms remains in place ($\beta = .27, p < .001$) after the indirect effects are accounted for, we can state that perceived offline social support partially mediates the extent to which one experiences depressive symptoms induced by financial stress, while perceived online social support acts as mediator between financial stress and offline social support.

With respect to the control variables, sex is positively associated with depressive symptoms ($\beta = .19, p < .01$) and perceived online social support ($\beta = .19, p < .01$). Women tend to show higher rates of depressive symptoms, as well as perceived online social support. Age is negatively associated with depressive symptoms ($\beta = -.01, p < .01$), and with perceived

online social support ($\beta = -.40, p < .001$), indicating a lower incidence of depressive symptoms among older people, yet equally lower perceived online social support.

5. Discussion

Most studies on the role of online social support in mental health etiology have either stayed true to the dominant main effects and buffering hypotheses as suggested in social support literature, or adopted the social capital concept to capture the online social resources that could be employed in dealing with life's challenges. Hence, little attention has been directed towards the socio-economic mechanisms that might affect the availability of an online protective support network. To the best of our knowledge, this study is the first that tackled this issue by investigating how the perception of social support is impacted by chronic stress exposure, specifically financial stress. Drawing on a large random a-select sample of the city of Ghent, Belgium, we examined to what extent exposure to financial stress affects people's depressive symptoms, and if so, if this association is mediated by both perceived online and offline social support. Following the social support deterioration model, exposure to stressors and negative life events bring about mental health problems because of a deterioration in social support.

In line with the social support deterioration model, we were able to confirm both of our hypotheses, showing that financial stress exposure negatively impacts one's mental health, while decreased levels of perceived social support, both online and offline, partially mediate this association. Accordingly, our findings are consistent with prior studies (Ensel and Lin 1991; Gjesfjeld et al. 2010; Holahan et al. 1999; Hobfoll 2001; Hobfoll et al. 2003; Kwag et al. 2011; Lee et al. 2018; Lepore et al. 1991; Norris and Uhl 1993; Quittner et al. 1990; Zhang et al. 2013) that adopted this mediation model and showed in a range of contexts that the

buffering role of social support can be undermined because of enduring stress exposure. Our study adds to the existing knowledge that online social support can indeed play a role in this stress process model, yet it appears that its part should not be overstated. First, online social support is lower among those exposed by financial stress, yet not to the same extent as offline social support. Second, only an indirect effect on depressive symptoms via offline social support was observed; a post hoc analysis revealed that perceived online social support is negatively albeit only weakly associated to depressive symptoms via perceived offline social support. On the one hand, this suggests that online social support is more robust than offline social support when it comes to financial stress exposure. On the other hand, it also appears that online social support yields little direct benefit with respect to mental health outcomes on its own. Below, we discuss these findings in more detail.

There is evidence that online social support is to a large extent demand driven. It has been demonstrated that asking for support online is positively associated with perceived online social support (Trepte et al. 2015; Utz and Breuer 2017; Zhang 2017) as is experiencing stress (Utz and Breuer 2017). In contrast, the negative association between financial stress exposure and online social support we found in our study suggests that not all stress is equal when it comes to support seeking. As argued earlier (cf. 2.2.3), financial stress is often experienced as stigma (Nelson, 2000), hence something SNS users might be reluctant to self-disclose to their online network given the broad variety of ties that are present (Trepte et al. 2015; Vitak and Ellison, 2013). However, other explanations might still be in place, such as refraining from active online social relationship maintenance or being less capable to capitalize on the potential support available online (cf. 2.2.3). In future studies it can be fruitful to explore what aspects of online social support are affected by chronic stress exposure.

The association between financial stress and perceived online social support is, however, weaker than the association between financial stress and offline social support. This suggests that online support networks might remain in place while exposed to stressors. A possible explanation might reside in that it is easier to maintain online than offline social networks (Vitak and Ellison 2013), meaning that the recessed social relation maintenance behaviors among those exposed to financial stress (Lepore et al. 1991) to have less effect. However, the flip side of the coin is that perceived online social support appears to have little bearing on the experience of depressive symptoms, at least on its own. The absence of a direct association with mental health is in line with prior studies (Li et al. 2015; Han et al. 2019; Trepte et al. 2015; Utz and Breuer 2017), leading some to state that "what happens online, stays online" (Li et al. 2015; Han et al. 2019). However, the direct associations of online social support with financial stress and perceived offline social support, and its indirect association with depressive symptoms suggest otherwise. Rather than being an online only phenomenon, we would argue that online and offline social support networks work together. Both are not operating in separate spheres, but digital media such as SNSs should be regarded as means to connect to and mobilize some parts of the personal support network. It can be speculated that online support networks might be conceived of as the extended network of weak and latent ties, good in providing informational support, while the offline social support network then consists of strong ties to which one predominantly turns to for emotional and instrumental support (Trepte et al. 2015). Future research might investigate these cognitions of both online and offline support networks more explicitly and disentangle online and offline social support further in relation to mental health in general and the deterioration model in particular.

5.1. Limitations

A major strength of this paper is that it draws on a random, a-select sample from medium-sized Western-European city. However, this may also hinder the generalizability of the findings to different cultural and geographical contexts. In line with this is that the data are cross-sectional data, preventing us from teasing apart the temporal order of the found associations. Still, both theory and the existing literature reporting on longitudinal studies (cf. 2.1.2) point towards the presented causality with respect to the indirect effect via offline social support. Less is known, however, of the temporal order of online and offline social support. Nevertheless, following the resource awareness hypothesis (Lu and Hampton 2017) as well as the findings of Kraut and Burke (2015), using SNSs and engaging in supportive online conversations contributes to people's offline social support.

A second strength of this study is that both online and offline social support are tested in the same model pertaining their relation to both a stressor and a mental health outcome, thus showing their relative importance and adding to earlier studies who tested only online social support (Utz and Maaß 2018). Still, the indirect association of financial stress with depressive symptoms via online social support requires us to be cautious. First, it is not directly associated with depressive symptoms, but indirectly via its association with offline social support. Second, the found indirect association on depressive symptoms can be interpreted as evidence for online social support deterioration. However, the size of the found effect requires us to remain cautious in making too large claims. Third, the instrument we used for studying the online social support has recently received criticism pertaining its construct validity as it might not adequately capture how SNSs are used for social relation development, maintenance and capitalization (Appel et al. 2014).

In this study we have predominantly focused on social support in terms of the social support network. Although this focus is warranted given the evidence that network

characteristics are directly while social support functions are indirectly related to mental well-being (Cohen and Wills 1985; Thoits 2011), it does limit our conclusions as stressor-specific social support tends to be required in order to cope with mental health problems (Thoits 2011). Along the same logic, it can be assumed that especially the erosion of the stressor-specific social support is most consequential with respect to increased mental health problems. However, the measures used in this study for offline and online social support do not distinguish between different types of support.

Although the sample is representative for the general population, respondents had to be sufficiently proficient in Dutch in order to participate. This may imply that we possibly lack information on a particular subgroup of (recent) migrants who did not meet that requirement.

Finally, there might be unaccounted confounders. That is, how people engage in social relations, either online or offline, or certain personality traits may also explain their depressive symptoms. Moreover, people experiencing depressive symptoms may be less inclined to engage in social interactions and or be less effective in deriving benefits of social relations such as receiving social support (Webber, Huxley and Harris 2011).

5.2. Conclusion

In this study we were able to provide evidence for the role of online social support access in the social support deterioration model. As predicted by the model, higher rates of depressive symptoms are found for people exposed to financial stress, which can be explained by a reduction in perceived social support access. Moreover, we found that financial stress exposure also reduces the online access to supportive social relations, which in turn carries over the effect to higher rates of depressive symptoms via perceived offline social support. Unlike its offline counterpart, however, online social support only weakly and indirectly

affects one's mental health. Accordingly, online social support might on the one hand be more robust against stress exposure, yet on the other hand, it appears to yield fewer mental health benefits.

6. Declaration of Interest Statement

No potential conflict of interest was reported by the authors.

7. References

- Appel, Lora, Punit Dadlani, Maria Dwyer, Keith Hampton, Vanessa Kitzie, Ziad A. Matni, Patricia Moore, and Rannie Teodoro. 2014. "Testing the validity of social capital measures in the study of information and communication technologies". *Information, Communication & Society* 17 (4): 398–416.
- Barrera, Manuel. 1986. "Distinctions between Social Support Concepts, Measures, and Models". *American Journal of Community Psychology* 14 (4): 413–45. doi: 10.1007/BF00922627.
- boyd, d. m. 2011. "Social Network Sites as Networked Publics: Affordances, Dynamics, and Implications". In *A Networked Self: Identity, Community, and Culture on Social Network Sites*, onder redactie van Zizi Papacharissi, 39–58. New York, NY: Routledge.
- Burke, Moira, and Robert E. Kraut. 2016. "The Relationship Between Facebook Use and Well-Being Depends on Communication Type and Tie Strength". *Journal of Computer-Mediated Communication* 21 (4): 265–81. doi:10.1111/jcc4.12162.
- Chen, J.-K., and Hung, F. N. (2020). "Sexual Orientation Victimization and Depression among Lesbian, Gay and Bisexual Youths in Hong Kong: The Mediating Role of Social Support". *Journal of Aggression, Maltreatment & Trauma* 0 (0): 1–15.
doi.org/10.1080/10926771.2020.1821853
- Cipolletta, Sabrina, Riccardo Votadoro, and Elena Faccio. 2017. "Online Support for Transgender People: An Analysis of Forums and Social Networks". *Health & Social Care in the Community* 25 (5): 1542–51. doi:10.1111/hsc.12448.

- Clayton, John, and Stephen J. Macdonald. 2013. "The Limits of Technology: Social Class, Occupation and Digital Inclusion in the City of Sunderland, England". *Information, Communication & Society* 16 (6): 945–66. doi:10.1080/1369118X.2012.748817.
- Cohen, Sheldon, and Harry M. Hoberman. 1983. "Positive Events and Social Supports as Buffers of Life Change Stress¹". *Journal of Applied Social Psychology* 13 (2): 99–125. doi:10.1111/j.1559-1816.1983.tb02325.x.
- Cohen, Sheldon, and Thomas A. Wills. 1985. "Stress, Social Support, and the Buffering Hypothesis". *Psychological Bulletin* 98 (2): 310–57. doi:10.1037/0033-2909.98.2.310.
- Cole, David A., Elizabeth A. Nick, Rachel L. Zelkowitz, Kathryn M. Roeder, and Tawny Spinelli. 2017. "Online social support for young people: Does it recapitulate in-person social support; can it help?" *Computers in Human Behavior* 68 (March): 456–64. doi:10.1016/j.chb.2016.11.058.
- Coyle, S., Malecki, C. K., and Emmons, J. (2019). "Keep Your Friends Close: Exploring the Associations of Bullying, Peer Social Support, and Social Anxiety". *Contemporary School Psychology*. doi.org/10.1007/s40688-019-00250-3
- Diener, Ed, and Martin E. P. Seligman. 2002. "Very Happy People". *Psychological Science* 13 (1): 81–84. doi:10.1111/1467-9280.00415.
- Dutton, William H, Grant Blank, and Darja Groselj. 2013. "Cultures of the Internet: The Internet in Britain. Oxford Internet Survey 2013". Oxford Internet Institute, University of Oxford.
- Ehsan, Annahita M, and Mary J De Silva. 2015. "Social Capital and Common Mental Disorder: A Systematic Review". *Journal of Epidemiology and Community Health* 69 (10): 1021–28. doi:10.1136/jech-2015-205868.

- Ellison, Nicole B, Rebecca Gray, Cliff Lampe, and Andrew T Fiore. 2014a. "Social Capital and Resource Requests on Facebook". *New Media & Society* 16 (7): 1104–21. doi:10.1177/1461444814543998.
- Ellison, Nicole B., Jessica Vitak, Rebecca Gray, and Cliff Lampe. 2014b. "Cultivating Social Resources on Social Network Sites: Facebook Relationship Maintenance Behaviors and Their Role in Social Capital Processes". *Journal of Computer-Mediated Communication* 19 (4): 855–70. doi:10.1111/jcc4.12078.
- Ensel, Walter M., and Nan Lin. 1991. "The Life Stress Paradigm and Psychological Distress". *Journal of Health and Social Behavior* 32 (4): 321–41. doi:10.2307/2137101.
- Eranti, Veikko, and Markku Lonkila. 2015. "The Social Significance of the Facebook Like Button". *First Monday* 20 (6). doi:10.5210/fm.v20i6.5505.
- Fieseler, Christian, Miriam Meckel, and Severina Müller. 2014. "With a Little Help of My Peers. The Supportive Role of Online Contacts for the Unemployed." *Computers in Human Behavior* 41: 164–76. doi:10.1016/j.chb.2014.09.017.
- Gallo, Linda C., and Karen A. Matthews. 2003. "Understanding the Association between Socioeconomic Status and Physical Health: Do Negative Emotions Play a Role?" *Psychological Bulletin* 129 (1): 10–51. doi: 10.1037/0033-2909.129.1.10.
- Gjesfjeld, Christopher D., Catherine G. Greeno, Kevin H. Kim, and Carol M. Anderson. 2010. "Economic Stress, Social Support, and Maternal Depression: Is Social Support Deterioration Occurring?" *Social Work Research* 34 (3): 135–43. doi:10.1093/swr/34.3.135.

- Hampton, Keith N., Chul-joo Lee, and Eun Ja Her. 2011. "How new media affords network diversity: Direct and mediated access to social capital through participation in local social settings". *New Media & Society* 13 (7): 1031-1049. doi:10.1177/1461444810390342.
- Hampton, Keith N., Lauren F. Sessions, and Eun Ja Her. 2011. "Core Networks, Social Isolation, and New Media: How Internet and Mobile Phone Use Is Related to Network Size and Diversity". *Information, Communication & Society* 14 (1): 130–55. doi:10.1080/1369118X.2010.513417.
- Hardyns, Wim, Veerle Vyncke, Lieven Pauwels, and Sara Willems. 2015. "Study protocol: SWING – social capital and well-being in neighborhoods in Ghent". *International Journal for Equity in Health* 14 (36). doi:10.1186/s12939-015-0163-1.
- Hargittai, Eszter, and Amanda Hinnant. 2008. "Digital Inequality: Differences in Young Adults' Use of the Internet". *Communication Research* 35 (5): 602–21. doi:10.1177/0093650208321782.
- Helsper, Ellen Johanna. 2012. "A Corresponding Fields Model for the Links Between Social and Digital Exclusion: A Corresponding Fields Model for Digital Exclusion." *Communication Theory* 22 (4): 403–26. doi:10.1111/j.1468-2885.2012.01416.x.
- Hobfoll, Stevan E. 2001. "The Influence of Culture, Community, and the Nested-Self in the Stress Process: Advancing Conservation of Resources Theory". *Applied Psychology* 50 (3): 337–421. doi:10.1111/1464-0597.00062.
- Hobfoll, Stevan E., Robert J. Johnson, Nicole Ennis, and Anita P. Jackson. 2003. "Resource Loss, Resource Gain, and Emotional Outcomes among Inner City Women". *Journal of Personality and Social Psychology* 84 (3): 632–43. doi:10.1037/0022-3514.84.3.632.

Holahan, Charles J., Rudolf H. Moos, Carole K. Holahan, and Ruth C. Cronkite. 1999.

“Resource Loss, Resource Gain, and Depressive Symptoms: A 10-Year Model.” *Journal of Personality and Social Psychology* 77 (3): 620–29. doi:10.1037//0022-3514.77.3.620.

Kaniasty, K. (2020). “Social support, interpersonal, and community dynamics following disasters caused by natural hazards”. *Current Opinion in Psychology* 32: 105–109.

doi.org/10.1016/j.copsyc.2019.07.026

Kołodziej-Zaleska, A., and Przybyła-Basista, H. (2016). “Psychological well-being of individuals after divorce: The role of social support”. *Current Issues in Personality Psychology* 4(4): 206–216. doi.org/10.5114/CIPP.2016.62940

doi.org/10.5114/CIPP.2016.62940

Kraut, Robert, and Moira Burke. 2015. “Internet Use and Psychological Well-being: Effects of Activity and Audience”. *Commun. ACM* 58 (12): 94–100. doi:10.1145/2739043.

Kwag, Kyung Hwa, Peter Martin, Daniel Russell, Warren Franke, and Marian Kohut. 2011.

“The Impact of Perceived Stress, Social Support, and Home-Based Physical Activity on Mental Health among Older Adults.” *The International Journal of Aging and Human Development* 72 (2): 137–54. doi:10.2190/AG.72.2.c.

Lakey, Brian, and Edward Orehek. 2011. “Relational Regulation Theory: A New Approach to

Explain the Link between Perceived Social Support and Mental Health”. *Psychological Review* 118 (3): 482–95. doi: 10.1037/a0023477.

Lampe, Cliff, Rebecca Gray, Andrew T. Fiore, and Nicole Ellison. 2014. “Help is on the

Way: Patterns of Responses to Resource Requests on Facebook”. In *Proceedings of the 17th ACM Conference on Computer Supported Cooperative Work & Social Computing*, 3–15. CSCW ’14. New York, NY, USA: ACM. doi:10.1145/2531602.2531720.

- Lashari, Sana Anwar, Amrita Kaur, and Rosna Awang-Hashim. 2018. "Home Away from Home: The Role of Social Support for International Students' Adjustment" 15 (2): 33–54.
- Lee, Chih-Yuan Steven, Sara E. Goldstein, and Bryan J. Dik. 2018. "The Relational Context of Social Support in Young Adults: Links with Stress and Well-Being." *Journal of Adult Development* 25 (1): 25–36. doi:10.1007/s10804-017-9271-z.
- Lepore, Stephen J., Gary W. Evans, and Margaret L. Schneider. 1991. "Dynamic Role of Social Support in the Link between Chronic Stress and Psychological Distress". *Journal of Personality and Social Psychology* 61 (6): 899–909. doi: 10.1037/0022-3514.61.6.899.
- Lewandowski, Joshua, Benjamin D. Rosenberg, M. Jordan Parks, and Jason T. Siegel. 2011. "The effect of informal social support: Face-to-face versus computer-mediated communication". *Computers in Human Behavior*, 2009 Fifth International Conference on Intelligent Computing, 27 (5): 1806–14. doi:10.1016/j.chb.2011.03.008.
- Li, Xiaoqian, Wenhong Chen, and Pawel Popiel. 2015. "What happens on Facebook stays on Facebook? The implications of Facebook interaction for perceived, receiving, and giving social support". *Computers in Human Behavior* 51 (Part A): 106–13. doi:10.1016/j.chb.2015.04.066.
- Lin, Nan, Alfred Dean, and Walter M. Ensel, red. 1986. *Social support, life events, and depression*. New York: Academic Press.
- Lindström, Martin, and Giuseppe N. Giordano. 2016. "The 2008 financial crisis: Changes in social capital and its association with psychological wellbeing in the United Kingdom – A panel study". *Social Science & Medicine* 153 (March): 71–80. doi:10.1016/j.socscimed.2016.02.008.

- Lu, Weixu, and Keith N Hampton. 2017. "Beyond the Power of Networks: Differentiating Network Structure from Social Media Affordances for Perceived Social Support". *New Media & Society* 19 (6): 861–79. doi:10.1177/1461444815621514.
- Lynch, John W., George A. Kaplan, and Sarah J. Shema. 1997. "Cumulative Impact of Sustained Economic Hardship on Physical, Cognitive, Psychological, and Social Functioning". *New England Journal of Medicine* 337 (26): 1889–95. doi:10.1056/NEJM199712253372606.
- Mariani, R., Renzi, A., Di Trani, M., Trabucchi, G., Danskin, K., and Tambelli, R. (2020). "The Impact of Coping Strategies and Perceived Family Support on Depressive and Anxious Symptomatology During the Coronavirus Pandemic (COVID-19) Lockdown". *Frontiers in Psychiatry* 11: doi.org/10.3389/fpsy.2020.587724
- Matthews, Karen A., and Linda C. Gallo. 2011. "Psychological Perspectives on Pathways Linking Socioeconomic Status and Physical Health". *Annual Review of Psychology* 62 (1): 501–30. doi:10.1146/annurev.psych.031809.130711.
- Mickelson, Kristin D., and Laura D. Kubzansky. 2003. "Social Distribution of Social Support: The Mediating Role of Life Events". *American Journal of Community Psychology* 32 (3–4): 265–81. doi:10.1023/B:AJCP.00000004747.99099.7e.
- Monroe, Scott M. 2008. "Modern Approaches to Conceptualizing and Measuring Human Life Stress". *Annual Review of Clinical Psychology* 4 (1): 33–52. doi:10.1146/annurev.clinpsy.4.022007.141207.
- Muthén, Linda K., and Bengt O. Muthén. 2017. *Mplus User's Guide*. Los Angeles, CA: Muthén & Muthén.
http://www.statmodel.com/download/usersguide/MplusUserGuideVer_8.pdf.

- Nabunya, P., Damulira, C., Byansi, W., Muwanga, J., Bahar, O. S., Namuwonge, F., Igbofese, E., Brathwaite, R., Tumwesige, W., and Ssewamala, F. M. (2020). "Prevalence and correlates of depressive symptoms among high school adolescent girls in southern Uganda". *BMC Public Health* 20 (1): 1792. doi.org/10.1186/s12889-020-09937-2
- Nelson, Margaret K. 2000. "Single Mothers and Social Support: The Commitment to, and Retreat from, Reciprocity". *Qualitative Sociology* 23 (3): 291–317.
doi:10.1023/A:1005567910606.
- Norris, Fran H., and Krzysztof Kaniasty. 1996. "Received and Perceived Social Support in Times of Stress: A Test of the Social Support Deterioration Deterrence Model". *Journal of Personality and Social Psychology* 71 (3): 498–511.
doi:http://dx.doi.org/10.1037/0022-3514.71.3.498.
- Norris, Fran H., and Gary A. Uhl. 1993. "Chronic Stress as a Mediator of Acute Stress: The Case of Hurricane Hugo". *Journal of Applied Social Psychology* 23 (16): 1263–84.
doi:10.1111/j.1559-1816.1993.tb01032.x.
- Park, Namsu, Kerk F. Kee, and Sebastián Valenzuela. 2009. "Being Immersed in Social Networking Environment: Facebook Groups, Uses and Gratifications, and Social Outcomes". *CyberPsychology & Behavior* 12 (6): 729–33. doi:10.1089/cpb.2009.0003.
- Plickert, Gabriele, Rochelle R. Côté, and Barry Wellman. 2007. "It's not who you know, it's how you know them: Who exchanges what with whom?" *Social Networks*, Special Section: Personal Networks, 29 (3): 405–29. doi:10.1016/j.socnet.2007.01.007.
- Ponnet, Koen. 2014. "Financial Stress, Parent Functioning and Adolescent Problem Behavior: An Actor–Partner Interdependence Approach to Family Stress Processes in Low-, Middle-,

- and High-Income Families”. *Journal of Youth and Adolescence* 43 (10): 1752–69.
doi:10.1007/s10964-014-0159-y.
- Qiu, Q., Qian, S., Li, J., Jia, R., Wang, Y., and Xu, Y. (2020). “Risk factors for depressive symptoms among older Chinese adults: A meta-analysis”. *Journal of Affective Disorders* 277: 341–346. doi.org/10.1016/j.jad.2020.08.036
- Quittner, Alexandra L., Robert L. Glueckauf, and Douglas N. Jackson. 1990. “Chronic Parenting Stress: Moderating versus Mediating Effects of Social Support”. *Journal of Personality and Social Psychology* 59 (6): 1266–78. doi: 10.1037/0022-3514.59.6.1266.
- Radloff, Lenore Sawyer. 1977. “The CES-D Scale: A Self-Report Depression Scale for Research in the General Population”. *Applied Psychological Measurement* 1 (3): 385–401. doi:10.1177/014662167700100306.
- Rains, Stephen A., and Kevin B. Wright. 2016. “Social Support and Computer-Mediated Communication: A State-of-the-Art Review and Agenda for Future Research”. *Annals of the International Communication Association* 40 (1): 175–211.
doi:10.1080/23808985.2015.11735260.
- Rozzell, Bobby, Cameron W. Piercy, Caleb T. Carr, Shawn King, Brianna L. Lane, Michael Tornes, Amy Janan Johnson, and Kevin B. Wright. 2014. “Notification pending: Online social support from close and nonclose relational ties via Facebook”. *Computers in Human Behavior* 38 (September): 272–80. doi:10.1016/j.chb.2014.06.006.
- Rung, A. L., Gaston, S., Robinson, W. T., Trapido, E. J., and Peters, E. S. (2017). “Untangling the disaster-depression knot: The role of social ties after Deepwater Horizon”. *Social Science & Medicine* 177: 19–26. doi.org/10.1016/j.socscimed.2017.01.041

- Schulz, Amy J., Barbara A. Israel, Shannon N. Zenk, Edith A. Parker, Richard Lichtenstein, Sheryl Shellman-Weir, and Laura Klem. 2006. "Psychosocial Stress and Social Support as Mediators of Relationships between Income, Length of Residence and Depressive Symptoms among African American Women on Detroit's Eastside". *Social Science & Medicine* 62 (2): 510–22. doi:10.1016/j.socscimed.2005.06.028.
- Sherbourne, Cathy Donald, and Anita L. Stewart. 1991. "The MOS social support survey". *Social Science & Medicine* 32 (6): 705–14. doi:10.1016/0277-9536(91)90150-B.
- Shiba, K., Yazawa, A., Kino, S., Kondo, K., Aida, J., and Kawachi, I. (2020). "Depressive symptoms in the aftermath of major disaster: Empirical test of the social support deterioration model using natural experiment". *Wellbeing, Space and Society* 1. doi.org/10.1016/j.wss.2020.100006
- Silva, Manuela., Adriana Loureiro, & Graça Cardoso (2016). "Social determinants of mental health: A review of the evidence." *The European Journal of Psychiatry* 30 (4): 259–292.
- Silver, Amber, and Lindsay Matthews. 2016. "The Use of Facebook for Information Seeking, Decision Support, and Self-Organization Following a Significant Disaster". *Information, Communication & Society* 20 (11): 1680–97. doi:10.1080/1369118X.2016.1253762.
- Sweet, Elizabeth, Arijit Nandi, Emma K. Adam, and Thomas W. McDade. 2013. "The High Price of Debt: Household Financial Debt and Its Impact on Mental and Physical Health". *Social Science & Medicine* 91 (August): 94–100. doi:10.1016/j.socscimed.2013.05.009.
- Thoits, Peggy A. 2011. "Mechanisms Linking Social Ties and Support to Physical and Mental Health". *Journal of Health and Social Behavior* 52 (2): 145–61. doi:10.1177/0022146510395592.

- Uphoff, Eleonora P., Kate E. Pickett, Baltica Cabieses, Neil Small, and John Wright. 2013. "A systematic review of the relationships between social capital and socioeconomic inequalities in health: a contribution to understanding the psychosocial pathway of health inequalities". *International Journal for Equity in Health* 12 (July): 54. doi:10.1186/1475-9276-12-54.
- Verduyn, Philippe, Oscar Ybarra, Maxime Résibois, John Jonides, and Ethan Kross. "Do Social Network Sites Enhance or Undermine Subjective Well-Being? A Critical Review." *Social Issues and Policy Review* 11 (1) (January): 274–302. doi:10.1111/sipr.12033.
- Van de Velde, Sarah, Piet Bracke, Katia Levecque, and Bart Meuleman. 2010. "Gender differences in depression in 25 European countries after eliminating measurement bias in the CES-D 8". *Social Science Research* 39 (3): 396–404. doi:10.1016/j.ssresearch.2010.01.002.
- van Deursen, Alexander J. A. M., and Jan AGM van Dijk. 2014. "The Digital Divide Shifts to Differences in Usage". *New Media & Society* 16 (3): 507–26. doi:10.1177/1461444813487959.
- van Deursen, Alexander, and Jan van Dijk. 2011. "Internet Skills and the Digital Divide". *New Media & Society* 13 (6): 893–911. doi:10.1177/1461444810386774.
- Vitak, Jessica. 2014. "Unpacking Social Media's Role in Resource Provision: Variations across Relational and Communicative Properties". *Societies* 4 (4): 561–86. doi:10.3390/soc4040561.
- Vitak, Jessica, and Nicole B. Ellison. 2013. "'There's a Network out There You Might as Well Tap': Exploring the Benefits of and Barriers to Exchanging Informational and

- Support-Based Resources on Facebook”. *New Media & Society* 15 (2): 243–59.
doi:10.1177/1461444812451566.
- Wadsworth, Martha E., and Thomas M. Achenbach. 2005. “Explaining the Link Between Low Socioeconomic Status and Psychopathology: Testing Two Mechanisms of the Social Causation Hypothesis.” *Journal of Consulting and Clinical Psychology* 73 (6): 1146–53.
doi:10.1037/0022-006X.73.6.1146.
- Wellman, Barry, and Scot Wortley. 1989. “Brothers’ Keepers: Situating Kinship Relations in Broader Networks of Social Support”. *Sociological Perspectives* 32 (3): 273–306.
doi:10.2307/1389119.
- Wohn, Donghee Yvette, Caleb T. Carr, and Rebecca A. Hayes. 2016. “How Affective Is a ‘Like’?: The Effect of Paralinguistic Digital Affordances on Perceived Social Support”. *Cyberpsychology, Behavior, and Social Networking* 19 (9): 562–66.
doi:10.1089/cyber.2016.0162.
- Wright, Kevin B., and Claude H. Miller. 2010. “A Measure of Weak-Tie/Strong-Tie Support Network Preference”. *Communication Monographs* 77 (4): 500–517.
doi:10.1080/03637751.2010.502538.
- Yip, Winnie, S.V. Subramanian, Andrew D. Mitchell, Dominic T.S. Lee, Jian Wang, and Ichiro Kawachi. 2007. “Does Social Capital Enhance Health and Well-Being? Evidence from Rural China”. *Social Science & Medicine* 64 (1): 35–49.
doi:10.1016/j.socscimed.2006.08.027.
- Zhang, Renwen. 2017. “The stress-buffering effect of self-disclosure on Facebook: An examination of stressful life events, social support, and mental health among college

students”. *Computers in Human Behavior* 75 (October): 527–37.

doi:10.1016/j.chb.2017.05.043.

Zhang, Rui-Ping, Li Tsingan, and Long-Ping Zhang. “Role Stressors and Job Attitudes: A Mediated Model of Leader-Member Exchange.” *The Journal of Social Psychology* 153 (5) (September): 560–76. doi.org/10.1080/00224545.2013.778812.

Zhao, Xiaoman, and Iccha Basnyat. 2018. “Online social support for ‘Danqin Mama’: A case study of parenting discussion forum for unwed single mothers in China”. *Computers in Human Behavior* 80 (March): 12–21. doi:10.1016/j.chb.2017.10.045.

8. Tables

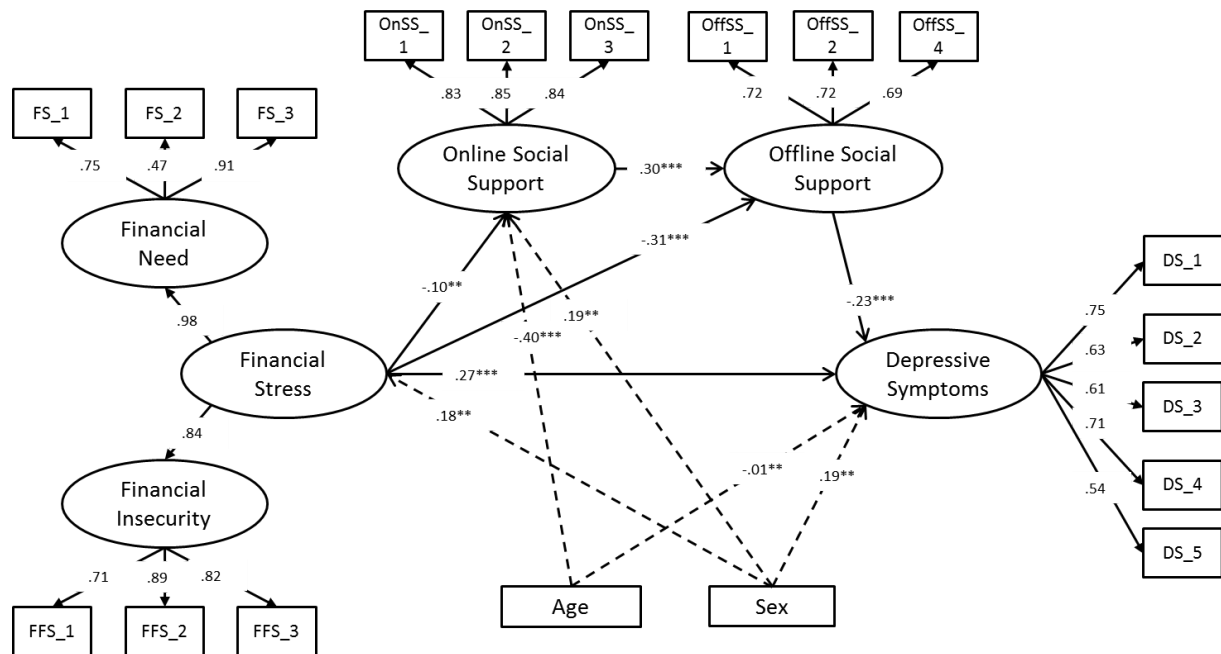
Table 1 Zero-order correlations between the latent constructs (n = 1182)

	1	2	3	4	5
1 Financial need					
2 Financial insecurity	.676**				
3 Online social support	-.095**	-.075**			
4 Offline social support	-.261**	-.201**	.291**		
5 Depressive symptoms	.269**	.265**	.017	-.202**	
Mean	2.46	2.16	3.03	4.84	1.45
SD	1.09	1.05	1.36	1.46	.43

Note. ** $p < .001$. Financial need and Financial insecurity were measured on a 7-point Likert scale; Online social support was measured using a 5-point Likert scale; Offline social support was measured on an 8-point scale; depressive symptoms was measured on a 4-point scale. The presented coefficients are standardized.

9. Figures

Figure 1. Financial stress associated to depressive symptoms via online and offline social support.



Note: Only significant pathways are shown. The reported coefficients are standardized values, adjusted for the influence of the covariates. Dashed lines were used to discern covariates from model associations. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

10. Figure captions

Figure 1. Financial stress associated to depressive symptoms via online and offline social support.