McIntyre, JC, Elahi, A, Latham, C, Mullholland, H, Haines-Delmont, A, Saini, P and Taylor, PJ

Does neighbourhood identification buffer against the effects of socioeconomic disadvantage on self-harm?

RUNNING HEAD: NEIGHBOURHOOD IDENTIFICATION AND SELF-HARM

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Jason McIntyre[1]

Anam Elahi[2]

Cameron Latham[3]

Helen Mullholland[2]

Alina Haines-Delmont[4]

Pooja Saini[1]

Peter J. Taylor[5]

[1] School of Psychology, Liverpool John Moores University, UK

[2] Department of Primary Care and Mental Health. Institute of Population Health, University of Liverpool. UK.

[3] IMAGO Training Ltd. Wigan, UK

[4] Department of Nursing, Manchester Metropolitan University, UK

[5] Division of Psychology and Mental Health, School of Health Sciences, The University of Manchester, Manchester Academic Health Sciences Centre, United Kingdom.

Correspondence:

Peter James Taylor

Division of Psychology and Mental Health, The University of Manchester, Zochonis Building, Brunswick Street, Manchester, M13 9PL, United Kingdom

+44 (0)161 306 0401

Peter.Taylor-2@manchester.ac.uk

Highlights

- Socioeconomic disadvantage is associated with greater risk of self-harm
- Identification with one's neighbourhood is associated with lower risk of self-harm
- Neighbourhood identification did not buffer the effects of disadvantage
- Social and systemic risk factors for self-harm require greater consideration

CRediT Authorship Contribution Statement

Jason McIntye: Project conceptualisation, development of analysis plan, analysis, data curation, writing (Original draft, Review & editing), project administration, initial survey design. **Anam Elahi:** Project conceptualisation, development of analysis plan, writing (Review & editing), initial survey design. **Cameron Latham:** Project conceptualisation, writing (Review & editing). **Helen Mullholland:** Development of analysis plan, writing (Review & editing), initial survey design. **Alina Haines-Delmont:** Development of analysis plan, writing (Review & editing). **Pooja Saini:** Development of analysis plan, writing (Review & editing), initial survey design. **Peter J. Taylor:** Project conceptualisation, development of analysis plan, writing (Original draft, Review & editing), project administration.

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Ethical Statement

Ethical approval: Ethical approval was obtained from the University of Liverpool (Ref: RETH000836). Participants provided written informed consent prior to taking part in the study.

Availability of data and materials Users can obtain access to the ARC NWC HHS data files after submitting a brief proposal (including agreement to HHS' conditions of use) at

[info@pldr.org]. Users will also be required to outline which version of the survey dataset they wish to access, data security arrangements in place and how they meet the criteria for access. Access to the data will be authorized following approval from the PLDR governance board.

Abstract

Background: Socioeconomic disadvantage and lack of group belonging (i.e., social identity) have been linked to poor mental health. However, no research has investigated the relationship between neighbourhood identity and self-harm, nor whether identifying with one's neighbourhood can mitigate the effects of economic stress on self-harm.

Methods: Pre-registered secondary data analysis of a large (N = 3412) community health survey conducted in disadvantaged areas of North West England.

Results: Despite the sample having a relatively high and therefore restricted level of disadvantage**,** individual and geographic indicators of disadvantage, as well as neighbourhood identification, were unique and strong predictors of self-harm thoughts and behaviours across several analyses**.** Specifically, experiencing disadvantage and disidentification predicted significantly higher odds of self-harm and self-harm thoughts. No consistent interactive effects emerged.

Limitations: The cross-sectional design limits firm conclusions regarding causal effects of neighbourhood identity and disadvantage on self-harm. However, causal direction is supported by past research and theory. The data is self-report, which is subject to response bias. The sample was also recruited from a region of the UK with low numbers of residents from ethnic minority backgrounds.

Conclusions: The results are consistent with past research indicating an association between social identity and better mental health, but for the first time extend these effects to self-harm. The findings demonstrate the importance of considering social and economic factors when attempting to prevent suicide and understand and treat self-harm thoughts.

Keywords: Self-harm; Suicide; Social Identity; Socioeconomic disadvantage

Does neighbourhood identification buffer against the effects of socioeconomic disadvantage on self-harm?

There is growing evidence that exposure to greater socioeconomic disadvantage increases the risk of self-harm. Area-level socioeconomic disadvantage was associated with self-harm in a systematic review of 27 studies from across 14 European countries (Cairns et al., 2017). Parental socioeconomic position (based on income and education) was associated with child self-harm rates in Sweden (Lodebo et al., 2017). Studies in the UK and Ireland have further demonstrated that area-level disadvantage (including specific indicators such as unemployment) has a consistent and substantive association with self-harm rates (Carr et al., 2016; Griffin et al., 2019; Hawton et al., 2001; Lin et al., 2020; O'Farrell et al., 2014). These studies rely on rates of self-harm based on people presenting to health services, and so miss instances of self-harm that do not result in health service contact. Household surveys provide another means of investigating self-harm based on self-reported experiences. The Adult Psychiatric Morbidity Survey highlights a rise in rates of self-harm in England between 2000 and 2015 (McManus et al., 2019), but individuals who were unemployed or who were in receipt of ESA (Employment and Support Allowance) were at an elevated risk (McManus et al., 2016). For example, over 40% of those receiving ESA reported a suicide attempt compared to under 10% amongst those not receiving ESA. Economic and social policy changes that help reduce or lessen the impact of disadvantage may help to reduce self-harm. However, psychological or social interventions may also be important in helping individuals living in more disadvantaged areas (Mulholland et al., 2021). One important area of inquiry is to understand the psychological processes that buffer or confer resilience against self-harm and its psychological antecedents in those at risk (Johnson et al., 2011), such as those experiencing socioeconomic disadvantage. Understanding these processes may support the development of interventions or preventative approaches targeting these individuals.

Self-harm, which refers to acts of intentional harm to oneself irrespective of suicidal intent (e.g., both suicidal and non-suicidal acts) including overdoses, self-cutting, hitting and burning oneself, is a prevalent difficulty (Muehlenkamp et al., 2012; National Collaborating Centre for Mental Health, 2004; O'Connor et al., 2018). In addition to the physical risks and consequences of self-harm (e.g. infection, scarring), it is often an indicator of distress and psychological difficulty, and also represents a major risk factor for further self-harm and death by suicide (Daukantaitė et al., 2020; Evans et al., 2005; Goldman-Mellor et al., 2014; Hawton et al., 2015).

There are various theoretical models, drawing on the current research evidence, that attempt to explain why people self-harm, including those focused on suicidal behaviour and those focused on other forms of self-injurious behaviour. A common theme across these models is a focus on a person's sense of social connection or belonging. The Interpersonal Theory of Suicide (IPT; Joiner, 2005; Van Orden et al., 2010), for example, states the urge to engage in suicidal behaviour is elevated when people have a lack of perceived belonging to other social groups or individuals. There is an extensive body of evidence supporting this association (Chu et al., 2017). Similarly, in the three-step theory of suicide, a declining sense of social connectedness is seen as an important process that facilitates the transition from milder suicidal ideation to more serious ideation (Klonsky and May, 2015). Additionally, experiences of social rejection may increase the risk of self-harm (Cawley et al., 2019). Social connection or belonging therefore appears important in understanding self-harm, and may buffer against the impact of stressors like socioeconomic disadvantage.

Research into feelings of belonging or social connection, and their link to self-harm has focused on general feelings about other people (e.g. "These days I feel disconnected from other people"; Hill et al., 2015). However, when considering the impact of living in a disadvantaged area, it may be that one's sense of belonging to that particular area is also

important. Living in a more disadvantaged area may be less impactful if a person feels a strong sense of belonging to that area, that it is a part of their identity or who they are. Social Identity Theory (Tajfel and Turner, 1979) emphasises how humans naturally identify to a greater or lesser extent with different social groups, these groups forming a part of how individuals perceive and define themselves. This extends to the areas people live in. There is evidence that feeling a sense of belonging to your community is associated with lower levels of depressive and paranoid symptoms (McIntyre et al., 2018a). Social identification with one's current home town has also been shown to protect people against the negative impact of stress on anxiety, depression, and paranoia (Elahi et al., 2018). These effects may be particularly potent in vulnerable groups, such as young people (McIntyre et al., 2018b) and ethnic minority populations (McIntyre et al., 2019; McIntyre et al., 2016). Moreover, there is strong evidence of a relationship between feeling a sense of belonging to social groups and lower levels of depression (Cruwys et al., 2014), and that social identity interventions are associated with reductions in depression and anxiety (Haslam et al., 2016).

Scarce research, however, has directly investigated social identification in the context of self-harm. Social identification has been posited as one explanation for the higher rates of self-harm seen in some social groups, such as alternative youth subcultures (Young et al., 2014), though it has been noted that data here is lacking (Hughes et al., 2018). Other research suggests that group identification may increase intent to self-harm where there is a group norm that approves of or encourages self-harm (O'Connor et al., 2006; Reyes-Portillo et al., 2019). The potential that positive social identification may protect against stressors such as disadvantage, and reduce the risk of self-harm, has not been investigated as far as we are aware. In the present study, we propose that social identity may interact with the characteristics of the neighbourhood people live in, so that greater identification may weaken the association between socioeconomic disadvantage and self-harm. For such individuals,

although they may be exposed to stressors and adversity resulting from individual and neighbourhood socioeconomic disadvantage, they may also experience a positive sense of belonging to and being a part of the area, which may provide a social and psychological barrier to the effects of disadvantage.

This study aims to investigate the interaction between neighbourhood social identity and socioeconomic disadvantage in predicting self-harm behaviour (i.e., deliberate acts of harm to oneself) and self-harm thoughts (i.e., contemplating suicide or self-harm) in a large representative community sample. The sample is economically and socially diverse, and thus well-suited to this investigation. It is hypothesised that 1) socioeconomic disadvantage (personal and neighbourhood) will be positively associated with a) past year self-harm behaviour, and b) self-harm thoughts, and that 2) neighbourhood social identity will moderate these associations, such that greater social identification will attenuate the relationship that socioeconomic disadvantage has with self-harm behaviours and thoughts. It is hypothesised that these effects will remain whilst adjusting for potential confounding variables, including age, gender, ethnicity and physical health difficulties. Socioeconomic disadvantage will be measured at a neighbourhood level, using the Indices of Multiple Deprivation (IMD; a multi-dimension measure of local socioeconomic disadvantage in the UK; Department for Communities and Local Government, 2015), and at an individual level (using subjective ratings of financial hardship). A third proxy measure of individual disadvantage based on educational attainment will also be used.

Method

Participants

A total of 3,412 participants completed the survey; 1,490 identified as male and 1,922 identified as female. Ten per cent of the sample were from Black and Minority Ethnic (BME) backgrounds and the remaining 90% were from White ethnic backgrounds. The mean age of

the sample was 49.37 years (*SD* = 18.91). Participants were compensated with a £10 voucher for their participation.

Design and sampling

The study is a secondary analysis of the NIHR ARC North West Coast Household Health Survey. This is a two-wave survey, although only the second wave of data (2018) is included in the present study because self-harm and neighbourhood identity were not measured in wave 1 (2015). In-person surveys were conducted with members of the public living in 19 disadvantaged neighbourhoods of North West England between August and December 2018. Neighbourhoods map approximately onto electoral ward boundaries and have populations between 5,000 and 10,000 people. Households were selected using random probability sampling. More detailed information of the survey design, measures and sampling procedure is provided in Giebel et al. (2020).

Patient and public involvement

A public advisory panel was involved in the development of the survey design and materials. Public advisors with lived experience of mental distress also sat on the Household Health Survey Implementation Group, which oversaw the survey administration and consulted on survey modifications between waves 1 and 2. A public advisor with experience of self-harm contributed to the present research questions and preparation of the manuscript and is therefore named as a co-author.

Measures

Neighbourhood identification.

Neighbourhood identification was measured with the Four Item Social Identity Scale (FISIS; Postmes et al., 2013). The scale taps key components of social identity such as commitment (“I feel committed to my local neighbourhood”) and centrality (“Being part of my local neighbourhood is an important part of how I see myself”). The scale has good

reliability and correlates highly with more comprehensive measures of social identification (Postmes, Haslam, & Jans, 2013). Response options range from 1 = *disagree completely* to 5 = *agree completely*. The scale demonstrated excellent internal consistency, $\alpha = .91$.

Socioeconomic disadvantage.

Socioeconomic disadvantage was measured at the individual level *and* neighbourhood level. Subjective person-level disadvantage was based on a single-item inquiring about people's current financial situation, which they could describe as "doing well", "getting by", or "struggling". For the purposes of the present study, and to aid in the interpretation of the predicted interactive effects, this variable was dichotomised by collapsing the "getting by" and "struggling" categories (1 = struggling or getting by, 2 = doing well). A further individual level proxy measure of disadvantage was based on education qualification attainment, which was re-coded as 1 = *no degree*, 2 = *degree level qualification or higher* 2. A neighbourhood level indicator of disadvantage was obtained using the Index of Multiple Disadvantage (IMD) score based on participant postcodes. This is a continuous score that indicates the local level of disadvantage (Department for Communities and Local Government, 2015). Higher scores indicate higher levels of disadvantage, with scores over 34 indicating very high disadvantage.

Self-harm behaviours and thoughts.

For self-harm behaviour, participants indicated if they had "deliberately hurt yourself in the past 12 months" (0 = *no*, 1 = *yes*). Self-harm thoughts were assessed with item nine of the Patient Health Questionnaire (PHQ9; Kroenke et al., 2001). Participants indicated the extent to which they had been bothered by "Thoughts that you would be better off dead, or of hurting yourself in some way" over the past two weeks. Due to the extremely high level of skewness (S-W = .92, $p < .00001$) and to assist interpretation, the measure was dichotomised whereby 0 = *no suicidal thoughts* (i.e., a response of "not at all") and 1= *suicidal thoughts present*. "Prefer not to say" responses were treated as missing data.

Demographics.

Age was recorded in years, ethnicity was coded as 0 = *White background*, 1 = *BME background*, and gender was coded as 1 = *male*, 2 = *female*.

Analysis Plan

The study hypotheses and analysis plan were pre-registered prior to being undertaken (https://osf.io/amkuv). Analyses were undertaken using STATA version 12 (StataCorp, 2011). Unadjusted bivariate relationships were examined with point-biserial correlations. Logistic regression was used to estimate the relationship between self-harm behaviours and thoughts (in both cases, 1 = *present*, 0 = *absent*) and the variables of interest with strengths of association reported as odds ratios. Clustering by neighbourhood was accounted for by adjusting standard errors using the svyset command (StataCorp, 2011), and analyses were weight-adjusted to allow for demographic variation in non-response. Weights were calculated at the Lower Level Super Output Area (LSOA) level based on gender, ethnicity, economic status and age. A rim-weight by population within each LSOA was also applied to each analysis. The three different measures of socioeconomic disadvantage (individual rating, education, IMD) were examined in three separate models for each of the two criterion variables (6 models in total). Missing data was handled via listwise deletion unless it exceeded 5% for a variable, in which case it was planned that Multiple Imputation would be used.

Results

Missing data analysis

Missing data analysis indicated very low levels of missing data at the variable and participant level. For the multi-item scale (neighbourhood identity), missing values analysis indicated that eleven participants (< .01%) had missing data for more than 20% of the items. As such, these participants were excluded from subsequent analyses in-line with the pre-

registration plan. This resulted in a final sample size of N = 3401. Following this step, we conducted variable level missing values analysis. All variables were missing less than 5% of data. Self-harm behaviours had the highest level of missing data (2.2%). Thus, in-line with the pre-registration plan, listwise deletion was used to account for missing variable scores in each analysis.

Preliminary analyses and descriptive statistics

Four hundred and ninety-one participants (14.7%) reported thoughts of self-harm in the previous two weeks and 91 participants (2.8%) reported self-harm behaviours. Mean levels of neighbourhood identification were above the mid-point of the five-point scale (M = 3.60, SD = .94) and 719 participants (21.2%) indicated that they were "doing well" financially, relative to "struggling" or "getting by". Eighty-one per cent of participants were in the most disadvantaged quintile based on IMD scores (M_{IMD} = 49.38, SD_{IMD} = 13.84), and 446 participants (13.1%) held a degree or higher level of education qualification. These data are consistent with the recruitment strategy, which targeted disadvantaged neighbourhoods.

To assess the bivariate relationship between our continuous predictors (neighbourhood identity and IMD) and dichotomous criterion variables (self-harm thoughts and self-harm behaviours), we conducted point-biserial correlations. All correlations were significant at α = .001. People who reported self-harm thoughts reported weaker neighbourhood identification (r_{pb} (3336) = -.12, p < .001) and lived in areas with higher levels of disadvantage, r_{pb} (3336) = .10, p < .001. Similarly, people who reported self-harm behaviours had weaker neighbourhood identification (r_{pb} (3324) = -.10, p < .001) and lived in more disadvantaged areas, r_{pb} (3324) = .08, p < .001.

We also examined associations between the three measures of socioeconomic disadvantage. IMD was significantly correlated with lower education (r_{pb} (3395) = -.09, p < .001) and lower subjective financial status, r_{pb} (3395) = -.04, p = .015. A Chi-square test of

independence indicated that education and subjective financial status were also significantly associated insofar as more people with a degree reported doing well financially than expected, $\chi^2(1) = 12.06$, $p = .001$, $\varphi = .06$.

Logistic regression analyses

A series of weight- and cluster-adjusted logistic regressions were conducted to examine the predictors of self-harm thoughts and behaviours. All coefficients and confidence intervals are reported in Tables 1 to 6. Predictors were entered in separate steps for every model, with socioeconomic status (SES) entered at Step 1 (Model A), neighbourhood identity at Step 2 (Model B) the interaction between neighbourhood identity and SES at Step 3 (Model C), and the demographic covariates entered at Step 4 (Model D). Continuous variables were mean-centred to reduce multicollinearity between the predictors and the interaction term. Consistent with the pre-registration plan, we constructed these models with both measures of self-harm (self-harm thoughts and self-harm behaviours) as the criterion variables. We also tested subjective individual, objective individual, and objective neighbourhood indicators of SES as predictors. Thus, there were six logistic regression models in total.

Self-harm thoughts (Tables 1 to 3)

Model 1, which assessed neighbourhood identity and IMD as predictors, found that at Step 1, IMD was a significant predictor of self-harm thoughts. Specifically, each one-point increase in IMD was associated with 2% higher odds of reporting self-harm thoughts. At Step 2, neighbourhood identity was also a significant predictor of self-harm thoughts. Each one-point increase in neighbourhood identity was associated with 24% lower odds of reporting self-harm thoughts. The interaction term did not significantly predict self-harm thoughts at Step 3. The effects of identity and IMD on self-harm remained significant at Step 3 when the interaction term was added, and also at Step 4 when adjusting for demographic covariates.

Model 2, which assessed neighbourhood identity and subjective economic status, found that at Step 1, "doing well" financially was associated with 72% lower odds of experiencing self-harm thoughts relative to "struggling" or "getting by". Neighbourhood identification was also associated with significantly lower odds of self-harm thoughts when adjusting for SES. Each one-point increase in identification was associated with 25% lower odds of self-harm thoughts. The interaction between identification and SES on self-harm thoughts was not significant. The effect of subjective financial status, but not neighbourhood identification, held when controlling for the interaction term and covariates.

Model 3 examined objective SES in the form of education status. Possessing a degree reduced participants' odds of self-harm thoughts by 37% (Step 1). At Step 2 we found each one-point increase in neighbourhood identification was associated with 28% lower odds of self-harm thoughts. The interaction term was not significant and the effects of education status and neighbourhood identification held when adjusting for the interaction and covariates.

Self-harm behaviours (Tables 4 to 6)

In Model 4, IMD was a significant predictor of self-harm behaviours at Step 1. Each one-point increase in IMD was associated with 3% higher odds of self-harming. Neighbourhood identity was also a significant predictor of self-harm behaviours at Step 2. Each one-point increase in identification was associated with 41% lower odds of reporting self-harm behaviours. The interaction term was not significant at Step 3, but was significant at Step 4 when adjusting for demographic covariates. The effects of identity and IMD on self-harm behaviours remained significant through Steps 3 and 4. Given the interaction was significant at Step 4, we explored this using simple slopes analysis with IMD predicting self-harm behaviours at low (-1SD) and high (+1SD) levels of neighbourhood identity. The change in probability of self-harm associated with an increase in IMD at high ($\Delta Y/\Delta X$ =

.0008, p = .009 [95%CI .0002, .001]) and low levels ($\Delta Y/\Delta X$ = .0005, p = .014 [95%CI .0002, .001]) of identity were both found to be significant and positive, with marginal differences in slopes, which did not support the interaction hypothesis that identity would buffer against the effects of disadvantage on self-harm.

Model 5 examined neighbourhood identity and subjective economic status on self-harm behaviours. At Step 1, "Doing well" financially was significantly associated with 62% lower odds of self-harm, relative to "struggling" or "getting by". At step 2, each one-point increase in neighbourhood identity was significantly associated with 44% lower odds of self-harming. The interaction term was not significant. The effect of subjective economic status on self-harm remained when adjusting for the interaction terms and covariates, while the effect of neighbourhood identification did not hold.

Finally, Model 6 examined objective SES (education) and neighbourhood identity as predictors of self-harm behaviours. Education level did not predict self-harm behaviours at any step, nor did the interaction term. Neighbourhood identity was, however, a significant predictor of self-harm behaviours. It was associated with 45% lower odds of self-harming at Step 2, and this effect remained significant when adjusting for covariates. Specifically, when adjusting for all covariates, each one-point increase in neighbourhood identification was associated with 40% lower odds of self-harm behaviours.

Discussion

The aim of this study was to investigate the association between neighbourhood identification, socioeconomic disadvantage and self-harm thoughts and behaviour. The study benefits from a large, locally representative sample, and pre-registered hypotheses and analysis plan. Lower neighbourhood identification and greater socioeconomic disadvantage were associated with self-harm across the analyses. The hypothesised interaction between identity and disadvantage was not evident in any analyses.

The results are consistent with past research indicating an association between neighbourhood identification and better mental health (Cruwys et al., 2014; Elahi et al., 2018; McIntyre et al., 2019; McIntyre et al., 2018a; McIntyre et al., 2018b), but for the first time extend these effects to self-harm. The results reflect the possibility that identifying more with one's neighbourhood helps protect against self-harm thoughts and behaviours. Specifically, when adjusting for known demographic covariates, each one-point increase in neighbourhood identification (as measured on a five-point scale) was associated with an approximate 40% reduction in likelihood of reporting self-harm, suggesting social identity should be an important consideration for policy-makers interested in reducing self-harm. The effects of neighbourhood identification on self-harm could be due to a greater social connectedness and belonging that is fostered in tight-knit communities, which in turn reduces self-harm risk. Indeed, it is argued by Stevenson and colleagues (2019) that if people feel they share a common bond with their neighbourhood, then they will be able to collectively cope effectively with challenges, and within the Interpersonal Theory of Suicide, a lack of feeling like you belong is seen as a key factor underlying the urge to end one's life (Joiner, 2005). Greater identification may also contribute to a positive self-concept (Branscombe et al., 1999; Iyer et al., 2009; Jetten et al., 2015), which represents a psychological barrier to self-harm (Forrester et al., 2017; Hasking et al., 2017; Hooley and Franklin, 2017), as does empathy, which can be strengthened by social identification (Zhang et al., 2019). Further to this, loneliness should be considered potential psychological mechanism for the present finding as it has been identified as a predictor of suicidal ideation (McClelland et al., 2020) and has been found to mediate the relationship between social identity and mental health symptoms (McIntyre et al., 2018). The precise psychological pathways that explain the relationship between identification and self-harm warrant further investigation.

The results regarding socioeconomic disadvantage are consistent with an established body of research demonstrating a relationship between disadvantage and poorer mental health, including increased self-harm (Cairns et al., 2017; Carr et al., 2016; Griffin et al., 2019; Hawton et al., 2001; Lin et al., 2020; Lodebo et al., 2017; O'Farrell et al., 2014). The effect sizes observed in the present study suggests that disadvantage has a substantive relationship with self-harm. People who classed themselves as doing well financially had approximately 70% lower odds of self-harm thoughts and self-harm behaviours compared to people who were "struggling" or "getting by". However, the confidence intervals in the self-harm behaviours model suggest the population estimate is imprecise. Area-level disadvantage was also a significant and important predictor of self-harm, insofar as a single point increase in IMD (range: 7.54 to 86.44) was associated with a 4% increase in the odds of self-harm and 2% increase in the odds of self-harm thoughts.

The adverse effect of socioeconomic disadvantage on mental health may occur through a variety of routes, including perceived social control and social cohesion, crime (the perceived threat of crime and actual exposure to crime), personal financial uncertainty, reduced access to health and social resources (Cairns et al., 2017; Patel et al., 2018; Visser et al., 2021). Such factors may contribute to greater psychological distress as well as leaving individuals more isolated and less able to access support, which in turn may contribute to a greater risk of self-harm. It is possible that struggling with self-harm and other mental health difficulties may lead to greater disadvantage for individuals; for example, if this contributes to difficulties remaining in education or work. However, such reverse causality does not fully account for the evidence regarding socioeconomic disadvantage and self-harm. Indeed, the plausibility of a causal effect of socioeconomic disadvantage on self-harm is supported by research showing that the changes in disadvantage following the 2008 recession coincided with increases in self-harm (Hawton et al., 2016).

The hypothesised interactive effects were not identified meaning there was no evidence that neighbourhood identification provides any sort of buffering or protection against the effects of socioeconomic disadvantage on self-harm. Whilst one interaction effect was significant, this was not in the hypothesised direction (effects of IMD on self-harm became stronger in people with greater identification) and the effect was marginal. This contradicts results from Elahi et al. (2018) who found that local geographic identities mitigated the effects of subjective financial status on mental health symptoms of depression, anxiety and paranoia. Thus, further work is needed to determine whether social identities have a stress-buffering effect in the context of disadvantage and mental health. Moreover, the current study focuses on identification with neighbourhood, but other social identities may be more important for some individuals. For example, LBGTQ+ individuals are at elevated risk of self-harm (Batejan et al., 2015; Dunlop et al., 2020) but may be protected by a greater positive identification with the LGBTQ+ community.

The cross-sectional design limits what can be inferred regarding the temporal characteristics or causal nature of effects. Poorer mental health (including self-harm) may create a barrier to identifying with one's neighbourhood. While factors such as the stigma that surrounds self-harm (Law et al., 2009; Lester and Walker, 2006; Long, 2018) may leave individuals feeling that they do not fit in or belong. Future research could build on these findings by adopting longitudinal and interventionist-causal approaches to better understand these associations. For example, an interventionist-causal study could investigate whether interventions designed to enhance neighbourhood identification have a positive effect on self-harm thoughts and behaviours. This study was reliant on self-report measures for many variables, which is subject to response bias. Moreover, the measures of self-harm thoughts and behaviours were based on single questions, which may have lacked validity when compared to more comprehensive measures of these constructs. The use of single items is

typical, however, of household survey data, where the need to reduce assessment burden is balanced against the recruitment of a large locally representative sample. Whilst ethnicity was included as a covariate, this was very crude (White vs. non-White) due to the small number of non-White participants, and important differences between different minority ethnic groups will have been lost as a result. The sample was representative of the local geographical area (Giebel et al. 2020), but will differ to other regions of the UK (e.g. other areas will have a greater non-White population).

Whilst many previous studies examine the association between disadvantage and self-harm at an area level, we investigated this association at a largely individual level, using data from a large household survey. This is advantageous since area-level associations do not necessarily translate into individual-level effects (Piantadosi et al., 1988). Notably, a number of studies focused on area-level disadvantage and self-harm are suggestive of larger associations (e.g. Incident Rate Ratios when comparing bottom and top disadvantage quintile of 2.1-4.20; O'Farrell et al., 2014; Griffin et al., 2019). This may reflect differences in focussing on individual vs. area level relationships, but may also reflect differences in the location, method, measurement (e.g. hospital records of self-harm rather than self-report) or statistical models used, and so caution in making direct comparisons is needed.

It may be possible to enhance social identification within neighbourhoods. Interventions have been developed that aim to help individuals generate a protective social identity, with preliminary evidence these may help in improving mental health (Haslam et al., 2019). Interventions that work at the community level may also be beneficial (Bromage et al., 2017). These could potentially generate a sense of shared identity by giving individuals a more active role in supporting and improving their community. Changes in social policy aimed at alleviating socioeconomic disadvantage may also help to reduce problems like self-harm and improve mental health more generally. Such measures have the potential to be

more effective than specific health service interventions (Gunnell et al., 1995), due to their wider reach and focus on a putative underlying cause. An increasing body of research, including the present study, is consistent with the notion that an individual's interaction with wider social influences and processes plays an important role in the development of self-harm. As such, the framing of such difficulties as consequences of individual processes or deficits while neglecting broader systemic and societal influences presents a barrier to change in social policy and therefore such narratives should be challenged.

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Table 1.

Neighbourhood identity and IMD predicting self-harm thoughts.

Variable	Odds Ratio	*p*	95%CI (Lower)	95%CI (Upper)
Step 1				
IMD	1.02	.007	1.00	1.03
Step 2				
IMD	1.02	.024	1.00	1.03
N'hood Identity	0.76	.003	0.64	0.90
Step 3				
IMD	1.02	.017	1.00	1.03
N'hood identity	0.75	.003	0.63	0.90
IMD x N'hood Identity	1.00	.309	1.00	1.01
Step 4				
IMD	1.01	.026	1.00	1.03
N'hood identity	0.78	.008	0.65	0.93
IMD x N'hood Identity	1.00	.279	1.00	1.01
Age	1.00	.255	0.99	1.00
Gender	1.02	.851	0.80	1.31
Ethnicity	0.31	.004	0.15	0.65

Table 2.

Neighbourhood identity and subjective financial status predicting self-harm thoughts.

Variable	Odds Ratio	*p*	95%CI (Lower)	95%CI (Upper)
Step 1	0.28	< .001	0.15	0.51
"Doing well"				
Step 2				
"Doing well"	0.29	.001	0.16	0.54
N'hood Identity	0.75	.002	0.64	0.89
Step 3				
"Doing well"	0.28	< .001	0.16	0.51
N'hood identity	1.05	.848	0.62	1.76
"Doing well x N'hood Identity	0.74	.151	0.48	1.13
Step 4				
"Doing well"	0.25	< .001	0.15	0.44
N'hood identity	1.15	.557	0.70	1.89
"Doing well" x N'hood Identity	0.70	.077	0.47	1.04
Age	1.00	.258	0.99	1.00
Gender	0.96	.727	0.75	1.22
Ethnicity	0.29	.002	0.14	0.60

Table 3.

Neighbourhood identity and education status predicting self-harm thoughts.

Variable	Odds Ratio	*p*	95%CI (Lower)	95%CI (Upper)
Step 1				
Education (degree)	0.63	.024	0.42	0.93
Step 2				
Education (degree)	0.61	.025	0.41	0.93
N'hood Identity	0.72	.001	0.61	0.85
Step 3				
Education (degree)	0.61	.024	0.40	0.93
N'hood identity	0.73	.000	0.62	0.85
Edu x N'hood Identity	0.98	.926	0.64	1.49
Step 4				
Education (degree)	0.67	.033	0.46	0.96
N'hood identity	0.75	.002	0.64	0.88
Edu x N'hood Identity	0.96	.858	0.64	1.46
Age	1.00	.147	0.99	1.00
Gender	1.02	.892	0.78	1.31
Ethnicity	0.31	.003	0.15	0.64

Table 4.

Neighbourhood identity and IMD predicting self-harm behaviours.

Variable	Odds Ratio	*p*	95%CI (Lower)	95%CI (Upper)
Step 1				
IMD	1.03	< .001	1.02	1.05
Step 2				
IMD	1.03	< .001	1.01	1.04
N'hood Identity	0.59	< .001	0.47	0.73
Step 3				
IMD	1.04	< .001	1.02	1.05
N'hood identity	0.55	< .001	0.46	0.65
IMD x N'hood Identity	1.02	.054	1.00	1.03
Step 4				
IMD	1.04	< .001	1.02	1.05
N'hood identity	0.59	< .001	0.49	0.72
IMD x N'hood Identity	1.02	.034	1.00	1.04
Age	0.97	.013	0.95	0.99
Gender	1.15	.621	0.65	2.02
Ethnicity	0.07	.017	0.01	0.59

Table 5.

Neighbourhood identity and subjective financial status predicting self-harm behaviours.

Variable	Odds Ratio	*p*	95%CI (Lower)	95%CI (Upper)
Step 1				
"Doing well"	0.38	.038	0.15	0.94
Step 2				
"Doing well"	0.43	.060	0.18	1.04
N'hood Identity	0.56	< .001	0.46	0.69
Step 3				
"Doing well"	0.41	.080	0.15	1.12
N'hood identity	0.57	< .001	0.43	0.74
"Doing well x N'hood Identity	0.90	.854	0.27	2.96
Step 4				
"Doing well"	0.29	.041	0.09	0.95
N'hood identity	0.90	.896	0.18	4.57
"Doing well" x N'hood Identity	0.71	.627	0.17	3.02
Age	0.97	.015	0.95	0.99
Gender	1.06	.840	0.61	1.83
Ethnicity	0.07	.012	0.01	0.51

Table 6.

Neighbourhood identity and education status predicting self-harm behaviours.

Variable	Odds Ratio	*p*	95%CI (Lower)	95%CI (Upper)
Step 1				
Education (degree)	0.75	.611	0.24	2.36
Step 2				
Education (degree)	0.73	.569	0.32	2.29
N'hood Identity	0.55	< .001	0.44	0.67
Step 3				
Education (degree)	0.47	.635	0.17	12.93
N'hood identity	0.54	< .001	0.42	0.68
Edu x N'hood Identity	1.16	.783	0.39	3.44
Step 4				
Education (degree)	0.57	.742	0.02	19.01
N'hood identity	.60	< .001	0.47	0.76
Edu x N'hood Identity	1.11	.851	0.36	3.41
Age	0.97	.011	0.95	0.99
Gender	1.10	.754	0.59	2.02
Ethnicity	0.07	.014	0.01	0.55