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More positive group memberships are associated with greater resilience in Royal Air Force (RAF) personnel

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In the current project, we examined how perceived group memberships (number, and characteristics, of), social and relational identification, and social identity leadership are associated with resilience in Royal Air Force (RAF) personnel. Based on social identity theorizing, we hypothesized positive associations between the number of groups, perceptions of their characteristics (e.g., positivity), and how they relate to each other (i.e., compatibility) and resilience (H1). We also hypothesized positive associations between both social identity leadership (H2) and resilience, and social and relational identification (H3) and resilience. Two hundred and forty-three personnel from 18 RAF bases completed an identity mapping exercise and measures of leadership, social and relational identification, and resilience. Our findings highlighted the importance of the association between positive group memberships and resilience, and social identification and resilience. Counter to our hypothesis, belonging to more groups was negatively associated with resilience, and there were non-significant relationships between three principles of social identity leadership and resilience, with embedding identity being significantly negatively associated with resilience. In support of social identity theorizing, the number of positive groups was positively associated with resilience, as was social identification. These findings indicate that, for RAF personnel, it is belonging to positive groups, both within and outside work, along with social identification, that is positively associated with resilience.

Formed on the 1 April 1918, the RAF was the world's first independent air force. Now in its second century, the purpose of the RAF is to defend the skies of Britain and project Britain's power and influence around the world (RAF Strategy, 2017). As such, RAF personnel are currently deployed on operations across the globe, including in Africa, Europe, and the Middle East. Key to achieving its goals, one of the key elements of the RAF Strategy (2017) is a focus on its people, using the full talents of their personnel, within a culture that values leadership. In undertaking their duties, RAF personnel can encounter levels of adversity and risk over and above that of the general population, especially in the

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form of risk to life when supporting operations both at home and abroad. The RAF is currently operating at a high tempo in supporting operations across the globe, and as a result, many of their personnel are experiencing high levels of demand and stress, which is effecting individual resilience (Wigston, 2019). Accordingly, the RAF has focused on enhancing resilience through the creation of a resilience steering group and working group to oversee policy development and coordinate initiatives, including the appointment of champions for the various elements of RAF resilience (i.e., physical, psychological, spiritual, and social). The Robson Academy of Resilience was established in 2016 to oversee and deliver resilience training across the RAF. Presently, the RAF has identified social resilience as a priority area for exploration to enable policy and intervention developments (RAF Resilience Framework, 2018). Responding to this call, in the current study we adopt a social identity framework to shine a lens on issues (e.g., group memberships and leadership) that may influence social resilience within the RAF. Whilst the RAF Resilience Framework identifies three levels of resilience: individual, team, and organization, we have focused on individual resilience as our outcome measure.

Resilience

With respect to resilience, Fletcher and Sarkar (2013) propose that resilience research is based on the desire to understand why some individuals can withstand, or even thrive on pressure, and why others cannot. Resilience is conceived as a continuum, whereby resilience may be present to differing degrees (Southwick, Bonanno, Masten, Panter-Brick, & Yehuda, 2014). Further, resilience is viewed as a dynamic process, in that a person's ability to cope with adversity can change over time, and can be context-dependent (Luther, Cicchetti, & Becker, 2000; Rutter, 1987). Overall, the study of resilience has focused on three main themes: adversity, positive adaptation, and protective and promotive factors.

Whilst Luthar and Cicchetti (2000) have proposed that individuals demonstrate resilience in response to significant adversity, Cowden, Meyer-Weitz, and Asante (2016) argue that resilience is also relevant to the daily demands that people experience. Whilst both these approaches emphasize negative experiences, Fletcher and Sarkar (2013) use the term stressors to reflect the fact that people also need to adapt to positive events, such as being promoted at work. Research has indicated that a history of some lifetime adversity – relative to both no adversity and high adversity – predicts positive outcomes, such as lower global distress, lower functional impairment, lower post-traumatic stress symptoms, and higher life satisfaction (Seery, Holman, & Silver, 2010). Thus, resilience could be enhanced through positive adaptation, harnessing resources, and learning lessons from an adverse experience, thereby fostering capabilities to overcome subsequent challenges during life promoting the idea of resilient growth and moving forward rather than returning back (Seery et al., 2010; Southwick et al., 2014). In a systematic review of 52 papers, Bryan, O'Shea, and MacIntyre (2017) propose a further two resilient outcomes, whereby the individuals can either maintain functioning (minimal impact resilience) or bounce back (emergent resilience) depending on the contextual needs, magnitudes, and exposures of each adverse experience.

Research has highlighted a wide range of internal promotive and protective resources to help build and/or maintain resilience, such as self-efficacy, optimism, coping skills, motivation, perspective, self-regulation, proactiveness, adaptability, sense of control, and positive mindset (Bryan et al., 2017). Moreover, researchers have also emphasized the importance of external elements, including social support, and socio-economic and

environmental factors (Bonanno, 2004; Rutter, 1985; Southwick *et al.*, 2014; Windle, 2011). In fact, in a systematic review of 52 articles, social support was considered to be the most important resource linked to resilience (Bryan *et al.*, 2017). Rutter (1985) emphasized that the importance of social support lies in the quality of relationships and the use made of them, as opposed to the mere availability of friends and relatives. In line with the importance of the social aspects of resilience, social resilience has been defined as 'the capacity to foster, engage in, and sustain positive relationships and to endure and recover from life stressors and social isolation' (Cacioppo, Reis, & Zautra, 2011, p. 44). From this perspective, social resilience is a multilevel construct, including three elements: (a) how an individual relates to those around them (i.e., agreeableness, compassion, and humility); (b) a person's interpersonal skills and resources (i.e., attentive listening and perceiving others accurately and empathically); and (c) collective capacities and resources (i.e., group identity and cohesiveness) (Cacioppo *et al.*, 2011). Two of the key relationships within a military context are with your immediate leader (i.e., relational identification) and your work team (i.e., social identification).

In order to examine the social aspects of resilience, we follow a multi-system model of resilience, which proposes that resilience is a multi-dimensional construct constituting three layers: social resilience, intrapersonal resilience, and interpersonal resilience (Liu, Reed, & Girard, 2017). First, social resilience incorporates socio indicators of resilience, for instance, socio-economic status or social support, which relate to the social aspects of resilience identified by the RAF Resilience Framework. Second, intrapersonal resilience refers to a range of intra-individual indicators of resilience, including physiological or biological reactions to adversity, as part of the physical domain of resilience as set out by the RAF Resilience Framework. Finally, internal resilience encompasses interpersonal indicators of resilience, such as adaptability and emotion regulation, which can be acquired or developed over time, which form part of the psychological element of the RAF Resilience Framework. This model not only examines resilience from an internal perspective, but also takes external factors, such as the effect of social relationships into account. Thus, by using this model our study examines how group memberships are associated with both the internal and external aspects of resilience.

Social relationships and group memberships

Recently, researchers have outlined the influential effect social relationships have in predicting health, well-being, and resilience (e.g., Cruwys, Haslam, Dingle, Haslam, & Jetten, 2014; Jones & Jetten, 2011), a concept that is collectively known as the 'Social Cure'. In a meta-analysis of 148 studies predicting mortality, data indicated that higher levels of perceived social support and greater social contact increased the likelihood of survival by over 50% (Holt-Lunstad, Smith, & Layton, 2010). Furthermore, the influence of social relationships was found to be comparable to other well-established risk factors, such as smoking, alcohol consumption, obesity, and physical activity, thus highlighting the potential importance and influence of social groups and relationships on health and well-being, and providing evidence to support the concept of the 'Social Cure'.

One important aspect of our social relationships are the groups that we belong to, such as family and friends, work and professional, hobby and sports. A large body of evidence has further indicated that being a part of multiple social groups can positively protect and enhance health and well-being, such as life satisfaction (Cruwys *et al.*, 2016), suffering from depression (Cruwys *et al.*, 2014), recovering from a stroke (Haslam *et al.*, 2008), or undergoing brain trauma (Jones *et al.*, 2011), again supporting the concept of the 'Social

Cure'. For example, Cruwys *et al.* (2014) found that participants who suffered from depression and had no group memberships reduced their risk of relapse by 24% if they joined one group, and by 63%, if they joined three groups. Consequently, the power of multiple group memberships is described by the phrase 'the more the merrier' (i.e., Chang *et al.*, 2016). In line with social identity theorizing and empirical research, suggesting a positive relationship between the number of groups individuals belong to and their resilience (e.g., Cruwys *et al.*, 2014; Jones & Jetten, 2011), we hypothesized that the *more groups* that RAF personnel belonged to the greater their resilience would be (H1a).

Whilst much of the 'Social Cure' literature discusses the response to suffering both physical and mental illnesses, as highlighted above, some researchers have examined the impact of social identity on stress (Haslam, Jetten, Cruwys, Dingle, & Haslam, 2018; van Dick & Haslam, 2012) as well as on trauma and resilience (Drury, 2012; Kellezi & Reicher, 2012; Haslam *et al.*, 2018; Muldoon *et al.*, 2019). The work on stress is relevant to this study as it relates to our conception of resilience, in so far as the cumulation of daily demands can collectively test people's resilience. In addition, the existing research suggests that stronger social identification with an organization/organizational unit is related to workers reporting higher levels of well-being (van Dick & Haslam, 2012). For instance, a meta-analysis of 58 studies suggested social identification with a work team was predictive of reduced stress (Steffens, Haslam, Schuh, Jetten, & van Dick, 2017). The research relating to resilience focuses on extreme events, such as mass emergencies and disasters (Drury, 2012) and the aftermath of the Kosovo War in 1999 (Kellezi & Reicher, 2012). Whilst the research on mass emergencies and disasters focuses on collective resilience, the work on the Kosovo War examines individual resilience. As such, our study builds on the current 'Social Cure' literature by using a holistic operationalization of resilience that includes both daily stressors and significant life events, with an RAF population that potentially has experienced both.

Researchers have therefore suggested that multiple group memberships can positively influence health and well-being through the mechanism of enhanced access to social support (Chang *et al.*, 2016). For example, for a group of bomb disposal experts, the negative relationship between their work group social identification and work stress was mediated by the amount of social support they perceived that they received from in-group members (Haslam, O'Brien, Jetten, Vormedal, & Penna, 2005). Thus, social support research indicates that if people perceive that they share a social identity (e.g., as supporters of the same sports team), they are more likely to give and receive social support from the members of that group (Haslam *et al.*, 2005), and to interpret that support positively (Haslam *et al.*, 2004). In a series of experiments, researchers demonstrated that football fans were more likely to help fellow supporters from their own club, rather than fans of a rival club, when football club membership was made salient (Levine, Prosser, Evans, & Reicher, 2005). However, this pattern of results was transformed when their social identity as general football fans was made salient, insofar that fans would also help supporters of a rival club as well as their own. Collectively, research evidence suggests that belonging to multiple groups is an important factor in enhancing health and well-being, and one way that this effect is achieved is through the provision and receipt of social support from other group members.

Beyond the number of groups that people belong to, additional evidence indicates that the characteristics of individual's groups are generally more powerful in influencing the relationship with health and well-being (i.e., Brook, Garcia, & Fleming, 2008; Cruwys *et al.*, 2016; Sonderlund, Morton, & Ryan, 2017). These characteristics include (1) the number of *important* groups (Jetten *et al.*, 2015); (2) the amount of *positive* groups

(Cruwys *et al.*, 2016); (3) the number of *representative* groups (i.e., how representative people perceive themselves to be of what it means to be a member of a group; Cruwys *et al.*, 2016); (4) the *compatibility* of groups (i.e., how easy or difficult it is to be a member of different groups; Brook *et al.*, 2008); and (5) the level of *overlap* in membership between groups (i.e., how many members of one group are also a member of another group; Sonderlund *et al.*, 2017). One means of assessing these variables is through using social identity mapping (e.g., Cruwys *et al.*, 2016). Social identity mapping is a means of creating a visual representation of an individual's social connectedness via their network of group memberships. Participants start by listing all of their social group memberships (i.e., family and friends, work and professional, hobbies and interests) and then they evaluate each group in terms of their characteristics (i.e., positivity and importance) and how they relate to each other (i.e., compatibility and overlap). This can be done either using Post-it Notes (e.g., Cruwys *et al.*, 2016) or via a computer application (e.g., Bentley *et al.*, 2019). For example, research has indicated significant positive relationships between group positivity and both social support and well-being, whilst there were non-significant relationships between the *number* of groups and these outcome variables (Sonderlund *et al.*, 2017). Further research has suggested a positive relationship between the number of *important* groups and health and well-being in the form of anxiety, depression, and life satisfaction (Cruwys *et al.*, 2016). Additionally, Bentley *et al.* (2019) reported significant correlations with both belonging to *positive* and *representative* groups and health and well-being in terms of life satisfaction and depression. In relation to the characteristics of the groups, we anticipated that the more *important*, *positive*, and *representative* individuals perceived their groups to be, the greater the level of resilience (H1b). Group *compatibility* has been significantly related to both life satisfaction (Bentley *et al.*, 2019) and anxiety (Cruwys *et al.*, 2016). In terms of the *overlap* between groups, the research indicates that belonging to multiple non-overlapping (e.g., distinctive) groups contributes more positively to individual well-being, than belonging to multiple overlapping groups, as there is larger base for social support (Sonderlund *et al.*, 2017). With respect to how the groups relate to each other, we expected that the more *compatible* the groups and the lower the *overlap* between their memberships, the greater their resilience will be (H1c).

Social identity and resilience

Researchers have proposed a Social Identity Model of Traumatic Identity Change, which indicates how the continuity, gain, or revitalization of positive and valued social identities could promote resilience, including post-traumatic growth, in response to trauma, through access to social identity resources, such as support, solidarity, and belonging (Muldoon *et al.*, 2019). Nevertheless, as yet few studies have examined the associations between multiple group memberships and resilience. Initial evidence has suggested that in the context of encountering physical challenges (e.g., bobsleigh [undertaken by a sample of RAF novice athletes], or a cold pressor task [undertaken by a sample of students]), belonging to more groups is associated with greater levels of resilience (Jones & Jetten, 2011). The more groups that the participants perceived that they belonged to, the quicker the RAF novice athlete's heart rate recovered following a bobsleigh, luge, or skeleton run, and the longer the students endured pain whilst having their hand immersed in icy water. Albeit, this study used a relatively vague measure of multiple group membership, only asking participants if they belong to many groups, which could be interpreted in different ways. Further, the study used behavioural markers as a proxy for

resilience (e.g., time in cold water) rather than a psychometrically validated measure of resilience. Additionally, social identity mapping (e.g., Cruwys *et al.*, 2016) has predicted resilience in the context of identity transitions in the form of a student's intent to continue studying at university following a transition from high school, a mother's attachment to their child following their birth, and a retiree's adjustment to retirement from work (Bentley *et al.*, 2019). Again, behavioural markers, this time identity transition, were used as a marker of resilience as opposed to a psychometrically validated measure of resilience. Further, rather than examining the individual constructs, the researchers (e.g., Bentley *et al.*, 2019) used the concept of a 'supergroup' defined as a group that scored above the mid-point on all of the quality indicators (positivity, representativeness, supportive, and compatibility) to relate to resilience. Presently, there is scant evidence supporting the effects of multiple group memberships on resilience markers beyond the number of groups individuals belong to. Thus, a key element of our study is to examine, not only the associations between multiple group membership and resilience, but also the associations between the quality of groups and resilience. Accordingly, our research is the first to consider a more holistic approach to understanding the associations between group memberships (i.e., number and characteristics) and a psychometrically validated measure of resilience.

The social identity approach to leadership (SIL)

Our study extends the study of social relationships in military organizations by exploring the associations between relational identification and resilience, and social identification and resilience. The work team, amongst all of our group memberships, is an important area of study given the amount of time that we spend with our work team and the critical relationship between worker and leader, especially within a hierarchical organization such as the military. The line manager will direct and monitor tasks, set objectives, be responsible for discipline and development, and write a key element of the annual appraisal, which is a critical element of the promotion process. In terms of the leader's relationship with their team members, SIL provides a substantive framework within which to explore how these relationships influence a range of key outcomes, including health and well-being (e.g., Slater, Turner, Evans, & Jones, 2018; Steffens, Haslam, Kerschreiter, Schuh, & van Dick, 2014). According to SIL, effective leadership involves bringing team members together as part of a shared team identity (Haslam *et al.*, 2011). SIL focuses on a range of social and contextual factors that impact on a leader's capacity to influence others, such as the values of the group that is being led (Haslam *et al.*, 2011). In essence, leadership is about how leaders and followers come to see each other as part of a common team or group (Haslam *et al.*, 2011). Consequently, social identity is a central part of leadership where both leaders and team members focus on what unites them as group members (i.e., as part of a shared social category such as the RAF).

SIL constitutes four principles (Haslam *et al.*, 2011; see also Steffens *et al.*, 2014; van Dick *et al.*, 2018), whereby leaders need to be 'one of us' by representing the group, champion the group by 'doing it for us', 'craft a sense of us' as entrepreneurs of identity, and 'make us matter' as embedders of identity. The extant literature provides substantial evidence linking SIL to a range of positive outcomes including team identification, perceived team spirit, leader influence, and team confidence (e.g., van Dick *et al.*, 2018; Steffens *et al.*, 2014). In addition, research demonstrates the additive value of SIL principles in comparison with other leadership approaches (including transformational,

authentic, and leader–member exchange) regarding outcomes such as trust and job satisfaction (van Dick *et al.*, 2018).

Rather than viewing SIL as a unitary construct, theorists posit that the four distinct principles are associated with different outcomes (Haslam *et al.*, 2011). For example, being representative of the group has been linked to greater perceptions of charisma and inspiration by team members, which can then help to build a stronger bond between the leader and the team members providing a framework for a mutual relationship (e.g., Molenberghs, Prochilo, Steffens, Zacher, & Haslam, 2017; Steffens, Haslam, & Reicher, 2014). In contrast, leaders who champion the collective interests of the group are perceived to be more authentic and inspire greater levels of followership, than a leader who is seen to advance their own personal interests (Steffens *et al.*, 2016). Further, SIL has been shown to impact other key outcomes, such as health and well-being (e.g., van Dick *et al.*, 2018), and thus, it is possible to suggest that it might also influence resilience. Aligned to existing research showing the impact of identity leadership on health and well-being (van Dick *et al.*, 2018; Steffens *et al.*, 2014), we expected that higher perceptions of *SIL* would be positively associated with the resilience of team members (H2). Additionally, our study utilizes SIL as the framework for exploring the associations between relational identification and resilience, as well as social identification and resilience. Thus, we posited that social identification (H3a) and relational identification (H3b) will also be positively associated with resilience.

The current research

Previous researchers have established that multiple group membership, both in terms of the quantity of groups and their characteristics, are linked to positive outcomes related to health and well-being (e.g., Cruwys *et al.*, 2014; Sonderlund *et al.*, 2017). Moreover, initial research suggests that multiple group membership is related to greater resilience (Jones & Jetten, 2011). In also examining relationships within the workplace, specifically with the leader and the team, extant evidence has suggested a link between SIL and a range of outcomes, including stress and burnout.

The purpose of our study is to explore the associations between social relationships and resilience in RAF personnel using social identity mapping. Our study seeks to contribute to the current literature by using a holistic measure of multiple group memberships by incorporating measures of both quantity (i.e., number of) and quality (i.e., group characteristics). Additionally, our study further develops the social identity mapping method by adding overlap to the measures used by Cruwys *et al.*, (2014). Additionally, this is the first study to examine the association between multiple group membership and resilience, using a psychometrically validated measure of resilience. Our work adds to the extant research on group memberships, to explore how these factors relate to internal and external aspects of resilience in a novel military sample. Finally, our study is the first to examine how the four principles of SIL are associated with resilience.

Method

Participants and design

We used a cross-sectional design with 243 RAF participants, who self-selected from a total population of approximately 30,000 personnel, from 18, out of 33, of the major bases both in the United Kingdom (U.K.) and overseas. Data were collected from multiple bases,

including a range of flying, support, and training RAF stations in order to capture what was happening across the organization. Albeit, the downside of this approach was there were small samples at some bases, which precluded analysing the nested structure of the data. Given that the participants self-selected the sample cannot be considered as a randomized sample of RAF personnel, as they may have come forward because they had strong views on resilience. Data collection was undertaken over a 5-month period between November 2018 and March 2019. The sample comprised 79% males and 21% females (which represents an over-representation of females that within the RAF as a whole, which is approximately 15%) with an average age of 35.42 years (range 18–55 years). Participants had served in the RAF for an average of 13.99 ($SD = 8.53$) years. To assess the sample size required to achieve a power of 0.80, we conducted an a priori calculation using G*Power. Cruwys *et al.* (2016; Study 1, $N = 201$) found that the number of group memberships and associated characteristics of those groups accounted for 17% ($R^2 = .17$) variance in self-esteem. Using this criterion, together with the expectation that identity leadership, relational, and social identification would contribute an additional 5% variance, with the nineteen predictor variables, a sample size of $N = 233$ was determined.

Measures

Demographics

Data included age, sex, rank, and length of time served in the RAF.

Resilience

Resilience was measured using the Five-by-Five Resilience Scale ($5 \times 5RS$; Desimone, Harms, Vanhove, & Herian, 2017). The $5 \times 5RS$ is a validated measure that assesses overall, as well as five indicators of, resilience (adaptability, emotion regulation, optimism, self-efficacy, and social support). Each subscale has 5 items, including both positively and negatively worded items. For example, adaptability included 'I can switch gears easily'; emotion regulation included 'I get overwhelmed by my emotions'; optimism included 'I expect things to fail'; self-efficacy included 'I excel in what I do'; and social support included 'I make friends easily'. All 25 items are administered in self-report format using a 5-point Likert scale ranging from 1 (*very inaccurate*) to 5 (*very accurate*). The Cronbach alphas for the initial validation of the $5 \times 5RS$ for sample 1 were from .72 to .85, and for sample 2, from .85 to .93 (Desimone *et al.*, 2017).

Social identity leadership

We used the Identity Leadership Inventory (ILI; van Dick *et al.*, 2018; Steffens *et al.*, 2014) to assess perceptions of SIL. The ILI is a valid measure that assesses the four principles of identity leadership (representing the group, championing the group, identity entrepreneurship, and embedding identity). The ILI has been validated across cultures and in twenty countries across the globe (van Dick *et al.*, 2018). Participants were asked to complete the ILI in reference to their line manager, who is at least one rank above, and who writes the main element of their annual performance appraisal. In contrast to business settings, in the military both the personnel and their line managers are frequently rotated. For example, in the RAF, whilst junior ranks and non-commissioned officers are in generally in place for 3–5 years, officers rotate every 2–3 years. The ILI comprises 15

items using a 7-point Likert scale ranging from 1 (*not at all*) to 7 (*completely*). For example, representing the group included ‘This leader is a model member of the group’; championing the group included ‘This leader acts as a champion for the group’; identity entrepreneurship included ‘This leader shapes members’ perceptions of the group’s values and ideals’; and embedding identity included ‘This leader devises activities that bring the group together’. The internal consistency for the ILI has been evidenced with strong Cronbach alphas for the subscales from .93 to .94 (Steffens *et al.*, 2014).

Social identification and relational identification

We used the 3-item measures of social and relational identification, based on Haslam (2004), which have been used by Slater *et al.* (2018). Participants were asked to rate how strongly they identified with their work team or line manager using a 7-point Likert scale ranging from 1 (*do not agree at all*) to 7 (*agree completely*). For example, social identification included ‘I identify strongly with the group’, and relational identification included ‘I feel a strong connection with the line manager’. The Cronbach alphas were .81 for the social identification measure and .77 for the relational identification measure (Slater *et al.*, 2018).

Social identity mapping

In conducting the social identity mapping, we followed the guidelines from Cruwys *et al.*, (2016). At the start of the social identity mapping exercise, the participants were asked to write down the name of each social group that they are a member of on a Post-it Note and stick it to the A2/3 piece of paper provided to them. Examples of social groups include family, friends, work and professional, and sport and interest. The number of Post-it Notes stuck to their paper was used to calculate the *number* (quantity) of their group memberships. Next, the participants were asked to rate each of their groups individually on the following three scales: *importance*, *positivity*, and *representativeness*. In terms of *importance*, the participants are asked how important they perceive the group to be on a 10-point Likert scale with 1 (*not important at all*) to 10 (*very important*). In addition, the participants are asked how *positive* they feel about being a member of the group, on a 10-point Likert scale with 1 (*not positive at all*) to 10 (*very positive*). Next, participants were asked how *representative* they perceived themselves to be of what it means to be a member of the group, on a 10-point Likert scale with 1 (*not representative at all*) to 10 (*very representative*). The participants were then asked to consider how their groups related to each other using the following two scales: *compatibility* and *overlap*. In terms of *compatibility*, participants were asked to join all pairs of groups with lines that indicate how compatible (how ‘easy vs. hard’) it is to be a member of those two groups as: jagged lines – very hard; wavy lines – moderately easy; and straight lines – very easy. Finally, in addition to the guidelines set out by Cruwys *et al.* (2016), we followed Sonderlund *et al.* (2017) to measure the levels of *overlap* between the groups. As such, participants are asked to rate the degree of overlap in group membership between each possible pairing, that is, ‘of the people who belong to Group X, how many also belong to Group Y’, on a 10-point Likert scale with 1 (*very few*) to 10 (*nearly all*).

We also utilized the guidelines of Cruwys *et al.* (2016) in determining the number of multiple group membership, importance, positivity, representativeness, and compatibility. We calculated the *number* of multiple group membership by adding up the total amount of groups on each participant’s map. We determined *high importance* by

summing the number of groups rated 8, 9, or 10 out of 10, and *low importance* by summing the number of groups rated 1, 2, or 3. We identified the number of *positive* groups by adding the number of groups rated 8, 9, or 10 out of 10, and the number of *negative groups* by summing the number of groups rated 1, 2, or 3. We determined *high representativeness* by adding the number of groups rated 8, 9, or 10 out of 10, and *low representativeness* by summing the number of groups rated 1, 2, or 3. We determined *high compatibility* by calculating the proportion of links between groups that are rated as 'very easy' (to be a member of two groups), and *low compatibility* by calculating the proportion of links rated as 'very hard'. Finally, in line with Sonderlund *et al.* (2017) we identified *overlap* by calculating the average overlap score for all group pairings.

Social identity mapping, in both paper and online forms, has been validated, respectively, by Cruwys *et al.* (2016) and Bentley *et al.* (2019). Internal consistency was validated by moderate to high intercorrelations between the factors (ranging from 0.37 to 0.84) across three studies, which suggested that whilst they were closely related, they were not interchangeable (Cruwys *et al.*, 2016). Additionally, Cruwys *et al.* (2016) reported weak intercorrelations with other measures of multiple group memberships (multiple group membership scale and group listing task), ranging from 0.05 (between group compatibility and the multiple group membership scale) to 0.29 (between the number of important groups and the multiple group membership scale) indicating that social identity mapping captures different elements of a person's social group network that are not captured in existing measures. Further, Bentley *et al.* (2019) reported a Cronbach alpha of .83 for the compatibility measure.

Procedure

Ethical approval for the study was obtained both from a UK University and from the UK Ministry of Defence. With respect to recruitment, the 18 RAF bases were contacted by the study team and the opportunity to take part in the working groups was advertised across the units using a mix of posters and emails. The respondents to the advert were then invited to take part in a working group that was undertaken on their RAF base. Forty-five working groups were conducted solely by the first author. Each working group lasted on average between 1 and 1.5 hours, totalling approximately 60 hours. As part of the working group, each participant completed the battery of questionnaires and then constructed a social identity map. During the social identity mapping exercise, participants were free to choose the type and quantity of groups that they added to their map and then were asked to rate them against a set of criteria. Examples of a complex, moderately complex, and simple maps can be found at Figures 1, 2 and 3, respectively.

Analytic strategy

In terms of analysing the social identity maps, the following results were extracted from the social identity maps and were used as independent variables: *number* of group memberships, *high importance*, *positive*, *high representativeness*, *high compatibility*, *overlap*, *low importance*, *negative*, *low representative*, and *low compatibility* (see Brook *et al.*, 2008; Cruwys *et al.*, 2016; Sonderlund *et al.*, 2017). In line with previous research (e.g., Chadha, Turner, & Slater, 2019), data for all variables were examined for missing values using Little's MCAR test, which revealed that across all variables that the values were missing at random, $\chi^2 = 338.457$, $df = 301$, $p = .068$. Thus, as the missing values were randomly distributed across the data, the use of the deletion technique where

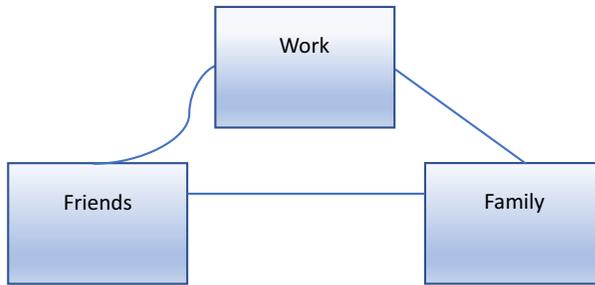


Figure 1. A simple social identity map. [Colour figure can be viewed at wileyonlinelibrary.com]

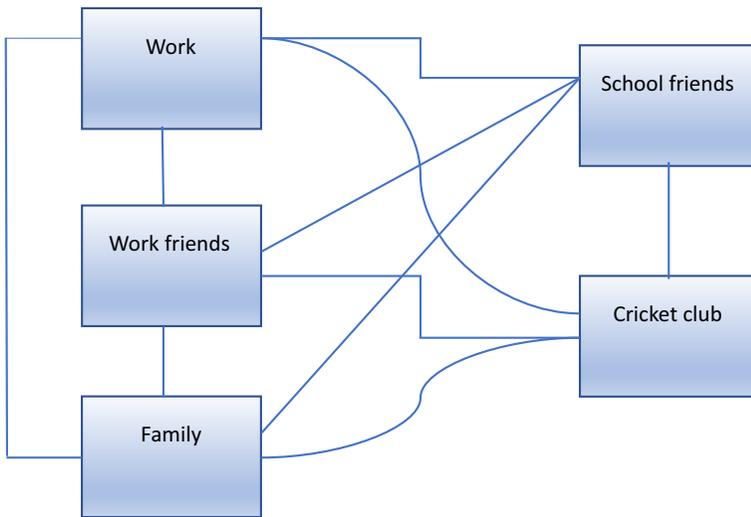


Figure 2. A moderately complex social identity map. [Colour figure can be viewed at wileyonline library.com]

missing values are discarded would have resulted in a significant loss of participants, thereby lowering the sample size and also resulting in a loss of power (Baraldi & Enders, 2010; Tabachnick & Fidell, 2007). Consequently, we used the expectation–maximization (EM) method to estimate the missing values (Graham, 2009) and to provide a complete data set for the main analyses (Quinton, Cumming, & Williams, 2018). Additionally, the data were examined for outliers and data points with z scores greater than 2 were winsorized, such that extreme values were replaced with the most extreme value that was not an outlier, to minimize the influence of outliers on the data (Barnet & Lewis, 1978). Consequently, items for *number of groups* ($n = 8$), *high importance* ($n = 9$), *low importance* ($n = 10$), *positive* ($n = 11$), *negative* ($n = 22$), *high representative* ($n = 11$), *low representative* ($n = 11$), *high compatibility* ($n = 0$), *low compatibility* ($n = 12$), *overlap* ($n = 10$), *global 5×5RS* ($n = 7$), *adaptability* ($n = 13$), *emotion regulation* ($n = 13$), *optimism* ($n = 10$), *self-efficacy* ($n = 16$), *social support* ($n = 11$), *represent* ($n = 8$), *champion* ($n = 8$), *entrepreneur* ($n = 10$), *embed* ($n = 0$), *social identification* ($n = 16$), and *relational identification* ($n = 16$) were winsorized.

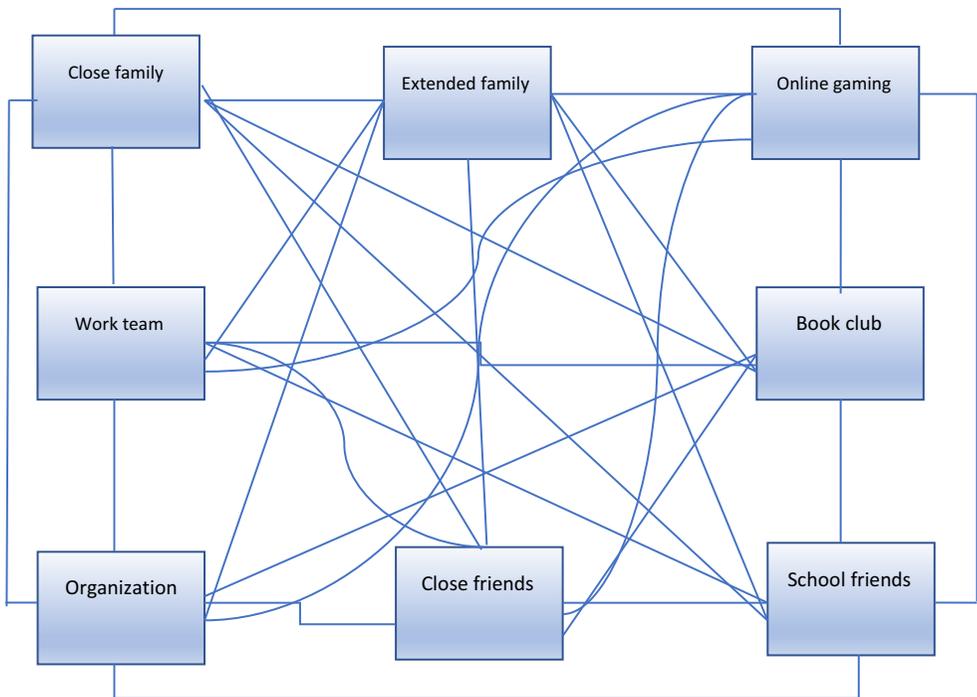


Figure 3. A complex social identity map. [Colour figure can be viewed at wileyonlinelibrary.com]

We conducted confirmatory factor analyses (CFAs) using AMOS version 26 to assess the construct validity of the 5×5 RS (as indicated by its internal item loadings and factor structure). Undertaking CFAs was important; as the 5×5 RS is a relatively new measure with limited use thus far. The model fit was evaluated using the chi-square statistic (χ^2), comparative fit index (CFI), and the root-mean-square error of approximation (RMSEA). A non-significant chi-square and CFI value of .90 or above are considered as a good fit (Bentler, 1990; Hu & Bentler, 1998). In addition, a RMSEA value of $< .06$ indicates a close fit, whilst a value of $< .08$ is considered an acceptable fit (Browne & Cudek, 1993). Moreover, a cut-off value of .10 has also been deemed to be acceptable (Vandenberg & Lance, 2000). The results of the model fit for the initial CFA on the 5×5 RS were $\chi^2 = 626.67$, $df = 265$, $p = < .001$; CFI = .81; RMSEA = .075. Using 0.50 as a cut-off for the item loadings (Hair, Black, Babin, & Anderson, 2009), the CFA of the 5×5 RS suggested the removal of item 5 (0.28) from the adaptability subscale and items 7 (0.46) and 8 (0.39) from the emotion regulation subscale. Following the removal of these four items, the results of the second CFA on the 5×5 RS were $\chi^2 = 511.02$, $df = 199$, $p = < .001$; CFI = .82; RMSEA = .080.

Next, internal consistency was estimated using Cronbach's alpha. The Cronbach alpha levels for the global and five resilience subscales were as follows: *global* (.86), *adaptability* (.66), *emotion regulation* (.77), *optimism* (.81), *self-efficacy* (.75), and *social support* (.79). The Cronbach alphas across the four dimensions of the ILI were as follows: *representing the group* (.94), *championing the group* (.93), *identity entrepreneurship* (.95), and *embedding identity* (.91). The Cronbach alphas for the final variables were *social identification* (.86) and *relational identification* (.93).

We ran a multiple hierarchical regression to explore our hypothesis using a composite resilience score as the dependent variable. The composite resilience score was used in preference to the five individual subscales because there were insufficient participants (lack of power) to justify running five separate regressions and there was an issue with the reliability of the adaptability subscale. To test H1a, H1b, and H1c, we entered demographic information (*age, sex, rank, and length of service*) at Step 1, the *number of groups* at Step 2, and the characteristics of the groups (*high importance, positive, negative, high representativeness, low representativeness*) and how they relate to each other (*high compatibility, low compatibility, and overlap*) at Step 3. The order that the group membership variables were entered into the model was determined by the importance accorded to them in previous research. As such, the quantity of groups that people belonged to is supported by a relatively larger body of research (e.g., Cruwys, South, Greenaway & Haslam, 2015; Haslam et al., 2018; Jones & Jetten, 2011), and was therefore entered first before the group characteristics and how they relate to each other (e.g., Cruwys et al., 2016; Sonderlund et al., 2017). The number of groups and their characteristics were included before *SIL, social identity, and relational identification* as they relate to the whole range of a participant's group membership (family, friends, work, hobbies, and interests) rather than the other variables that are solely focused on their immediate work group and leader. In addition, to test H2, H3a, and H3b, the 4 subscales of identity leadership (i.e., *represent, champion, entrepreneur, and embed*) along with *relational identification* were added at Step 4, with *social identification* being included at Step 5. The order with which the independent variables were entered into the model was determined by previous research, with identity leadership (e.g., Steffens et al., 2014) having a larger body of evidence supporting it than identifying with your work team or leader (Slater et al., 2018).

Results

Descriptive statistics

Table 1 displays the descriptive statistics.

Correlations

Tables 2 and 3 set out Pearson's correlations for all variables. The results offer mixed support for H1a, as the *number of groups* is significantly positively associated with adaptability and significantly negatively associated with emotion regulation. Additionally, there is support for H1b, with the *number of important groups* being significantly positively associated with adaptability and social support, and the *number of positive groups* being significantly positively associated with adaptability, optimism, self-efficacy, and social support, and *high representativeness* being significantly positively associated with adaptability, self-efficacy, and social support. Further, there was limited support for H1c, with no significant associations with *high compatibility*, and only adaptability and optimism being significantly positively related to *overlap*. Moreover, there was support for H2, with *representing the group* being significantly positively associated with adaptability, optimism, and social support; with *championing the group* being significantly positively associated with adaptability, emotion regulation, self-efficacy, and social support; with being an *entrepreneur of identity* being significantly positively associated with adaptability, emotion regulation, and social support; and *embedding*

Table 1. Mean Scales, standard deviations, scales, minimums and maximums among all variables

| N = 243 | Mean | SD | Scales | Minimum | Maximum |
|------------------------------|-------|-------|--------|---------|---------|
| Age | 35.42 | 8.22 | | 18 | 55 |
| Sex | 1.21 | 0.41 | | | |
| Rank | 10.99 | 4.40 | | | |
| Length of service (Years) | 14.43 | 8.35 | | 1 | 38 |
| Number of groups | 6.73 | 2.53 | | 3 | 12 |
| Important Groups | 3.36 | 1.63 | | 0 | 7 |
| Positive groups | 4.10 | 1.83 | | 0 | 8 |
| High Representative Groups | 3.76 | 1.97 | | 0 | 8 |
| High compatibility | 47.78 | 26.45 | | 0 | 100 |
| Overlap | 3.49 | 1.53 | 1–10 | 1 | 6.67 |
| Unimportant Groups | 0.49 | 0.73 | | 0 | 2 |
| Negative groups | 0.27 | 0.44 | | 0 | 1 |
| Low representative groups | 0.47 | 0.71 | | 0 | 2 |
| Low compatibility | 22.70 | 18.99 | | 0 | 60 |
| Represent – ILI | 4.56 | 1.46 | 1–7 | 1.75 | 7 |
| Champion – ILI | 4.98 | 1.49 | 1–7 | 2 | 7 |
| Entrepreneur – ILI | 4.60 | 1.44 | 1–7 | 1.75 | 7 |
| Embed – ILI | 3.91 | 1.60 | 1–7 | 1 | 7 |
| Global – ILI | 4.55 | 1.36 | 1–7 | 1.87 | 6.93 |
| Relational identification | 5.01 | 1.53 | 1–7 | 2 | 7 |
| Social identification | 5.58 | 1.09 | 1–7 | 3.33 | 7 |
| Adaptability – 5 × 5RS | 3.95 | 0.50 | 1–5 | 3 | 5 |
| Emotion regulation – 5 × 5RS | 3.74 | 0.75 | 1–5 | 2.33 | 5 |
| Optimism – 5 × 5RS | 4.03 | 0.66 | 1–5 | 2.60 | 5 |
| Self-Efficacy – 5 × 5RS | 3.96 | 0.48 | 1–5 | 3 | 4.80 |
| Social Support – 5 × 5RS | 4.15 | 0.62 | 1–5 | 2 | 5 |
| Global – 5 × 5RS | 3.98 | 0.40 | 1–5 | 3.09 | 4.82 |

identity having no significant associations with resilience. Despite the wide range of significant associations, all of the *r* values were relatively low, with .26 being the highest.

Regression analyses

Group membership

As shown in Table 4, at Step 1, regression analyses indicated non-significant associations between all of the demographics and resilience: *age* ($b = .006$, 95% CIs [-0.010, 0.022]); *sex* ($b = -.015$, 95% CIs [-0.143, 0.114]); *rank* ($b = -.006$, 95% CIs [-0.019, 0.007]); and *length of service* ($b = .000$, 95% CIs [-0.016, 0.017]). Overall, the demographics account for 1.9% of the variance in resilience. In contrast to H1a, at Step 2, the results indicated a non-significant negative association between the *number* of groups and resilience, ($b = -.009$, 95% CIs [-0.031, 0.013]), accounting for 0.3% of the variance in resilience. However, when the group characteristics were added at Step 3, the *number* of groups then became significantly negatively associated with resilience ($b = -.054$, 95% CIs [-0.089, -0.018]) and remained significant throughout the remaining steps. In addition, there was a significant positive association between the number of *positive* groups and resilience, ($b = .049$, 95% CIs [0.004, 0.094]). All other group characteristics

Table 2. Correlations among demographics, group membership, and resilience

| N = 243 | Age | Sex | Rank | LoS | No. Grp | Imp Grp | Pos Grp | H Rep Grp | H Cmp | Ovlp | Un Grp | Neg Grp | L Rep Grp | L Cmp | Ad | ER | Op | S-E | SS | G RS |
|-----------|--------|--------|--------|--------|---------|---------|---------|-----------|--------|--------|--------|---------|-----------|--------|--------|--------|--------|--------|--------|-------|
| Age | — | | | | | | | | | | | | | | | | | | | |
| Sex | -.08 | — | | | | | | | | | | | | | | | | | | |
| Rank | .03 | .91** | — | | | | | | | | | | | | | | | | | |
| LoS | -.00 | -.13* | .22** | — | | | | | | | | | | | | | | | | |
| No. Grp | -.18** | .13* | .07 | .12 | — | | | | | | | | | | | | | | | |
| Imp Grp | -.28** | .16* | .13* | .12 | .16* | — | | | | | | | | | | | | | | |
| Pos Grp | .15* | -.23** | -.12 | .02 | -.13* | .17** | — | | | | | | | | | | | | | |
| H Rep Grp | -.56** | .06 | .17** | .16* | .09 | .09 | .16* | — | | | | | | | | | | | | |
| H Cmp | -.31** | .56** | .433* | .31** | .63** | .31** | .16* | .02 | — | | | | | | | | | | | |
| Un Grp | .39** | .68** | .39** | .12 | .68** | .39** | .12 | .01 | .04 | .13* | — | | | | | | | | | |
| Neg Grp | .38** | .11 | .38** | .11 | .11 | .38** | .11 | .04 | .13* | .13* | .16* | — | | | | | | | | |
| L Rep Grp | .06 | .06 | -.06 | .06 | .06 | -.06 | .06 | .16* | .13* | .13* | .13* | .16* | — | | | | | | | |
| L Cmp | -.23** | -.23** | -.24** | -.23** | -.23** | -.24** | -.23** | -.23** | -.23** | -.23** | -.23** | -.23** | -.23** | — | | | | | | |
| Ad | .61** | .61** | .61** | .61** | .61** | .61** | .61** | .61** | .61** | .61** | .61** | .61** | .61** | .61** | — | | | | | |
| ER | .58** | .58** | .58** | .58** | .58** | .58** | .58** | .58** | .58** | .58** | .58** | .58** | .58** | .58** | .58** | — | | | | |
| Op | -.14* | -.14* | -.14* | -.14* | -.14* | -.14* | -.14* | -.14* | -.14* | -.14* | -.14* | -.14* | -.14* | -.14* | -.14* | -.14* | — | | | |
| S-E | -.17** | -.17** | -.17** | -.17** | -.17** | -.17** | -.17** | -.17** | -.17** | -.17** | -.17** | -.17** | -.17** | -.17** | -.17** | -.17** | -.17** | — | | |
| SS | -.20** | -.20** | -.20** | -.20** | -.20** | -.20** | -.20** | -.20** | -.20** | -.20** | -.20** | -.20** | -.20** | -.20** | -.20** | -.20** | -.20** | -.20** | — | |
| G RS | -.46** | -.46** | -.46** | -.46** | -.46** | -.46** | -.46** | -.46** | -.46** | -.46** | -.46** | -.46** | -.46** | -.46** | -.46** | -.46** | -.46** | -.46** | -.46** | — |
| | .79** | .79** | .79** | .79** | .79** | .79** | .79** | .79** | .79** | .79** | .79** | .79** | .79** | .79** | .79** | .79** | .79** | .79** | .79** | .79** |
| | .33** | .33** | .33** | .33** | .33** | .33** | .33** | .33** | .33** | .33** | .33** | .33** | .33** | .33** | .33** | .33** | .33** | .33** | .33** | .33** |
| | .27** | .27** | .27** | .27** | .27** | .27** | .27** | .27** | .27** | .27** | .27** | .27** | .27** | .27** | .27** | .27** | .27** | .27** | .27** | .27** |
| | .46** | .46** | .46** | .46** | .46** | .46** | .46** | .46** | .46** | .46** | .46** | .46** | .46** | .46** | .46** | .46** | .46** | .46** | .46** | .46** |
| | .60** | .60** | .60** | .60** | .60** | .60** | .60** | .60** | .60** | .60** | .60** | .60** | .60** | .60** | .60** | .60** | .60** | .60** | .60** | .60** |
| | .71** | .71** | .71** | .71** | .71** | .71** | .71** | .71** | .71** | .71** | .71** | .71** | .71** | .71** | .71** | .71** | .71** | .71** | .71** | .71** |

Key: LoS – length of service (years); No. Grp – number of groups (social identity mapping); Imp Grp – important groups (social identity mapping); Pos Grp – positive groups (social identity mapping); H Rep Groups – highly representative groups (social identity mapping); H Cmp – highly compatible groups (social identity mapping); Ovlp – overlap (social identity mapping); Un Grp – unimportant groups (social identity mapping); Neg Grp – negative groups (social identity mapping); L Rep Grp – low representative groups (social identity mapping); L Cmp – low compatible groups (social identity mapping); Ad – adaptability (5 × 5RS); ER – emotion regulation (5 × 5RS); Op – optimism (5 × 5RS); S-E – self-efficacy (5 × 5RS); SS – social support (5 × 5RS); G RS – Global Resilience Score (5 × 5RS).

**Correlation is significant at the 0.01 level. *Correlation is significant at the 0.05 level.

Table 3. Correlations among SI, social identification, relational identification, and resilience

| N = 243 | Rep | Champ | Ent | Emb | G ILI | RI | SI | Ad | ER | Op | S-E | SS | GRS |
|---------|-----|-------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|
| Rep | — | | | | | | | | | | | | |
| Champ | | .83** | | | | | | | | | | | |
| Ent | | | .82** | | | | | | | | | | |
| Emb | | | | .77** | | | | | | | | | |
| G ILI | | | | | .85** | | | | | | | | |
| RI | | | | | | .80** | | | | | | | |
| SI | | | | | | | .33** | | | | | | |
| Ad | | | | | | | | .15* | | | | | |
| ER | | | | | | | | | .19** | | | | |
| Op | | | | | | | | | | .26** | | | |
| S-E | | | | | | | | | | | .33** | | |
| SS | | | | | | | | | | | | .27** | |
| GRS | | | | | | | | | | | | | .71** |

Key: Rep – represent the group (IL); Champ – champion the group (IL); Ent – entrepreneur of identity (IL); Emb – embed identity (IL); G ILI – Global ILI (IL); RI – relational identification; SI – social identification; Ad – adaptability (5 × 5RS); ER – emotion regulation (5 × 5RS); Op – optimism (5 × 5RS); S-E – self-efficacy (5 × 5RS); SS – social support (5 × 5RS); G RS – Global Resilience Score (5 × 5RS).
 **Correlation is significant at the .01 level; *Correlation is significant at the .05 level.

Table 4. Hierarchical regression analyses for group membership, SIL, RI, and SI predicting resilience

| Variable | Step 1 | | | | Step 2 | | | | Step 3 | | | | Step 4 | | | | Step 5 | | | | | |
|----------------------------|--------|-------------|------|-------|--------|-------|-------------|------|--------|--------|-------------|--------------|--------|-------|---------|-------------|--------------|------|-------|---------|-------------|--------------|
| | b | SE | β | t | b | SE | β | t | b | SE | β | t | b | SE | β | t | b | SE | β | t | | |
| Age | .006 | -.010, .022 | .008 | .119 | .723 | .006 | -.010, .023 | .008 | .130 | .788 | .004 | -.011, .020 | .008 | .088 | .546 | .003 | -.012, .018 | .008 | .060 | .381 | .002 | -.013, .017 |
| Sex | -.015 | -.143, .114 | .065 | -.015 | -.229 | -.006 | -.136, .125 | .066 | -.006 | -.089 | -.008 | -.140, .125 | .067 | -.008 | -.112 | -.025 | -.156, .106 | .066 | -.025 | -.376 | -.030 | -.158, .099 |
| Rank | -.006 | -.019, .007 | .007 | -.061 | -.866 | -.007 | -.021, .006 | .007 | -.078 | -.1055 | -.007 | -.020, .006 | .007 | -.078 | -.1093 | -.009 | -.021, .004 | .006 | -.092 | -.1316 | -.009 | -.022, .003 |
| Length of Service | -.099 | -.1440 | .017 | .008 | .040 | .000 | -.016, .017 | .008 | .048 | .002 | -.014, .018 | .008 | .040 | .246 | .004 | -.012, .019 | .008 | .076 | .477 | .005 | -.010, .020 | |
| Number of groups | .000 | -.016, .017 | .008 | .007 | .040 | .000 | -.016, .017 | .008 | .048 | .002 | -.014, .018 | .008 | .040 | .246 | .004 | -.012, .019 | .008 | .076 | .477 | .005 | -.010, .020 | |
| Important groups | -.305 | -.2816* | .017 | -.819 | -.058 | -.009 | -.031, .013 | .011 | -.058 | -.819 | -.054 | -.089, -.018 | .018 | -.335 | -.2979* | -.052 | -.087, -.018 | .018 | -.328 | -.2982* | -.049 | -.083, -.015 |
| Positive groups | .020 | -.026, .065 | .023 | .080 | .860 | .020 | -.026, .065 | .023 | .080 | .860 | .025 | -.020, .069 | .022 | .100 | 1.098 | .016 | -.027, .060 | .022 | .066 | .738 | -.005, .083 | |
| High representative groups | .049 | .004, .094 | .023 | .222 | 2.128* | .049 | .004, .094 | .023 | .222 | 2.128* | .047 | .003, .092 | .023 | .214 | 2.085* | .039 | -.005, .083 | .022 | .178 | 1.752 | -.005, .083 | |
| Highly compatible | .028 | -.011, .067 | .020 | .138 | 1.422 | .028 | -.011, .067 | .020 | .138 | 1.422 | .019 | -.019, .057 | .019 | .093 | .979 | .022 | -.015, .060 | .019 | .110 | 1.179 | -.015, .060 | |
| Overlap | .000 | -.003, .003 | .001 | -.009 | -.101 | .000 | -.003, .003 | .001 | -.009 | -.101 | .001 | -.002, .003 | .001 | .039 | .427 | .001 | -.002, .004 | .001 | .066 | .733 | -.002, .004 | |
| Unimportant groups | .033 | -.003, .069 | .018 | .124 | 1.790 | .033 | -.003, .069 | .018 | .124 | 1.790 | .031 | -.004, .066 | .018 | .117 | 1.755 | .029 | -.006, .063 | .018 | .107 | 1.630 | -.006, .063 | |
| Negative groups | -.018 | -.121, .084 | .052 | -.033 | -.352 | -.018 | -.121, .084 | .052 | -.033 | -.352 | -.014 | -.113, 0.086 | .050 | -.025 | -.274 | -.004 | -.102, .094 | .050 | -.007 | -.078 | -.004 | -.102, .094 |
| Low representative groups | -.024 | -.179, .131 | .078 | -.026 | -.305 | -.024 | -.179, .131 | .078 | -.026 | -.305 | -.010 | -.161, .142 | .077 | -.011 | -.127 | .006 | -.143, .155 | .075 | .006 | .078 | -.143, .155 | |
| Lowly compatible | .009 | -.092, .110 | .051 | .016 | .174 | .009 | -.092, .110 | .051 | .016 | .174 | -.005 | -.105, .094 | .051 | -.009 | -.105 | -.013 | -.111, .085 | .050 | -.023 | -.270 | -.111, .085 | |
| Represent - ILI | -.001 | -.005, .003 | .002 | -.040 | -.460 | -.001 | -.005, .003 | .002 | -.040 | -.460 | .000 | -.004, .003 | .002 | -.007 | -.085 | .000 | -.003, .004 | .002 | .015 | .170 | -.003, .004 | |
| Champion - ILI | .029 | -.043, .102 | .037 | .106 | .802 | .029 | -.043, .102 | .037 | .106 | .802 | .029 | -.043, .102 | .037 | .106 | .802 | .029 | -.043, .102 | .037 | .106 | .802 | -.042, .100 | |
| Entrepreneur - ILI | .045 | -.028, .117 | .037 | .165 | 1.213 | .045 | -.028, .117 | .037 | .165 | 1.213 | .055 | -.016, .127 | .036 | .203 | 1.517 | .039 | -.036, .114 | .038 | .141 | 1.031 | -.036, .114 | |

Continued

had non-significant associations with resilience: *high importance* ($b = .020$, 95% CIs [-0.026, 0.065]); *high representativeness* ($b = .028$, 95% CIs [-0.011, 0.067]); *high compatibility* ($b = .000$, 95% CIs [-0.003, 0.003]); *overlap* ($b = .033$, 95% CIs [-0.003, 0.069]); *low importance* ($b = -.018$, 95% CIs [-0.121, 0.084]); *negative* ($b = -.024$, 95% CIs [-0.003, 0.069]); *low representative* ($b = .009$, 95% CIs [-0.092, 0.110]); and *low compatibility* ($b = -.001$, 95% CIs [-0.005, 0.003]). Overall, the addition of the group characteristics at Step 3 contributed 11.4% of the variance in resilience, thereby providing partial support for H1b and H1c.

Identity leadership

At Step 4, the four principles of SIL and relational identification were added to the regression analyses. The results indicated a significant negative association between *embedding identity* and resilience ($b = -.054$, 95% CIs [-0.104, -0.004]). The remaining three principles of SIL and relational identification were all non-significant: *representing the group* ($b = 0.029$, 95% CIs [-0.043, 0.102]); *championing the group* ($b = .045$, 95% CIs [-0.028, 0.117]); *identity entrepreneurship* ($b = .039$, 95% CIs [-0.036, 0.114]); and *relational identification* ($b = .006$, 95% CIs [-0.049, 0.061]). In total, the addition of the four principles of SIL and relational identification accounted for an additional 7.4% of the variance in resilience. Finally, when *social identification* was added at Step 5, the results indicated a significant positive relationship with resilience ($b = .076$, 95% CIs [0.028, 0.125]), with it contributing 3.4% of the variance in resilience.

Discussion

The purpose of our study was to examine how perceived group memberships (number, and characteristics, of), social and relational identification, and SIL were associated with resilience in RAF personnel. Our study is the first to examine the associations between group memberships (number and characteristics), social identity, and SIL with resilience in RAF personnel. Our findings indicate that group characteristics account for 11.4% of the variance in overall resilience, SIL and relational identification contribute 7.4%, and social identification accounts for 3.4%. In terms of the individual variables, although the *number* of groups was not significantly associated with resilience when it was entered into the regression at Step 2, when the group characteristics were included at Step 3, there was a significant negative association between the *number* of groups and resilience, which was continued throughout the remaining steps, and which is counter to H1a. Furthermore, whilst there are non-significant associations between *importance*, *representativeness*, and number of *negative* groups and resilience, there is a significant positive association between the number of *positive* groups and resilience, partially supporting H1b. Additionally, contrary to H1c, there were non-significant associations between both *compatibility* and *overlap*, and resilience. Contrary to H2, there were non-significant associations between three of the SIL dimensions (*represent*, *champion*, and *entrepreneur*) and resilience, and a significant negative association between *embedding identity* and resilience. Finally, there is a significant positive association between *social identification* and resilience, supporting H3a, and a non-significant association between *relational identification* and resilience, counter to H3b.

Contrary to H1a, multiple group memberships were negatively related to *resilience*. This contrasts with previous evidence that has found positive effects of a greater number

of group memberships on health and well-being (Cruwys *et al.*, 2014) and resilience (Jones & Jetten, 2011) as part of the 'Social Cure' literature. Rather than 'the more the merrier' (Chang *et al.*, 2016), our regression analysis highlights the opposite result, as belonging to more groups was associated with lower levels of *resilience*, potentially supporting the existence of a 'Social Curse' (Kellezi & Reicher, 2012). Research has indicated that in certain circumstances (i.e., belonging to a stigmatized group lacking in social support), some group memberships can potentially be a source of stress, which could be detrimental to health and well-being (Jetten *et al.*, 2017). Research has suggested that the ethos and camaraderie promoted within the Armed Forces can reinforce personnel's identification with the military, which can also serve to distance and separate them from civilian life, creating an 'us' and 'them' culture, leaving some military personnel with the sense that they are viewed as an outgroup by society (Binks & Cambridge, 2018). The level of this distance and separation between personnel's military identity and civilian life can be accentuated by their military identity becoming their primary and dominant identity (Binks & Cambridge, 2018). In essence, this could leave military personnel feeling that they are separate from the rest of society, which could, in part, explain why multiple group memberships have a negative association with *resilience* in this context. Alternatively, other researchers (e.g., Sonderlund *et al.*, 2017) have suggested that this sense of distinctiveness that members of the armed forces can feel towards their military identity can, under certain circumstances, enhance their health and well-being. For example, belonging to multiple non-overlapping (i.e., distinctive) groups was positively associated with higher levels of well-being (Sonderlund *et al.*, 2017). Further, when examining the association between the quantity of groups and individual health and well-being, the research suggested that when identities are overlapping (i.e., non-distinctive) then belonging to fewer groups seems to be better (Sonderlund *et al.*, 2017).

Additionally, this result could be linked to the idea that there can be conflict, for example, between work and non-work identities, in so far as people feel they are unable to satisfy both their own and others' expectations or requirements (Ramarajan, 2014). In this context, having fewer groups may be associated with higher *resilience* because working for the RAF is highly demanding in terms of the amount of time, effort, and energy it takes up (Binks & Cambridge, 2018; Ramarajan, 2014). In other words, it leaves little space outside of work to maintain other group memberships, which can promote both conflict and the weakening of ties between professional and other important group identities, such as the family (Ramarajan, 2014; Vuga & Juvan, 2013). From this perspective, the military could be viewed as a 'greedy institution' which not only requires the service member's loyalty and devotion, but also the wholehearted support of the family (Vuga & Juvan, 2013). Compounding this is the significant time away from home (in the United Kingdom/abroad) and frequent (and significant) moves and ultimately the potential requirement to sacrifice one's life (Desivilya & Gal, 1996; Segal, 1986; Vuga & Juvan, 2013). Additionally, the family can also be demanding in terms of the expectation to identify with the family as a whole and fulfil their roles within it (Desivilya & Gal, 1996; Vuga & Juvan, 2013). Thus, in combination the military and the family can place a large burden on the service member, with marriage increasing the service personnel's perception of military demands (Vuga & Juvan, 2013). In a study of Israeli Defence Force personnel, 78% found it difficult to reconcile the competing demands of the military and family (Desivilya & Gal, 1996). Therefore, in such a demanding job with a potential risk to life, the amount of mental capacity/attention to perform may foster an environment where fewer groups are better for resilience.

Given that belonging to more *positive* groups was associated with greater levels of *resilience*, efforts to enhance resilience within the RAF could concentrate on helping personnel to feel positive about the groups that they belong to, both inside and outside of work. Nevertheless, given the cross-sectional design used within our study it is also plausible that higher levels of *resilience* could influence group membership, rather than vice versa. Indeed, the level of choice that individuals have regarding the groups they join could also influence the strength of their group identification, which in turn could influence their *resilience* (Obst & White, 2007). Accordingly, we recommend future researchers consider including a scale which explores the degree of choice in the identity mapping process.

In terms of the non-significant associations between *importance*, *representativeness*, *compatibility*, and *overlap* and *resilience*, it may, in future, be useful to take an intrapersonal identity network approach to analysing these variables (Ramarajan, 2014). For instance, our study examined the overall number of important/unimportant, highly representative/low representativeness, high compatibility/low compatibility groups, and average overlap, which limited our capacity to examine the individual relationships between particular groups within the network, especially those between the participant's military identity and their other identities. As such, we also recommend consideration of relationships between particular types of groups (e.g., military vs. family) that participants list and how the alignment of different group types may influence resilience (Ramarajan & Reid, 2013). In a military context, it has been suggested that work and non-work groups can be closely intermingled (Ramarajan & Reid, 2013). An additional aspect that could help to explain the relationships between groups is network centralization (Ramarajan, 2014). Network centralization refers to the extent that a single group (i.e., military) in the network is pre-eminent in that it is related to all other groups, but the other groups are not necessarily related to one another. In the present study, we were unable to analyse the individual relationship between work and non-work identities due to the sensitivity and confidentiality of data within the RAF context. Further, another aspect that should be considered is the density of the network, which refers to the average strength of the conflicting or enhancing relationships across all group memberships, which can lead to an individual experiencing highly conflicted or synergistically related identities (Ramarajan, 2014). Research has suggested that integrating the different social identities could enhance resilience over time (Ramarajan, 2014) and thus we would recommend further examination of the relationship between a military identity and other non-military identities within a network.

Additionally, research has indicated that different types of groups (intimacy, task, and social) meet different functional needs (affiliation, achievement, and identity) for their members (Johnson *et al.*, 2006). For example, intimacy groups, such as families and friends, primarily meet affiliation needs (i.e., a feeling of belonging with others, emotional attachment, and support; Johnson *et al.*, 2006). Likewise, task groups, such as co-workers or sports team members, tend to mostly meet achievement needs, such as mastery, success, and competence (Johnson *et al.*, 2006). Finally, social groups, such as ethnicity and gender, predominantly meet identity needs, such as the enhancement of self-identity and self-esteem (Johnson *et al.*, 2006). Thus, it could be that a combination of different types of groups is required for people to be resilient overall, as each type of group serves a different purpose. Nevertheless, for some in the military, such as those serving in the infantry, who maintain closer friendships with their comrades, even after they leave the armed forces, and internalize their military identity to the extent that it overcomes their personal identity, the military could contain each different type of group (intimacy, task,

and identity) and therefore fulfil the majority of their needs (Binks & Cambridge, 2018). In contrast, for those service members who viewed their role in the military as 'just a job', who were more likely to maintain friendships from their civilian life, it could be that the military only helped to fulfil their achievement needs as a task group (Binks & Cambridge, 2018). Consequently, the difference, for example, between serving within combat (infantry) or combat support (engineer) units could have an impact on how military identity impacts on resilience.

Our study also extends previous research (Cruwys *et al.*, 2016; Sonderlund *et al.*, 2017), by being the first to use social identity mapping in an organizational setting, and by including the quantity of groups alongside their characteristics in a military context. Overall, our data add to current thinking by outlining that social relationships, in the form of group memberships, are associated with *resilience*. Furthermore, in our data, the importance of belonging to groups in this context possibly depends on both their quantity and how positive they are perceived to be. Albeit the *number* of groups is negatively associated with *resilience*, whilst the number of *positive* groups is positively associated with *resilience*. Our data extend current research (van Dick *et al.*, 2018; Steffens *et al.*, 2014) by illuminating the relationship between *SIL* and *resilience* within RAF personnel, with *embedding identity* being significantly negatively associated with *resilience*. Additionally, the social identity mapping exercise is an integral part of the 'Groups 4 Health' programme that seeks to build social connectedness through strengthening social identity within a group experience (Haslam, Cruwys, Haslam, Dingle, & Chang, 2016). The 'Groups 4 Health' programme has led to positive health and well-being outcomes, such as depression, anxiety, stress, self-esteem, and life satisfaction (Haslam *et al.*, 2016), and we would recommend it being tested as part of a resilience development programme.

Overall, the four *SIL* subscales and *relational identification* accounted for 7.4% of the variance in the resilience of the RAF participants. Thus, suggesting that enhancing the four principles of *SIL* collectively could have a positive effect on *resilience*, although the precise mechanism(s) underpinning this is an area for future researchers. Nevertheless, the only principle to be significantly associated with *resilience* was *embedding identity*, which has a negative association, suggesting that creating structures, and devising activities and events to bring the group closer together is detrimental to individual *resilience*. Whilst *representing the group* has been the most researched *SIL* principle (e.g., Molenberghs *et al.*, 2017; Steffens, Haslam, Ryan, & Kessler, 2013), *embedding identity* has received the least attention, as it is only included in the two studies that validate the *ILI* measure (van Dick *et al.*, 2018; Steffens *et al.*, 2014). In these studies, *embedding identity* has a significant positive association with a range of outcomes, such as team identification, work engagement, team confidence, and task cohesion (van Dick *et al.*, 2018; Steffens *et al.*, 2014). Nevertheless, *embedding identity* has a significant negative association with trust (van Dick *et al.*, 2018). Given the significant negative association between *embedding identity* and *resilience* in this study, we recommend that further research be taken undertaken focusing on this principle of *SIL*.

In contrast, *social identification* was significantly associated with *resilience*, alone contributing 3.4% of variance to the resilience model. This result extends the existing research which has shown that *social identification* has an effect on depression and satisfaction with life within army personnel (Sani, Herrera, Wakefield, Boroch, & Gulyas, 2015) and well-being within naval personnel (Horton, McClelland, & Griffin, 2014), by demonstrating the positive influence of team identification on resilience in RAF personnel. With respect to *social identification*, specific efforts to increase *resilience* should include activities designed to strengthen the level of identification that team

members have with their work group. For example, establishing and sustaining a connection between team members and the team should be included in leadership development programmes and interventions designed to enhance resilience in a work setting. Further, previous evidence has indicated a significant positive relationship between *SIL* and team identity. Consequently, enhancing *SIL* through the 5R programme of leadership development (Haslam *et al.*, 2017) could help to develop a stronger connection with the team, which could in turn assist in building resilience, as found in the current study. However, further research should be conducted to seek to explain the apparent contradiction between embedding identity being negatively associated with resilience and social identity being positively associated with resilience.

Whilst the above variables explain 22% of the variance in resilience, there is still a relatively large amount of variance that remains unexplained. The current literature proposes a range of alternative predictors that were outside the scope of this study. In terms of social resilience, level of education, ethnicity, family background, and access to health care and social services have all been forwarded as potential determinants (Bonnano, 2004; Liu *et al.*, 2017). In terms of interpersonal factors, a large range of potential predictors of *resilience* have been proposed, such as attentive listening, compassion, coping skills, empathy, humility, mastery, positive mindset, and self-control and regulation (Bryan *et al.*, 2017; Cacioppo *et al.*, 2011; Liu *et al.*, 2017). Finally, another potential predictor of resilience is previous exposure to adversity (Seery *et al.*, 2010). For instance, it has been suggested that intermittent exposure to brief periods of adversity help to build resilience (Seery *et al.*, 2010).

These results, despite the inherent peculiarities of working within the military, could be applicable to other groups that work together to achieve common goals, and who operate in high pressure environments, where facing risk and adversity are common aspects of the job, such as the 'blue light services' (i.e., police, fire, and ambulance), and accident and emergency units in hospitals. Further, the regular rotation of both staff and leaders that occurs in the military means that these results could also be pertinent to professional sports teams, such as football, where the average tenure of a professional football manager in England is just 1.23 years (Sky Sports News, 2015). Consequently, a potential avenue for future research could be to examine the associations between multiple group membership, *SIL*, and team identity in these organizations.

Limitations and considerations for future researchers

Our study is not without limitations. First, given the cross-sectional research design it is not possible to discern either directionality or causation of effects, along with the precise mechanisms by which group membership(s) and *SIL* may bring about changes in resilience. Indeed, it is plausible that the relationship between group membership(s) and resilience is bi-directional and hence being highly resilient could influence the number and type of groups individuals join. The use of longitudinal research designs would enable the exploration of cross-lagged effects to help unpack the temporal effects of group memberships on resilience. Second, although the sample was from 18 different bases and across a wide range of ranks, the use of a self-selected convenience sample meant that it was unrepresentative of the RAF. Therefore, this somewhat limits the generalizability of the results within and beyond the organization. Third, whilst our data are nested (i.e., 18 RAF bases), the spread of participants across each RAF base varied substantially (range 3–40) deeming multilevel analysis unsuitable. Future researchers should aim to recruit a balanced distribution of participants across the RAF bases (Snijders & Bosker, 1993).

Finally, whilst our study is the first that we know of to the use of the 5 × 5RS beyond the initial validation, there may be problems with the measure. Even after the removal of items, the Cronbach alpha for adaptability subscale indicated that there are still some potential issues with reliability of this scale. To mitigate this issue, we used a composite score for our analyses which yielded an acceptable alpha of .86. The use of an overall resilience score additionally ensured analyses maintained sufficient power (Clark-Cater, 2010). Accordingly, future researchers using longitudinal designs should undertake further confirmatory factor analysis to critique the development and applicability of the 5 × 5RS.

Practical implications

Our results indicate that belonging to fewer groups, feeling positive about the groups that RAF personnel belong to, and higher levels of social identification are associated with higher resilience. Thus, the RAF should understand the role that groups, both within and outside work, play in contributing to the resilience of RAF personnel, building on the Groups 4 Health concept (Haslam *et al.*, 2016). For example, social identity mapping could be a useful intervention through which personnel gain an understanding of their social relationships in a group context as part of their initial training (see Slater & Barker, 2019). Social identity mapping is an organic process, providing the participants with a framework and a free choice in determining how many and which groups they include on their map. As such, our participants named a mix of more traditional physical groups, such as sports clubs, as well as virtual groups, including online gaming communities. Moreover, the construction of the social identity map provokes reflection in some participants as they made sense of their connections. Nevertheless, for those who belong to a larger number of groups (i.e., ten or above), the process of relating the groups to each other can be time-consuming. Additionally, our data suggest that a useful starting point for leaders is the level of connection that the team members feel with the team. Thus, strengthening social identification could be one way to enhance the resilience of the team members. In addition, enhancing SIL within the team could also assist in building the resilience of team members. These outcomes could be achieved by using a 5R (Readying, Reflect, Represent, Realise, Report; Haslam *et al.*, 2017) process to establish shared values and goals (Slater & Barker, 2019).

Conclusion

Our study adds to current thinking (i.e., Jones & Jetten, 2011) regarding the link between multiple group membership and resilience, by examining the links between group memberships, both quantity and characteristics, and resilience. Our cross-sectional data indicated that the number of groups RAF personnel perceive they belong to is negatively associated with resilience, whilst it is belonging to positive groups that is associated with greater resilience. We further added to current thinking (van Dick *et al.*, 2018; Steffens *et al.*, 2014), by examining simultaneously, the link between SIL and the health and well-being of workers, by exploring the relationship between SIL, social identification, relational identification, and resilience in an organizational setting. Our data suggest that perceiving leaders within the RAF to embed our group's identity negatively influences resilience, whilst the strength of RAF personnel's social identification with their work team positively influences resilience. Consequently, interventions which seek to

strengthen how positive people feel about the social groups that they belong to, and their level of social identification with their work team have the potential to play a key role in enhancing resilience in RAF.

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Conflicts of interest

All authors declare no conflict of interest.

Author contribution

Craig Andrew White (Conceptualization; Data curation; Investigation; Methodology; Project administration; Resources; Validation; Writing – original draft; Writing – review & editing) Matthew J. Slater (Methodology; Supervision; Writing – review & editing) Martin J. Turner (Methodology; Supervision; Writing – review & editing) Jamie Barker (Conceptualization; Formal analysis; Methodology; Supervision; Validation; Writing – review & editing).

Data availability statement

Due to the ethical agreement with the U.K. Ministry of Defence for undertaking this research, we are only able to make the SPSS syntax data files available.

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