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# Social Identity Mapping: A procedure for visual representation and assessment of subjective multiple group memberships

Tegan Cruwys\*, Niklas K. Steffens, Stephen Alexander Haslam, Catherine Haslam, Jolanda Jetten and Genevieve A. Dingle

School of Psychology, University of Queensland, St Lucia, Queensland, Australia

In this research, we introduce Social Identity Mapping (SIM) as a method for visually representing and assessing a person's subjective network of group memberships. To provide evidence of its utility, we report validating data from three studies (two longitudinal), involving student, community, and clinical samples, together comprising over 400 participants. Results indicate that SIM is easy to use, internally consistent, with good convergent and discriminant validity. Each study also illustrates the ways that SIM can be used to address a range of novel research questions. Study 1 shows that multiple positive group memberships are a particularly powerful predictor of well-being. Study 2 shows that social support is primarily given and received within social groups and that only in-group support is beneficial for well-being. Study 3 shows that improved mental health following a social group intervention is attributable to an increase in group compatibility. In this way, the studies demonstrate the capacity for SIM to make a contribution both to the development of social-psychological theory and to its practical application.

The social world is multifaceted and capturing this complexity is a challenging task for researchers. Social psychologists have focused on social identification, or the subjective psychological representation of one's group memberships, as a particularly important construct (e.g., Roccas & Brewer, 2002; Turner & Oakes, 1986). Several validated scales measuring strength of social identification have been developed, including both unidimensional (e.g., Postmes, Haslam, & Jans, 2013) and multidimensional (e.g., Cameron, 2004; Ellemers, Kortekaas, & Ouwerkerk, 1999; Leach *et al.*, 2008) instruments. However, the social identity tradition theorizes that a range of constructs beyond simple social identity strength are conceptually important. These include social identity salience, multiple group memberships (MGMs), group compatibility, identity continuity, and group support. However, to date, there has been much less discussion about how best to conceptualize, measure, and integrate these other group membership-related constructs that are as critical to understanding our social world.

In this study, we address this gap by introducing a new procedure – Social Identity Mapping (SIM) – that engages participants in the process of simultaneously representing a suite of social identity constructs in a way that allows for their systematic comparison and assessment. In its basic form, SIM involves participants constructing a visual map that (1) identifies the groups to which they subjectively belong as well as their psychological

\*Correspondence should be addressed to Tegan Cruwys, School of Psychology, University of Queensland, St Lucia, Qld 4072, Australia (email: t.cruwys@uq.edu.au).

importance, (2) describes theoretically relevant aspects of these group memberships (e.g., the degree to which a group membership is positive), and (3) represents the similarity and compatibility of these groups *vis-a-vis* each other. By this means, the procedure serves to create a visual representation of a person's social world that captures key features of relevant social identities and their interrelationship. As we argue below, this has the potential to advance social identity theorizing and also to facilitate interventions in a range of applied contexts.

### **Why do we need SIM?**

There are points of contact between SIM and existing measures of social network size (e.g., Wasserman & Faust, 1994) that aim to represent the interconnected nature of people's social worlds. Nevertheless, these extant procedures speak primarily to the interrelationships among *individuals*, rather than among social identities or the group memberships on which they are predicated. From the perspective of social identity theorizing (i.e., after Tajfel & Turner, 1979; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987), this has at least two drawbacks. First, in theoretical terms, this overlooks the role of *group*-based relationships in structuring social behaviour and related outcomes (e.g., Turner, 1982). Second, in empirical terms, group-based relationships have distinctive power to predict diverse outcomes such as change in self-esteem (Jetten *et al.*, 2015) and preserved cognitive function in ageing (Glei *et al.*, 2005; Haslam, Cruwys, & Haslam, 2014).

In particular, in recent years one's sense of identification with *multiple* social groups has emerged as a central social identity construct (Kang & Bodenhausen, 2015), not least because MGM appears to be particularly important for health and well-being. (Brook, Garcia & Fleming, 2008) For instance, having a larger number of social identities protects against depression relapse (Cruwys *et al.*, 2013), increases physical resilience (Jones & Jetten, 2011), and enhances recovery from stroke (Haslam *et al.*, 2008). A variety of measures exist to index one's MGMs (see Ramarajan, 2014, for a review), including the MGM scale (Haslam *et al.*, 2008).

Existing measures have proved useful in generating important evidence for the health-related benefits of social group membership (e.g., Haslam, Jetten, Postmes, & Haslam, 2009). They are also easy to administer and score. However, their primary focus has been on measuring the richness (or paucity) of a person's social group network in a general sense, rather than interrogating precisely what it is about those group memberships that confer health benefits. SIM represents an advance in seeking to provide enriched and comprehensive data on a person's social group networks. For instance, researchers have argued for the importance of (1) the compatibility of group memberships (Hirsh & Kang, 2016; Rosenthal, London, Levy, & Lobel, 2011), (2) a person's prototypicality within groups (van Kleef, Steinel, van Knippenberg, Hogg, & Svensson, 2007), and (3) their social contact with groups (Sani, Herrera, Wakefield, Boroch, & Gulyas, 2012; Sani, Madhok, Norbury, Dugard, & Wakefield, 2015). Nevertheless, there has been no systematic, validated or widely agreed-upon approach to the measurement of these constructs and none which allows them to be assessed simultaneously. SIM addresses this issue by allowing these, and other, constructs to be assayed within the same interactive procedure.

At a practical level too, there is value in developing procedures that move beyond a primary reliance on scale responses. Not least, this is because social identity constructs are increasingly used in applied domains where they are central to theory-derived assessment and intervention (Haslam, 2014). In these contexts, though, there is demand for a tool that is accessible to participants and that provides a visual representation, indexing relevant

constructs in ways that are both rich and phenomenologically meaningful. This is not the case with standard social identity scales whose Likertian form primarily benefits researchers rather than participants.

To illustrate this point, consider a practitioner who is working with social identity constructs in an organizational context to examine the nature of identity conflict following a merger (van Dick, Ullrich, & Tissington, 2006) or in a clinical context to understand the presentation of social isolation and depression in response to a stressor (Cacioppo, Hawkey, & Thisted, 2010). In both of these examples, the practitioner may want not only to measure such constructs, but also to work with participants to increase their awareness both of the social identities that are in play and of their interrelationship. This is because practitioners may be interested in enabling participants to gain insight into, and take some ownership of, social identity dynamics (e.g., Haslam, Cruwys, Haslam, Dingle, & Chang, 2016).

A further impetus for the development of the mapping procedure is recognition of the fact that social identities are understood to be subjective and responsive to context (e.g., Oakes, Haslam, & Turner, 1994; Onorato & Turner, 2004). Despite their theoretical importance, these qualities are at odds with the priorities of psychometric scale development, particularly in the clinical and personality traditions, which tend to privilege the measurement of stable, reified constructs. For example, standard social identity measures would allow us to examine the extent to which each of the authors identifies as Australian (e.g., on a scale from 1 to 7). Yet while there will be contexts in which this is a meaningful question, there will be others in which this group membership (and hence the question) will be entirely irrelevant. At the same time, it is well established that measuring social identity is highly reactive so that the process of asking whether we identify as Australian (say) is likely both to make the identity more salient and to increase reported identification. In this way, self-report measures that ask participants to reflect upon specific predetermined social identifications will themselves have an impact on those identifications. This, then, is not just a problem of measurement (e.g., see Haslam, Oakes, Reynolds, & Turner, 1999), but points to the need to develop and validate procedures that allow participants to report subjectively important emergent social identities, rather than forcing them to orient to social categories that may in some contexts be subjectively meaningless. We propose that the measurement of social identity can be transformed into an interactive, reflective, and reflexive process.

### ***The evolution of SIM***

The importance of SIM was first recognized in the context of an applied programme for managing social identities in organizational contexts. The goal of Actualizing Social Identity and Personal Identity Resources (ASPIRe; Haslam, Eggins, & Reynolds, 2003) is to assess and then develop team and organizational identification among participants (Peters, Haslam, Ryan, & Fonseca, 2013). The first stage of the ASPIRe process (known as Ascertain Identity Resources; AIRing) involves participants describing their most important group membership in the workplace and indicating the nature of the relationship between this group and other important groups with which they interact (Eggins, O'Brien, Reynolds, Haslam, & Crocker, 2008; Reynolds, Eggins, & Haslam, 2010).

AIRing has proved to be a useful procedure in a range of contexts, including the management of health services in the military (Peters *et al.*, 2013) and the merger of departments within a university (Peters, Haslam, Ryan, & Steffens, 2014). Nevertheless, despite the importance of AIRing as a means of understanding the nature of the identities

that play out in such contexts, to date there has been no systematic assessment of the identity-related data obtained.

The idea of interactively and qualitatively assessing people's social identities was subsequently extended beyond organizational contexts, for instance, via a mapping process that involved a visual representation of people's social identities before and after a significant life change (Jetten, Haslam, Iyer, & Haslam, 2010). Facilitated by a clinical psychologist in the context of a broad-ranging neuropsychological assessment, this SIM process involved (1) using different-sized Post-it notes to represent social groups of differential importance (with larger Post-it notes representing more important groups), (2) using spatial organization to represent group similarity (with Post-It notes representing similar groups being placed close together), and (3) drawing lines between the notes to represent group compatibility (with straight lines indicating that groups were compatible and jagged lines indicating that they were incompatible).

Informal observations suggested that this process was experienced as therapeutic by participants, primarily because it allowed them to produce a concrete representation of their support networks. At the same time, it also allowed the psychologist to gain immediate insight into some key social identity resources that were available to participants (see Jetten, Haslam, Haslam, Dingle, & Jones, 2014, for a discussion). More recently, this procedure has been adapted by Best *et al.* (2014) to explore the impact of social group networks in recovery from alcohol and other drug addictions. This provides the basis for recovery to be conceptualized as a process of social identity change.

Yet while the use of identity mapping in applied contexts speaks to its practical utility, no research has been conducted to establish the procedure's psychometric properties. This is critical not only for methodological reasons but also on theoretical grounds, as the predictive power of a variety of social identity concepts (as operationalized by SIM) remains unclear. Furthermore, when used in these applied contexts, SIM has been facilitated one-on-one by a trained clinician or researcher, who was able to explain social-psychological concepts to participants as well as answer questions that arose during the process. While this might be suitable in some contexts, such intensive one-on-one facilitation will not always be feasible (e.g., in the case of large-scale interventions where resource considerations necessitate the use of self-completed questionnaires). In these contexts, were it shown to have analytical and predictive power, a SIM instrument that requires minimal facilitation could be particularly useful.

### **The present research**

The goal of the present research was threefold. First, we aimed to extend prior research by developing (1) a version of SIM that participants could self-complete, and (2) a standardized means of scoring the core social identity constructs that are entailed in this process (e.g., group compatibility). Second, we aimed to establish the reliability and validity of these core constructs, so as to provide psychometric support for the ongoing use of SIM in research and applied contexts. Third, we aimed to demonstrate whether SIM could usefully inform debate about an array of issues that are central to contemporary social-psychological theorizing (e.g., concerning the relationship between social identity, social support, and well-being).

To this end, we conducted three studies, involving over 400 participants. More specifically, these took the form of a 6-month longitudinal survey with a student sample (Study 1;  $N = 201$ ), a cross-sectional survey with a community sample (Study 2;  $N = 132$ ), and a pre-to-post-intervention study with a clinical sample (Study 3;  $N = 69$ ).

**Table 1.** Four psychometric features on which Social Identity Mapping (SIM) was evaluated

Prediction	Study 1	Study 2	Study 3
1. SIM should have <i>internal consistency</i> , in that its four core dimensions will be interrelated and show moderate stability over time	✓	✓	✓
2. SIM should be related to extant measures of social relationships (e.g., multiple group membership scales, social network size; <i>convergent validity</i> )	✓		✓
3. SIM should not be systematically related to age, gender, social desirability, or 'Big 5' personality ( <i>discriminant validity</i> )	✓	✓	
4. SIM should have <i>predictive utility</i> , in that it will be useful in generating and addressing novel research questions that are not readily assessed using existing instruments	✓	✓	✓

We made four specific predictions regarding the outcome of the studies (Table 1). Each study addressed at least three of these predictions, which map onto the core psychometric principles required to establish reliability and validity. First, SIM must have good *internal consistency*. SIM measures a variety of different constructs and, while these may not all be closely interrelated, we would expect them each to have a normal distribution, to elicit a wide range of responses, and to be moderately (but not highly) stable over time. This latter point can be contrasted with expectations surrounding many individual-difference measures, which would generally be expected to be more stable than social-psychological constructs. To assess this, in each study we considered the descriptive statistics, including the distribution and range of each SIM construct, the interrelationships between SIM constructs, and, in Studies 1 and 3, test–retest reliability.

The second prediction was that SIM would have *convergent validity*. More specifically, we expected that SIM constructs would be significantly associated – but not interchangeable – with other measures of MGM (Study 1) and measures of social network size (Study 3).

The third prediction was that SIM would have *discriminant validity*. That is, we expected that SIM constructs would be independent of (1) constructs such as scale-response strategy (social desirability; Study 1) or (2) constructs that are theorized to be orthogonal to social identity (Big 5 personality traits; Study 2).

The fourth prediction was that SIM would have *predictive utility*. In other words, we aimed to examine whether the procedure enables the investigation of novel research questions. To investigate the capacity of SIM to fulfil this purpose, each of the three studies explored the predictive utility of a unique illustrative variable calculated from SIM, along with a novel research question that could not readily be assessed using existing measurement instruments.

### **The SIM procedure**

For the purposes of this research, the SIM procedure was revised in minor ways from previous instantiations (as discussed above; e.g., Best *et al.*, 2014; Jetten *et al.*, 2010). Participants were provided with a large (A3) sheet of paper, three sizes of Post-it notes, a pen, and complete written instructions (for sample instructions, see Appendix S1; three





**Figure 1.** Three illustrative social identity maps: Representations of (a) low, (b) moderately, and (c) highly complex networks of subjective group memberships.

illustrative final maps are presented in Figure 1). The SIM procedure has four distinct stages.

*Group specification and importance*

Participants were provided with a detailed definition of a (psychological) social group as well as several examples, and asked to write the name of each group that he or she was a

member of on a Post-it note. Participants were asked to use the size of each Post-it note as an indicator of group importance, such that the names of the most important groups were written on the largest size, groups of moderate importance on the medium size, and groups of least importance on the smallest size. Two of the core SIM indices are calculated from this information: Number of Groups, by summing the total number of Post-it notes; and Number of Important Groups, by summing the number of groups named on the largest Post-it notes. The number of groups generated by participants was of interest because this most closely resembles the way in which the concept of MGM is typically conceptualized (Ramarajan, 2014; Thoits, 1983).

However, while the total number of groups participants generate is certainly of interest, theoretically, the social identity approach would argue that it is primarily when these groups are *internalized* as meaningful and self-relevant that they shape psychological and behavioural outcomes. In line with arguments that social identification strength is best measured using simple one-item scales (Postmes *et al.*, 2013) or visual analogues (Aron, Aron, & Smollan, 1992), here social identification was measured by participants' ascribed importance of each group (represented by size). While importance may not be an identical construct to identification, we posited that it was a simple-language equivalent term, and one that appears prominently in widely used social identification scales (e.g., Cameron, 2004; Doosje, Haslam, Spears, Oakes, & Koomen, 1998; Ellemers *et al.*, 1999; Leach *et al.*, 2008; Sellers, Smith, Shelton, Rowley, & Chavous, 1998). We considered the summing approach preferable to a weighted average of importance scores, because the latter tends to misrepresent the reality of respondents who are exhaustive in listing their group memberships (i.e., those who typically list a greater number of groups overall, but not necessarily more important groups). This summing approach has also previously been used by several research groups (e.g., Mawson, Best, Beckwith, Dingle, & Lubman, 2015; Sani, Madhok, Norbury, Dugard, & Wakefield, 2014; Sani *et al.*, 2015).

### Group ratings

Participants were then asked to provide information about each group that they generated, by writing a number (corresponding to a relevant rating) in a specific corner of each Post-it note. The specific questions asked in this stage differed across the studies, not least because these represent four *modifiable* dimensions of the SIM procedure that can be customized to examine questions specific to a particular study or intervention. All studies included a measure of *group positivity*, which asked participants to rate, from 0 (not positive at all) to 10 (very positive), how positive they felt about being a member of each group in the top left-hand corner. Theoretically, people are thought to be motivated to join groups which contribute to positive self-esteem (Tajfel & Turner, 1979), and this has a variety of positive consequences that typically differ from those associated with membership in low-status, stigmatized, or negative groups (Quinn & Earnshaw, 2013; Schmitt, Branscombe, Postmes, & Garcia, 2014). Drawing on this reasoning, Number of Positive Groups was included as a core SIM construct and this was calculated by summing the number of groups with a rating of 8, 9, or 10 out of 10 on group positivity.

Study 1 also included a measure of *social contact*, which asked participants to give each group a number between 0 and 30 representing the number of days in a typical month that they engage in an activity related to that group membership, and to write this in the top right-hand corner. Study 2 included a measure of *group tenure*, which asked participants to give each group a number representing the number of years that they had



been a member of each group, and to write this in the bottom left-hand corner. Study 3 included a measure of *group prototypicality*, which asked participants to give each group a rating from 0 to 10 indicating how representative they perceived themselves to be of what it means to be a member of the group, and to write this in the bottom right-hand corner. Importantly, these four dimensions are not an exhaustive list of information that could be collected in this stage of the SIM procedure. For instance, other studies have used this stage of the SIM to measure group-based norms of substance use (Best *et al.*, 2014).

#### *Group similarity*

Next, participants were asked to position the Post-it notes on the page such that groups close together were similar to one another and groups far apart were very different from one another (as perceived by participants on whatever dimensions were important to them). Although it is beyond the scope of this article to explore this variable in depth, this provided data on the perceived overlap (vs. distinctiveness) of group memberships—a variable that is theorized to be a fundamental feature of social identification (Roccas & Brewer, 2002).

#### *Group compatibility*

Finally, participants were asked to join pairs of groups with lines that indicated perceived compatibility between various groups, specifically indicating how ‘easy versus hard’ it is to be a member of those two groups. Jagged lines were used to indicate highly incompatible groups, wavy lines moderately compatible groups, and straight lines highly compatible groups. This task was informed by an emerging literature on social identity complexity that has concerned itself with the relationships *between* MGMs, and the degree to which these may be (dys)functional (e.g., Benet-Martínez, & Haritatos, 2005; Ramarajan, 2014). Researchers have also argued for the importance of identity congruence (Hoang, Holloway, & Mendoza, 2011) or identity integration (Amiot, de la Sablonnière, Terry, & Smith, 2007), which we consider conceptually similar to group compatibility (Iyer, Jetten, Tsivrikos, Postmes, & Haslam, 2009). This procedure provided a basis for the last of the four core SIM constructs – Group Compatibility – which was calculated as the proportion of links between groups that was rated as ‘very easy’ (to be a member of two groups).

It is worth noting that the richness of the data provided by SIM is such that other indices might have been calculated (e.g., group similarity/overlap). However, in the interests of brevity and clarity we made an *a priori* decision to focus on the above four core indices, as well as one additional construct in each study in order to demonstrate that SIM can be adapted to assess those constructs that are most meaningful to researchers in a given setting (Group Contact in Study 1; Group Tenure in Study 2; and Group Prototypicality in Study 3).

In terms of the interrelationship between these four core SIM constructs, we expected that Number of Groups, Number of Important Groups, and Number of Positive Groups would covary, in part because they are all concerned with (various aspects of) the size of one’s social group network. However, we expected Group Compatibility to be less closely related to these variables (or perhaps even independent of them) as the size of one’s network need not relate to the quality of relationships between groups. In all studies, participants were allowed to keep their final social identity map, with researchers taking a digital image for research purposes. This was an important feature of data collection, as many participants developed a sense of ownership and pride in their map and chose to retain it.

## STUDY I

Study 1 provided an initial test of all four predictions, using a predominantly undergraduate student sample.

### **Convergent and discriminant validity**

We predicted that SIM constructs would covary with existing indices of group membership – notably, the MGMs scale and the Group Listing Task (Haslam *et al.*, 2008). Convergent validity was assessed relative to these two existing measures.

In terms of discriminant validity, an important component of scale validation is ensuring measurement is not confounded with social desirability (King & Bruner, 2000). People generally consider it to be a good thing to appear sociable and popular, and might therefore wish to artificially inflate the richness of their social identity map. To address this possibility, a validated short-form social desirability scale was included.

### **Predictive utility**

Two tests were conducted to explore the capacity of SIM to contribute to the development of novel research questions as well as their investigation. A key application of the SIM tool is in the ‘social cure’ domain (e.g., see Best *et al.*, 2014; Haslam, *et al.*, 2016). Therefore, an important starting point for demonstrating the usefulness of SIM in this tradition. First, examined the capacity of SIM constructs to predicting life satisfaction over and above social contact, with a view to replicating and extending the work of Sani *et al.* (2012). For this purpose, we calculated an additional variable from the SIM, Group Contact. Second, we examined the capacity of SIM constructs to predict change in self-esteem over time, with a view to replicating and extending the work of Jetten *et al.* (2015). Both of these analyses involved comparing Number of Groups, Number of Important Groups, and Number of Positive Groups (all of which are encompassed in common definitions of MGM; e.g., Jones & Jetten, 2011) as predictors of well-being.

## Method

Adult participants ( $N = 201$ ) were recruited from the university community. First-year psychology students (which comprised the majority of the sample) received course credit for their participation. The study was advertised as ‘Mapping My Social World’, and entailed completed a questionnaire battery and SIM in the laboratory (order of all tasks was randomized). Participants were 71.1% female and had a mean age of 19.56 years ( $SD = 2.60$ ; range 18–37). A representative subset of participants completed a follow-up study to assess test–retest reliability ( $N = 91$  participants consented to follow-up and provided valid contact information at T1;  $N = 45$  could be contacted 6 months later, and  $N = 38$  returned to the laboratory to complete T2). *t*-Tests indicated no significant differences on demographic variables or variables of interest between those who completed the follow-up questionnaire and those who did not.

## Measures

### Convergent validity

*Group Listing Task.* This is a measure of MGMs (Haslam *et al.*, 2008, see also Jetten *et al.*, 2015) in which the same definition of groups is provided as in the SIM procedure, and participants are requested to list up to six groups that they are members of.

*Multiple group memberships scale.* Participants completed a 4-item scale measuring subjective multiple group memberships (MGM scale; Haslam *et al.*, 2008, see also Cruwys, Haslam, Dingle, Haslam, & Jetten, 2014). This scale includes items such as ‘I belong to lots of different groups’, measured on a 7-point scale from ‘Strongly disagree’ to ‘Strongly agree’.

### Discriminant validity

*Social desirability.* Participants responded either ‘True’ or ‘False’ to 10 items (Reynolds, 1982) designed to measure individual differences in the degree to which they seek to convey an unrealistically positive impression of themselves in self-report questionnaires (e.g., ‘I have never deliberately said something that hurt someone’s feelings’).

### Predictive utility

*Self-esteem.* Self-esteem was measured using the 1-item short-form of the Rosenberg Self-Esteem scale (Robins, Hendin, & Trzesniewski, 2001), ‘I have high self-esteem’, on a 5-point scale ranging from ‘Not very true of me’ to ‘Very true of me’.

*Life satisfaction.* Life satisfaction was assessed using the validated 5-item Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985), for example ‘I am satisfied with my life’, rated on a 7-point scale from ‘Strongly Disagree’ to ‘Strongly Agree’ ( $\alpha = .88$ ).

### Social Identity Mapping

Participants completed SIM in accordance with the procedure described above. The experimenter was available at all times and provided clarification if participants expressed any uncertainty about how to complete the task. Group Contact was calculated by summing the number of groups with which participants had at least weekly social contact.

## Results

Participants took between 15 and 30 min to complete their SIM. Very few queries were directed to the experimenter, with the most common relating to what would constitute a group. The final maps were completed in accordance with instructions by all but three participants, who misunderstood the instructions and whose data were excluded from analysis. This suggests that participants typically understood the description of each

**Table 2.** Descriptive statistics of social identity constructs at Time 1, Study 1

	M	Median	SD	Range
Number of groups	6.52	6	3.25	1–19
Number of important groups	2.74	2	1.53	0–9
Number of groups with highest importance rating (3/3)				
Number of positive groups	3.41	3	3.05	0–16
Number of groups with 8, 9, or 10/10 positivity score				
Group compatibility	0.51	0.50	0.23	0–1
Proportion of links groups that were rated 'very easy' to be members of both				
Group contact	3.55	3	2.96	0–16
Number of groups people engage/participate with on at least a weekly basis (4+ days/month)				
Group listing task	4.55	5	1.79	0–6
Multiple group membership scale	4.72	5	1.42	1–7

Note.  $N = 201$ .

social-psychological concept in the SIM instructions and that there were no problems with the clarity of SIM as a whole.

### **Internal consistency**

The average participant reported six social groups, two of which were highly important, three of which were positive, and three of which they had at least weekly contact with (see Table 2 for descriptive statistics). However, there was substantial variation around this, with some participants reporting as few as one or as many as 19 groups.

Study 1 evaluated the internal consistency of SIM in a number of ways. First, the range, along with skew and kurtosis scores, was examined for the core SIM constructs. None showed significant heteroscedasticity, in contrast to the Group Listing Task, which had a restricted range such that 38.7% of participants received the highest possible score of 6.

Furthermore, and as can be seen in Table 3, the intercorrelations between Number of Groups, Number of Important Groups, and Number of Positive Groups were moderate to high, between .42 and .64. This suggests that these constructs are closely related, although not interchangeable. Intercorrelations with Group Compatibility were somewhat lower, in the range of .16–.21.

Data from the participants who completed SIM 6 months later ( $N = 38$ ) were used to calculate test–retest reliability for each of the core SIM indices:  $\alpha_{\text{Number of Groups}} = .65$ ;  $\alpha_{\text{Number of Important Groups}} = .59$ ;  $\alpha_{\text{Number of Positive Groups}} = .36$ ;  $\alpha_{\text{Group Compatibility}} = .41$ . While these scores are somewhat lower than many individual-difference constructs, this is consistent with our conceptualization of SIM as a process that captures malleable aspects of a person's social-psychological reality. This is particularly true because across a 6-month period for these young adults, we would expect a number of changes in their lives that would be reflected in their group memberships such as new classes, new housemates, and new neighbourhoods.

**Table 3.** Correlations at Time 1, Study 1

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Number of groups	–									
2. Number of important groups	.64*	–								
3. Number of positive groups	.44*	.42*	–							
4. Group compatibility	.21*	.17*	.16*	–						
5. Group contact	.45*	.34*	.85*	.04	–					
6. Group listing task	.22*	.10	.18*	.05	.09	–				
7. Multiple group membership scale	.29*	.23*	.19*	.05	.12	.41*	–			
8. Life satisfaction	.21*	.19*	.23*	.11	.17*	.17*	.27*	–		
9. Self-esteem	.12	.15*	.12	–.07	.09	.12 <sup>†</sup>	.24*	.46*	–	
10. Social desirability	.07	.01	.10	.03	.03	.05	.09	.13	.09	–

Note.  $N = 201$ .

\* $p < .05$ .

†  $p < .10$ .

Social identity continuity was further explored by examining the content of the groups generated by participants. Fifty percent of T1 groups were listed at T2 (with the same name), with an average of 2.84 new groups generated at T2. It is worth noting, though, that this measure likely underestimates the continuity of social identities and overestimates new groups, because groups could only be coded as the same if they were given the identical name at both time points (e.g., If Jane McKellar listed ‘The McKellars’ at T1 and ‘Family’ at T2, this would be coded as non-continuity).

### **Convergent and discriminant validity**

As can be seen in Table 3, the intercorrelations with the MGM scale and the Group Listing Task were relatively weak, varying from .05 (Group Compatibility with the MGM scale) to .29 (Number of Important Groups with the MGM scale). This suggests that SIM captures unique aspects of a person’s social group network that are not reflected in these existing measures.

Social desirability was not significantly related to any SIM dimension, or to any other measure of MGM. This would suggest that participants did not generally inflate the richness of their social identity maps in an effort to create a positive impression of themselves.

### **Predictive utility**

First, we aimed to extend and replicate the work of Sani *et al.* (2012), who demonstrated that social group contact is less important than social identification(s) in protecting well-being. In the first regression analysis, life satisfaction was included as the dependent variable. Step 1 included Group Contact, which significantly predicted life satisfaction,  $F(1, 199) = 5.826$ ,  $\beta = .17$ ,  $p = .017$ ,  $R^2 = .028$ , such that more group contact was associated with better life satisfaction. In Step 2, the three constructs of Number of

Groups, Number of Important Groups, and Number of Positive Groups were added to the model. This step significantly improved the model,  $F_{\text{change}}(3, 196) = 3.10$ ,  $p = .028$ ,  $R^2 = .073$ . This contributed approximately 4% additional variance to the model, which was predominantly accounted for by Number of Positive Groups,  $\beta = .26$ ,  $t(196) = 1.96$ ,  $p = .051$ .

Second, we aimed to extend and replicate the work of Jetten *et al.* (2015), who found that change in MGMs over time predicted change in self-esteem. A regression analysis was conducted with self-esteem (T2) as the dependent variable. Step 1 included T1 self-esteem,  $\beta = .71$ ,  $t(36) = 5.98$ ,  $p < .001$ ,  $R^2 = .50$ , and Step 2 included T2 measures of Number of Groups, Number of Important Groups, and Number of Positive Groups. Step 2 significantly improved the model,  $F(3, 33) = 5.59$ ,  $p = .003$ ,  $R^2 = .67$ . This was accounted for primarily by Number of Positive Groups,  $\beta = .65$ ,  $t(33) = 4.04$ ,  $p < .001$ , which uniquely predicted 16% of the change in self-esteem across a 6-month period.

## Discussion

Study 1 provided initial evidence for our four goals of establishing internal consistency, convergent validity, discriminant validity, and predictive utility of SIM. We found that the SIM procedure was well understood by participants, and the resulting SIM constructs were normally distributed, and related to one another and to existing measures of MGM, but independent of social desirability. We replicated previous findings that social identification(s) predict well-being over and above social contact (Sani *et al.*, 2012, 2015) and that MGMs predict change in self-esteem over time (Jetten *et al.*, 2015). However, we were able to go further in disentangling the component of MGM most protective of well-being. In both analyses, Number of Positive Groups emerged as the most important SIM construct, associated with higher life satisfaction and self-esteem.

It was interesting to note that while the core SIM constructs were interrelated, the intercorrelations between Group Compatibility and the other variables were somewhat lower. This speaks to the importance of capturing the complex and dynamic aspects of MGMs, which is unlikely to be reducible to a single variable representing the size of one's social group network.

It is worth noting, too, that Study 1 provides evidence for the predictive utility of the MGM scale and the Group Listing Task, both of which performed comparably to some indices of SIM in predicting well-being, and were similarly independent of social desirability. Interestingly, though, the correlation between these scales and the core SIM constructs was somewhat lower than one might have expected, perhaps in part because the Group Listing Task is less comprehensive, and the MGM scale assesses people's beliefs about the extensiveness of their group network rather than their specific group memberships. This highlights the different aspects of MGM that can be indexed, and our goal is not to render these scales redundant. Rather, we aim to develop SIM as a process that can comprehensively measure a variety of aspects of MGM, in a way that is particularly suitable for applied contexts or for research that interrogates issues of psychological mechanisms. This is a point to which we return in the General Discussion.

Limitations of Study 1 were its predominantly student sample and small longitudinal sample. There also remains a need to establish whether SIM constructs



have any meaningful associations with demographic and personality variables. Study 2 addressed these limitations and further explores the rich array of data available from SIM.

## STUDY 2

Study 2 was a laboratory-based study with a community sample that aimed to gather evidence to address three of our goals in validating SIM: internal consistency, discriminant validity, and predictive utility. To demonstrate the versatility and richness of data that can be generated from SIM, we calculated average Group Tenure, which may be particularly relevant to identity transition research (e.g., Steffens, Cruwys, Haslam, Jetten, & Haslam, 2016). In Study 2, discriminant validity was assessed by considering the relationship between SIM constructs and demographics (age and gender) as well as ‘Big 5’ personality. In particular, we aimed to establish that SIM constructs were not merely proxies for extroversion, agreeableness, or conscientiousness. This is important because, conceptually, multiple social identities are seen to be the psychological representation of one’s malleable social reality, not relatively stable individual differences such as one’s preference for social interaction.

Furthermore, in Study 2, we aimed to demonstrate the predictive utility of SIM by providing new evidence for the relationship between social identity variables, social support, and well-being. More specifically, it has previously been demonstrated that social support is a psychological resource that flows from important social group memberships (Cruwys *et al.*, 2014) and partially accounts from the well-being benefits of social group membership (Greenaway, Haslam, Ysseldyk, & Heldreth, 2015; Haslam, O’Brien, Jetten, Vormedal, & Penna, 2005). However, previous empirical studies have not examined the role of social support that is accessed from *within* versus *outside* one’s social group memberships, in part due to the difficulty measuring this without a tool such as SIM. Theoretically, we predicted that only social support that originated from one’s group memberships would protect well-being, because only this support would be recognized and received in the manner in which it is intended (Haslam, Reicher & Levine, 2012). This was tested in Study 2 using a mediation model (following Gleibs *et al.*, 2011).

## Method

Participants were recruited using a paid university pool of members of the general community interested in participating in psychological research. A sample of 132 participants received \$10 for completing the study in the laboratory. Participants’ mean age was 22.54 years ( $SD = 5.12$ ; range 17–55) and 68.2% were female.

## Measures

### *Social Identity Mapping*

The same method of administering SIM was used as in Study 1. All participants in Study 2 completed SIM prior to completing other questionnaires. Group Tenure was calculated as the average number of years of group membership as reported in the bottom left corner of each Post-it note.

### *Discriminant validity*

*'Big 5' personality.* The personality dimensions of Openness to Experience (e.g., 'I see myself as someone who has an active imagination'), Emotional Stability (e.g., 'I see myself as someone who gets nervous easily'), Extroversion (e.g., 'I see myself as someone who is outgoing, sociable'), Agreeableness (e.g., 'I see myself as someone who is generally trusting'), and Conscientiousness (e.g., 'I see myself as someone who does a thorough job') were measured using a validated 10-item measure (Rammstedt & John, 2007) in which responses were made on 7-point scales from Strongly Disagree (1) to Strongly Agree (7).

### *Predictive utility*

*Social support.* Two different measures of social support were included. Each measure was taken from House (1981), for example 'I get the support I need from other people', measured on a 7-point scale from Strongly Disagree (1) to Strongly Agree (7). These two scales were identical except that participants were asked to indicate (1) how much support they received from others who were *within the groups in their identity map* (four items;  $\alpha = .86$ ), and (2) how much support they received from others who were *outside their identity map* (four items;  $\alpha = .91$ ).

*Depression Anxiety Stress Scales.* Participants completed a validated short-form of the Depression Anxiety Stress Scales (DASS-21; Lovibond & Lovibond, 1995). This measure includes three subscales, assessing depression, anxiety, and stress symptoms, respectively. The DASS has been shown to be reliable and valid in both clinical and non-clinical samples (Crawford *et al.*, 2009; Henry & Crawford, 2005). Participants indicated how often in the preceding week they experienced symptoms such as 'I felt like I wasn't worth much as a person' (depression subscale;  $\alpha = .80$ ), 'I felt I was close to panic' (anxiety subscale;  $\alpha = .78$ ), and 'I tended to over-react to situations' (stress subscale;  $\alpha = .83$ ) from 0 = 'Did not apply to me at all' to 3 = 'Applied to me very much, or most of the time'.

## **Results**

### ***Internal consistency***

As in Study 1, there was a wide range in the responses that were captured by SIM, with all variables showing a normal distribution without significant skew. The mean scores on SIM constructs were slightly, but not significantly, higher in this sample (as indicated by one-sample *t*-tests), such that participants reported an average of seven group memberships, three of which were important and four of which were positive (Table 4). Group Tenure was high on average ( $M = 7.25$  years) with the average participant joining one new group in the last year.

Three of the four core SIM constructs (Number of Groups, Number of Important Groups, and Number of Positive Groups) were all highly correlated in the range of .66–.80 (Table 5). Again, Group Compatibility was more weakly related to the other SIM constructs, with correlations in the range of .28–.38. Group Tenure was unrelated to other SIM constructs, consistent with the evidence that length of association with a group is not a particularly good proxy for psychological connection to it (Desmond, 2012).

**Table 4.** Descriptive statistics of Social Identity Mapping Tool constructs, Study 2

	M	Median	SD	Range
Number of groups	7.46	7	4.02	2–23
Number of important groups	2.95	3	1.74	0–9
Number of groups with highest importance rating (3/3)				
Number of positive groups	4.96	4	3.07	0–16
Number of groups with 8, 9, or 10/10 positivity score				
Group compatibility	0.51	0.50	0.24	0–1
Proportion of links groups that were rated 'very easy' to be members of both				
Average group tenure	7.53	7.25	3.96	0.75–20.80
Depression	7.89	6	6.70	0–30
Anxiety	7.97	6	6.94	0–32
Stress	11.89	10	8.05	0–38
Extroversion	3.36	3.5	0.91	1–5
Agreeableness	3.57	3.5	0.72	2–5
Conscientiousness	3.22	3	0.98	1.5–5
Emotional stability	3.13	3	0.98	1–5
Openness to experience	3.30	3	0.79	1.5–5
Social support received from within groups	5.78	6	1.02	1.75–7
Social support received from outside groups	4.02	4	1.43	1–7

Note.  $N = 132$ .

### **Discriminant validity**

Gender was not significantly related to any SIM construct. Age was not significantly associated with the four core SIM constructs, but did predict longer average group tenure ( $r = .26$ ).<sup>1</sup> As can be seen in Table 5, data supported the contention that SIM constructs are not reducible to any of the 'Big 5' personality traits. Specifically, only one relationship (of 25 relationships examined) was significant: people lower in emotional stability perceived their group memberships to be less compatible. This evidence is consistent with the claim that SIM assesses malleable, contextually bound and subjective social-psychological group memberships in a way that is not systematically related to stable individual differences.

### **Predictive utility**

To test the relationship between important group memberships, social support, and depression, we conducted a multiple mediation analysis using 1,000 bootstrapped samples with Number of Important Groups as the independent variable, both kinds of social support specified as mediators, and depression as the dependent variable (Model 4; note also that the findings were replicated if each mediator was tested in a separate model; standardized variables were used to calculate betas but unstandardized variables were used to test significance in accordance with recommendations by Hayes, 2013). Number of Important Groups significantly predicted Social Support from Within Groups ( $\beta = .29$ ,

<sup>1</sup> Study 1 also measured age and gender and, broadly consistent with Study 2, no significant effects were apparent except that female gender ( $r = .17$ ,  $p = .012$ ) and age ( $r = .17$ ,  $p = .017$ ) were both weakly associated with number of positive groups.

**Table 5.** Correlation between Social Identity Mapping constructs and health/helping constructs of interest, Study 2 (full table available in Appendix S2: Table S1)

	Number of groups	Number of important groups	Number of positive groups	Group compatibility	Group tenure
Number of groups	–				
Number of important groups	.69*	–			
Number of positive groups	.80*	.66*	–		
Group compatibility	.28*	.38*	.37*	–	
Group tenure	.13	.09	.11	.15	–
Age	.15	.14	.02	.03	.26*
Gender (male = 1, female = 2)	.01	.05	.17	–.00	.06
Depression	–.09	–.18*	–.16	–.09	–.08
Anxiety	–.12	–.18*	–.17	–.20*	–.12
Stress	–.02	–.16	–.10	–.09	.02
Social support received from within groups	.14	.29*	.28*	.04	.04
Social support received from outside groups	–.12	–.04	.01	.04	–.07
Extraversion	.08	.10	.17	.06	–.15
Agreeableness	–.02	.12	–.03	.02	–.12
Conscientiousness	–.01	–.01	–.02	.04	.02
Emotional stability	.00	.04	.06	.20*	.03
Openness to experience	.13	.16	.15	.08	.03

Note.  $N = 132$ .

\* $p < .05$ .

$p < .001$ ), but not Social Support from Outside Groups ( $\beta = -.04$ ,  $p = .63$ ). Social Support from Within Groups predicted Depression ( $\beta = -.37$ ,  $p < .001$ ), whereas Social Support from Outside Groups did not ( $\beta = -.01$ ,  $p = .93$ ). This corresponded to a significant indirect effect of Number of Important Groups on Depression ( $\beta = -.41$  [CI:  $-0.89$ ,  $-0.14$ ]) that fully mediated the relationship, rendering the direct effect non-significant ( $\beta = -.07$ ,  $p = .39$ ).

## Discussion

Study 2 provided further evidence of the validity and utility of SIM in line with three of our research goals. Specifically, SIM was again shown to have sound psychometric properties, and no systematic relationship with participants' age, gender, or personality was identified. Perhaps most importantly, we again demonstrated the value of SIM as a tool for exploring novel research questions. Specifically, two types of social support (from within vs. outside of social groups) were measured here for the first time. These are constructs that can readily be assessed following administration of SIM because once participants become aware of the groups that are represented in their maps – and the identities in question have been rendered

more concrete through the process of map production – they can be asked follow-up questions about the nature of these groups (and their interrelationships). In this case, this meant that it proved quite easy to explore – and demonstrate the importance of – forms of social support that have not previously been assessed despite the theoretical claim that social support needs to be grounded in shared social identity in order to be beneficial (e.g., Haslam *et al.*, 2005).

Although ‘Support from Outside Groups’ formed a reliable and normally distributed scale, a limitation of this study is we did not ask participants to specify what kinds of support they received from outside their social groups and so we can only speculate about what these might entail (government welfare, neighbourhood watch, workplace wellness programmes, etc.). It is also the case that mediation analyses have limitations in establishing causal relationships (e.g., Bullock, Green, & Ha, 2010), and so while this study provides evidence for the utility of SIM, the specific findings related to social support would benefit from replication.

### STUDY 3

Study 3 aimed to address several outstanding issues with a view to strengthening evidence of the validity, reliability, and utility of SIM. First, the study was conducted with a clinical sample who were experiencing psychological distress in association with social isolation, for which they received a group-based social intervention. We suggest that it is particularly critical to assess the validity of SIM in such a sample, as one of our key goals is to establish the tool’s utility in applied contexts – for instance, in tracking progress among those who have a paucity of social connections (e.g., as discussed by Cruwys *et al.*, 2014; Haslam *et al.*, 2014). In this study, SIM was therefore conducted both pre- and post-intervention, along with two key outcome variables: depression and life satisfaction. This allowed us to assess (1) whether SIM is appropriately sensitive to change, and (2) whether change in SIM constructs is related to clinical outcomes. Put another way, we investigated the capacity of SIM to identify ‘active ingredients’ in a social intervention that facilitates improvement in depression and life satisfaction.

Second, in addition to the four core SIM constructs, in Study 3 *Group Prototypicality* assessed the degree to which respondents believed they were representative of each group in their map – a variable that has emerged as important in previous research (e.g., Hais, Hogg, & Duck, 1997; Schmitt & Branscombe, 2001; van Knippenberg & van Knippenberg, 2005). The number of groups that were rated 8, 9 or 10 out of 10 was summed to provide an overall index of this construct.

Finally, Study 3 included a widely used measure of social network size to assess the convergent validity between SIM constructs and other, more interpersonally oriented, measures of social connectedness.

## Method

### Participants

Participants were 69 people (62.3% female, age range 17–32;  $M = 19.90$ ,  $SD = 3.19$ ) who participated in a five-session group-based social intervention, Groups 4 Health (G4H), designed specifically to build and strengthen social group connectedness. This intervention comprises a variety of group-based activities that seek to raise awareness of the importance of social groups for health, to develop a deeper awareness of one’s own social

group networks, and to teach strategies for (1) utilizing existing group resources more effectively and (2) developing meaningful new social group connections (the intervention is described in detail in Haslam, Cruwys, Haslam, & Dingle, 2015; with evidence of its effectiveness described in Haslam, *et al.*, 2016). Participants were included in the programme if they experienced social isolation that was associated with mild to moderate depression or anxiety. Participants completed measures at the beginning and the end of the programme ( $N = 45$  for analyses including both time points of data, due to attrition, unusable data, etc.).

Social Identity Mapping was included as part of the intervention (forming the primary focus of the second session). This meant that participants completed their social identity map in Week 2 of the programme as well as after it had ended (6 weeks later).

### **Convergent validity**

#### *Social network size*

A *social network activity* scale (Brissette, Cohen & Seeman, 2000) assessed the size and diversity of participants' social network. Specifically, for each of 10 different types of people (e.g., spouse, children, grandchildren, other family, friends, close neighbours, people in my local community) participants were asked to report whether they had been in contact with them at least once in the last 2 weeks (coded 0 'No' or 1 'Yes'). These responses were summed with the final score ranging from 0 to 10.

### **Predictive utility**

#### *Depression*

The *Patient Health Questionnaire-9* (PHQ-9; Kroenke, Spitzer, & Williams, 2001) was used to measure severity of depression, for example 'Feeling tired or having little energy', rated on a 4-point scale (0 = never, 3 = nearly every day) for their occurrence in the previous 2 weeks.

#### *Life satisfaction*

As in Study 1, Life Satisfaction was measured using the Satisfaction with Life Scale (Diener *et al.*, 1985).

## **Results**

### **Internal consistency**

As in Studies 1 and 2, SIM showed good psychometric properties (Table 6), with no significant skew or kurtosis. Number of Groups, Number of Important Groups, and Number of Positive Groups were again moderately related to one another with correlations between .31 and .47 (see Table 7). Group Compatibility was not significantly related to other SIM constructs in this sample, while Group Prototypicality was related to Number of Groups and Number of Positive Groups. Participants in this sample reported an average of seven group memberships, two of which were important and three of which were positive. All core SIM constructs except Number of Groups were significantly lower than in previous studies (as indicated by one-sample *t*-tests). This suggests that subjective social isolation is not associated with



**Table 6.** Descriptive statistics of Social Identity Mapping tool constructs, Study 3

	M	Median	SD	Range
T1 Number of groups	6.62	7	1.59	3–11
T1 Number of important groups	1.99	2	0.87	0–4
Number of groups with highest importance rating (3/3)				
T1 Number of positive groups	3.64	3	1.70	0–8
Number of groups with 8, 9, or 10/10 positivity score				
T1 Group compatibility	0.45	0.47	0.19	0–1
Proportion of links groups that were rated 'very easy' to be members of both				
T1 Group prototypicality	2.51	3	1.39	0–6
Number of groups where representativeness is 8, 9, or 10/10				
T2 Number of groups	6.55	6	1.60	3–11
T2 Number of important groups*	2.44	2	0.85	0–4
T2 Number of positive groups*	4.31	4	2.02	1–8
T2 Group compatibility*	0.54	0.54	0.23	0–1
T2 Group prototypicality	3.00	3	1.58	0–7

Note.  $N = 69$  for T1 and  $N = 45$  for T2.

\*Significant change from T1 to T2 at  $p < .05$  in a paired-samples  $t$ -test.

**Table 7.** Correlations between Social Identity Mapping constructs, social network size, and well-being variables at Time 1, Study 3 (full table available in Appendix S2: Table S2)

	Number of groups	Number of important groups	Number of positive groups	Group compatibility	Group prototypicality
Number of groups	–				
Number of important groups	.47*	–			
Number of positive groups	.55*	.31*	–		
Group compatibility	.07	.23	.14	–	
Group prototypicality	.49*	.21	.51*	.45*	–
Social network size	.24*	.20	.20	.32*	.12
Life satisfaction (SWLS)	.39*	.09	.24*	.23	.14
Depression (PHQ)*	.04	–.03	.13	–.22	–.00

Note.  $N = 69$ .

\* $p < .05$ .

fewer social groups in general, but rather with group memberships that are subjectively less meaningful, less positive and less compatible.

#### Sensitivity to change

As this sample had undergone a social intervention designed to increase their social group networks, test–retest reliability was conceptualized in terms of *sensitivity to change*. These ranged from  $r_{\text{Number of Important Groups}} = .24$  to  $r_{\text{Number of Groups}} = .47$ , and as anticipated, were in all cases lower than in Study 1. Furthermore, at Time 2 participants

reported a significant increase in their Number of Important Groups,  $t(45) = 2.46$ ,  $p < .05$ , Number of Positive Groups,  $t(45) = 2.30$ ,  $p < .05$ , and Group Compatibility,  $t(45) = 2.81$ ,  $p < .01$ . This suggests that SIM was able to detect meaningful change in social identity constructs following a social intervention over a 2-month period.

The content of social identities was again examined in Study 3 to assess social identity continuity. Here, 75% of groups listed at T1 were listed with the same name at T2, with an average of 1.98 new groups listed at T2. This continuity is somewhat higher than in Study 1, and contributes to evidence of the effectiveness of the intervention, which contains a module ('Sustaining') explicitly promoting identity continuity.

### **Convergent validity**

The correlations between social network size and the four core SIM constructs ranged from .24 to .32. These relatively small associations are consistent with our expectation that the richness of one's interpersonal network is related to, but distinguishable from, the richness of one's social group network.

### **Predictive utility**

A regression analysis was used to investigate the predictors of improvement in depression symptoms. Step 1 included depression measured at T1, to control for initial differences in symptom severity. Step 2 added T1 measures of Number of Groups, Number of Important Groups, and Number of Positive Groups, Group Compatibility, and Group Prototypicality. Step 3 added T2 measures of these same group variables. Given the limited sample size and to preserve power, a backward stepwise method was used so that only significant predictors were retained in the model. The final model ( $R^2 = .30$ ) indicated that controlling for initial severity of depression,  $\beta = .38$ ,  $t(42) = -2.91$ ,  $p = .006$ , T2 Group Compatibility predicted reduced depression across the course of the programme,  $\beta = -.35$ ,  $t(42) = -2.71$ ,  $p = .01$ .

A comparable regression analysis was conducted to assess which SIM constructs predicted improvements in life satisfaction. The final model ( $R^2 = .48$ ) included covariates of initial life satisfaction, initial Number of Important Groups and initial Number of Groups. T2 Number of Important Groups,  $\beta = .27$ ,  $t(39) = 2.13$ ,  $p = .040$ , and T2 Number of Positive Groups,  $\beta = .29$ ,  $t(39) = 2.21$ ,  $p = .033$ , both predicted improved life satisfaction across the course of the programme.

## **Discussion**

This study assessed the utility of SIM with a vulnerable population in receipt of a social intervention, providing three new insights. First, we were able to demonstrate that SIM constructs were responsive to intervention, with Number of Important Groups, Number of Positive Groups, and Group Compatibility all increasing significantly following intervention.

Second, we showed that SIM was able to capture mechanisms through which social intervention can be effective in improving mental health. Specifically, gains in these same three constructs significantly predicted improved life satisfaction and reduced depression. This extends previous evidence that shows social identification is an important mechanism of action for this social intervention (Haslam, *et al.*, 2016), by shedding light

on the particular aspects of group belonging that contribute to improved health outcomes through the programme. This analysis provides insight into the theoretical value of SIM as a procedure for tapping into complex social identity processes and mechanisms.

Third, we demonstrated that SIM constructs had the expected weak associations with social network size. This is not surprising given that there is some overlap between interpersonal and social group relationships (e.g., such that a person's personal friends may be members of their groups). However, SIM differs from established network measures in two important respects. First, the approach is conceptually distinct by virtue of its focus on social group, rather than individual interpersonal, ties. Second, SIM is unlike standard network tools, where participants provide numerical ratings of their social network and these are then converted into a visual representation by researchers. SIM reverses this process, by asking participants to explore and communicate their subjective experience of their social world, and then calculating numerical outputs after the fact. Here, then, a visualized social network is an input, rather than an output.

## GENERAL DISCUSSION

Across three studies, we have presented evidence for the reliability and validity of SIM as a means of representing and indexing a variety of theoretically important social identity constructs. Specifically, in all three studies participants found SIM intuitive to complete with minimal experimenter input, and each measure was approximately normally distributed without substantial skew. The various social identity constructs that we examined were also associated with one another in ways that we would predict on the basis of prior theory (e.g., so that group importance was positively correlated with group positivity), and Study 1 found that SIM measures were substantially related, but not highly stable, over a 6-month period.

In terms of convergent validity, SIM constructs were associated with existing measures of MGM (Study 1) as well as with a measure of social network size (Study 3). Studies 1 and 2 provided evidence of discriminant validity, in that SIM constructs were not significantly related to measures of social desirability, personality, age, or gender. Finally, each study provided an example of how SIM could be used to generate and test novel research questions. Those examined here related to social group contact, change in self-esteem, the nature and impact of social support, and mechanisms underlying change in social group intervention.

In terms of theoretical implications, the development of SIM draws attention to a long-standing issue in social-psychological research – namely that there is often a substantial gap between the complexity of the social-psychological constructs that are articulated within a given theory (e.g., in the case of the social identity approach, group importance, and group compatibility) and the ways in which those constructs are typically measured (Schriesheim, Powers, Scandura, Gardiner, & Lankau, 1993). This has meant that, to date, the validated psychometric tools that social identity researchers have had at their disposal are predominantly scales assessing social identity strength (e.g., after Doosje, Ellemers, & Spears, 1995). What SIM offers is a new means of tapping into and assessing complex social identity-related constructs that opens up opportunities for richer and more nuanced interrogation of research questions that are germane to social identity processes. The new forms of empirical data that are garnered through the use of SIM also have the potential to contribute to theoretical innovation and refinement.

Beyond this, we would argue that SIM also has profound implications for psychometrics more generally. In social psychology, standard measurement practice requires participants to complete ratings on Likert scales in response to predefined questions formally posed by researchers (e.g., agreeing or disagreeing with a statement such as ‘I identify with Europe’; Postmes *et al.*, 2013). This process has long been critiqued by qualitative researchers as disempowering (Creswell, 2003; Holland, Renold, Ross, & Hillman, 2010), in so far as it involves researchers imposing a set of nomothetic assumptions on participants and constraining the way they are able to report their personal experience (e.g., Is Britain part of Europe? How should one respond if one rejects Europe as a category?; Mols & Haslam, 2008). However, the convenience of such measures, along with the desire to obtain standardized data that are easy to aggregate, has ensured their continued dominance. SIM, however, provides a novel framework and approach for data generation that has some of the strengths of both qualitative and quantitative approaches. On the one hand, the data that are collected through the mapping process are readily quantified and hence easily subjected to standard forms of statistical analysis (indeed, in this respect if the procedure has a limitation, it is that the possibilities for this are almost endless). Yet on the other hand, the experience of completing SIM has similarities with semi-structured qualitative procedures in which participants are able to generate idiographic responses (maps) as they see fit and in ways that are self-exploratory, self-created, and empowering – even enjoyable. In this regard, it is notable that participants routinely developed a sense of ownership over their maps, recognizing them as informative representations of their subjective social reality. This hermeneutic potential is clearly not routinely realized via standard forms of quantitative data collection, where the experience is often of data being ‘extracted from’ rather than ‘provided by’ participants (Haslam & McGarty, 2014). And while it is not feasible (or desirable) for all research to be conducted in this way, SIM nevertheless provides new opportunities for researchers to collect data in a way that is more participatory and engaging than traditional methods.

In terms of applied implications, SIM represents the first attempt to develop and validate an idiographic social identity measure that is designed for use in applied settings. In the absence of social-psychological tools of this nature, other areas of psychology have filled the gap. In organizational and clinical psychological settings, for instance, an abundance of measures have attempted to break out of the nomothetic mould. This is true, for example, of experiential measures of personality (Myers, McCaulley, Quenk & Hammer, 1998), personal strengths (Peterson & Seligman, 2004), and values (Harris, 2009). What has facilitated the take-up of such tools is not necessarily the robustness of their theoretical foundation, but rather the accessible, attractive, and interactive nature of the measurement instruments and their appealing graphical design. We believe that social psychology could benefit from similar methodological innovation, and SIM represents a first move in this direction.

### **Limitations and future directions**

A clear limitation of SIM in its current form is the labour involved in administering and scoring, which is a barrier to its use (and validation) with large samples. This may not be a problem in applied settings such as clinical practice, where it may be used with small groups or a single person at a time and, further, where it is standard practice for assessment tools to be time-intensive to administer and score (SIM compares favourably with intelligence testing, for example, which takes 2 hr per person of one-on-one

administration and scoring). Nevertheless, this may make this version of SIM impractical for large-scale research or application – for example, in large organizations. The ideal solution to this would be a computer-based tool where scoring is automatic and participation could occur online. This computer-based version is currently in development.

It is also important to emphasize at this point that SIM represents a first, but far from final, step in the process of identifying the best way to conceptualize and calculate more complex social identity constructs. For example, while we have demonstrated one way of calculating social identity compatibility, this could be calculated in a variety of different ways, and we have yet to examine constructs such as group similarity or social identity complexity, which can be calculated from SIM. However, an advantage of SIM is that the richness of the data contained in a person's map allows for a wide variety of such measures to be generated and compared. In addition, other existing scales, such as measures of social identity strength (e.g., Leach *et al.*, 2008), and collective self-esteem (Luhtanen & Crocker, 1992) are yet to be explicitly compared against the variables generated from SIM. Therefore, while we do not claim to have resolved these theoretical questions here, SIM may prove a useful tool for future investigation.

#### *When should SIM be used?*

There are at least three sets of circumstances in which we would recommend using SIM as a first-choice psychometric instrument. The first is when a researcher is interested in obtaining a generative, subjective, and participative representation of a person's social world. For the reasons outlined above, this more idiographic participant experience is ideal when research is exploratory, or being conducted with minority or vulnerable groups, or is informed by more critical methodological sensibilities. The second set of circumstances arise when researchers are interested in obtaining multiple, dynamic measures of social group memberships – for instance, when they are interested in comparing different dimensions of a person's social world (e.g., support from within vs. outside one's groups; as in Study 2). In this regard, SIM provides opportunities to simultaneously assess complex, interactive social identity characteristics, thereby allowing researchers to empirically dissect the 'active ingredient' of social identity in a variety of different domains. The third set of circumstances arise when researchers, practitioners, or teachers are interested in their participants having a visual, interactive – and potentially therapeutic – experience. We suggest this is most appropriate in applied clinical or organizational settings, where the goal is not only to measure but also to reflect on, actively engage with, and potentially modify a person's social-psychological reality (e.g., Best *et al.*, 2014; Dingle, Cruwys, & Frings, 2015; Haslam, *et al.*, in press).

#### *When should SIM not be used?*

Social Identity Mapping should not be used when a simpler measurement instrument is sufficient to address one's theoretical or practical aims (e.g., as argued by Postmes *et al.*, 2013). In this regard, it is apparent, for example, that several of the indices that can be generated by SIM can be obtained in other, less complex, ways. For instance, number of group memberships can be assessed using the MGM scale or the Group Listing Task (Haslam *et al.*, 2008) while strength of social identification can be measured using both longer multidimensional instruments (Leach *et al.*, 2008) or even single-item scales (Postmes *et al.*, 2013). The purpose of SIM is not to replace these existing measures, nor

to suggest that such constructs are not measured adequately with existing tools. Instead, the procedure speaks to – and allows researchers and practitioners to assay – the richness and complexity of social identities as they are experienced, measuring a variety of dimensions that are not readily captured by existing tools.

### **Conclusion**

In this study, we have presented SIM as a novel procedure for visually representing and assessing a person's subjective network of MGMs. In three studies, we have provided evidence for the internal consistency of this technique, its convergent and discriminant validity, and its predictive utility. SIM serves a broader goal, however, of stimulating conversation about the procedures that can be used to measure dynamic and complex social-psychological constructs, in ways that are both nomothetic (allowing for generalization) and ideographic (in allowing for the exploration of subjective meaning). For a field which gives primacy to subjective experience, it is perhaps surprising to observe the enduring dominance of self-report instruments which meet our more nomothetic objectives, but which our participants sometimes find boring, if not disempowering and alienating (Minkler, 2000). In contrast, SIM is visual, immersive, and self-exploratory, with numerical outputs kept 'under the hood'. Nevertheless, the data we have presented here demonstrate that this need not compromise the scientific integrity of this measurement instrument, and may in fact increase its validity by furnishing researchers with representations of a person's social world that are both subjectively meaningful and phenomenologically valid.

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### Supporting Information

The following supporting information may be found in the online edition of the article:

**Appendix S1.** Social Identity Mapping (SIM) instructions.

**Appendix S2.** Full correlation tables, Studies 2 and 3.

**Table S1.** Full correlation table, Study 2.

**Table S2.** Full correlation table, Study 3.