

Sober social networks: the role of online support groups in recovery from alcohol addiction

BLIUC, Ana-Maria <<http://orcid.org/0000-0002-8286-8940>>, DOAN, Tuyet-Ngan and BEST, David <<http://orcid.org/0000-0002-6792-916X>>

Available from Sheffield Hallam University Research Archive (SHURA) at:

<http://shura.shu.ac.uk/23428/>

This document is the author deposited version. You are advised to consult the publisher's version if you wish to cite from it.

Published version

BLIUC, Ana-Maria, DOAN, Tuyet-Ngan and BEST, David (2018). Sober social networks: the role of online support groups in recovery from alcohol addiction. *Journal of Community & Applied Social Psychology*, 29 (2), 121-132.

Copyright and re-use policy

See <http://shura.shu.ac.uk/information.html>

Sober Social Networks: The Role of Online Support Groups in Recovery from Alcohol Addiction

Abstract

In the context of addiction research, positive recovery outcomes are affected by the quality of people's social interactions and perhaps to an even greater extent, by the defining norms of the groups they identify with – that is, using versus recovery groups. Here, we examine the role of online supportive networks in the process of recovery from alcohol addiction. We analyse the relationship between negative and positive aspects of recovery capital (i.e., self-stigma, and respectively positive recovery identity and self-efficacy) as they relate to well-being outcomes among alcohol users in an online recovery support group. Based on a computerised linguistic analysis of the naturally-occurring data extracted from an online recovery support group (i.e., 257 posts made by 237 group members), we found that self-stigma negatively predicts self-efficacy and well-being, and social identification with a recovery identity mediates these relationships. Overall, these findings highlight that positive engagement with supportive recovery networks is central to an effective and sustainable recovery.

Introduction

Globally, access to the Internet has increasingly been recognised as a human right, reflecting an implicit recognition of the need to ensure that disadvantaged people in society are able to have their voices heard (Australian Human Rights Commission, 2013). The Internet has not only become a mainstream mode of communication, with an estimated 74% of Internet users being active social media users, but has also changed the way people access and discuss health information (Amante, Hogan, Pagoto, English, & Lapane, 2015; Chaffey, 2017; Chung, 2013; Hasler, Ruthven, & Buchanan, 2014; Kemp, 2017; Thomas, McLeod, Jones, & Abbott, 2015; Wong, Harrison, Britt, & Henderson, 2014). Online networks have increasingly been used as a source of health information, with communication infrastructures, such as online forums and message boards, enabling the sharing of knowledge, experiences and skills related to physical and mental health concerns (Westerman, Spence, & Van Der Heide, 2014). While the positive effect of face-to-face social support on individuals' wellbeing in difficult times is well-documented, there is less evidence on whether *online* social interactions have similar positive effects (Pan, Feng, & Skye Wingate, 2017; Thomas et al., 2015; Umberson & Montez, 2010). Theory-driven, empirical research on the role of online social interaction in supporting positive health outcomes is essential so that cost-effective solutions for high burden diseases such as substance use disorders can be found (Chung, 2013; Hobbs, Burke, Christakis, & Fowler, 2016).

By facilitating social interaction, online social networks can provide members with a sense of belonging, purpose and support (Cheung, Chiu, & Lee, 2011; Oh, Ozkaya, & LaRose, 2014). Indeed, much of the research on traditional (offline) social networks has focused on the impact of such interpersonal relationships on individuals' health outcomes (Berkman, Kawachi, & Glymour, 2014; Ozbay et al., 2007; Pan et al., 2017; Umberson & Montez, 2010). Here, we explore the role of *online social networks* in recovery from drug and

alcohol addiction from a Social Identity Theory (SIT) perspective (Tajfel & Turner, 1979, see also, Jetten, Haslam, & Haslam, 2012). This perspective is applied here to explain the social, rather than individual factors underpinning individuals' behaviours in online social networks of recovery from alcohol addiction. In other words, we adopt a 'social cure' perspective, where we focus on individuals' social identification with meaningful groups that they access online as a key factor shaping their health and wellbeing, rather than their individual interpersonal relationships (Jetten, Haslam, Haslam, Dingle, & Jones, 2014).

Social identification stems from a process in which individuals derive meaning and self-esteem from meaningful social identities; once they internalise the norms and values associated to these identities, they are more likely to adopt behaviours which are consistent with these norms and values. Specifically, salient social identities serve to structure individuals' cognitions and behaviours, as they endeavour to achieve or maintain a positive identity that is linked to a sense of belonging and commitment to highly valued group memberships (Best et al., 2016; Haslam, O'Brien, Jetten, Vormedal, & Penna, 2005; Tajfel & Turner, 1979). Further, the stronger individuals identify with a particular group, the greater the impact on their behaviour is expected to be (Jetten et al., 2014). This approach has practical implications, not only on intergroup relations in organisations and other formal groups, but also in healthcare, where group-based interventions are increasingly used in the treatment of many conditions including addictive behaviours (Best & Buckingham, 2016).

As an extension of SIT, Best et al. (2016) proposed the Social Identity Model of Recovery (SIMOR), which frames recovery from addiction as a process of social identity change, whereby individuals gradually adopt the norms and values of new (more functional) membership groups and move away from old using social networks and the resulting identities. The internalisation of recovery values and norms then shapes subsequent attitudes and behaviours related to substance use, typically involving reduced exposure to conditioned

cues that increase the risk of relapse and avoidance of substance use (Best, Irving, Collinson, Andersson, & Edwards, 2017). SIMOR argues that individuals can establish positive identities regardless of continuing symptoms. Thus, Best et al. (2016) emphasise the social and psychological nature of recovery over the clinically-oriented view that defines recovery in terms of symptom improvement and a return to former (normal) functioning (Davidson, O'Connell, Tondora, Styron, & Kangas, 2006). SIMOR also provides an explanation as to why the risk of relapse may be high early in the recovery process, and diminishes as the individual becomes embedded in recovery groups. As social identity change involves a fundamental shift in beliefs and attitudes around substance use, the move away from a substance-using group identity while a recovery-oriented identity is forming, may not always occur in a straightforward manner (Bathish et al., 2017). Therefore, the maintenance of a recovery-oriented identity requires ongoing and active engagement with recovery-oriented groups (Best et al., 2016).

Research investigating progress in substance users in the structured mutual aid groups and smokers recruited from online sources found positive associations between group identification and positive health outcomes for both groups (Buckingham et al., 2013). This finding is indicative of potential practical implications regarding the delivery of interventions for addiction, suggesting that belonging to supportive online social networks may be a viable alternative (or supplementary resource) to traditional face-to-face group interventions.

Social Networks, Recovery Capital and Identity

This evidence suggests that a positive recovery-oriented social identity constitutes a resource that supports health and wellbeing; in this sense, social identification can be considered a form of *positive recovery capital* – that is, the total of one's resources that individuals are able to draw upon in their recovery efforts (Cloud and Granfield, 2008). The concept of recovery capital provides a functional framework to assess the diverse capacities

of individuals to recover and interpret different individual recovery experiences. In this sense, both formal treatment and mutual help meetings such as AA can be considered as forms of social recovery capital. A recent systematic review shows that the mechanisms of behaviour change through which AA confers recovery capital were predominantly social and cognitive in nature; enhanced self-efficacy and recovery coping skills that assist in the maintenance of recovery motivation were found to be facilitated by the development of a positive social identity supportive of abstinence and recovery (Kelly, 2016). Social identification with groups supportive of recovery can then be viewed as cultural recovery capital, as it is the values and norms derived from group membership that leads to improved health outcomes (Best et al., 2017; Cloud & Granfield, 2008).

Conversely, negative recovery capital is a more recently theorised form of recovery capital that was introduced after it was observed that even individuals with high levels of recovery capital can have difficulties initiating and maintaining recovery (Cloud & Granfield, 2008). As such, negative recovery capital can be seen as including aspects which may undermine an individual's motivations or efforts to overcome their addiction (Hennessy, 2017; Mawson et al., 2015). It follows then, that when negative recovery capital compromises an individual's sense of self-efficacy or capacity for positive social identification, there are likely to be adverse consequences for their health and wellbeing.

Stigma as a Form of Negative Recovery Capital

Stigma was found to undermine the recovery efforts of those recovering from drug and alcohol addiction (Corrigan, Larson, & Rüsch, 2009; Corrigan, Rafacz, & Rüsch, 2011). Stigma can be categorised as enacted stigma, perceived stigma and self-stigma. Enacted stigma and perceived stigma describe, respectively, individuals' direct experiences of stereotypes, prejudice and discrimination in society, and beliefs around the prevalence of such stigmatising attitudes and actions (Corrigan & Rao, 2012; Luoma et al., 2013; Luoma et

al., 2007). Self-stigma refers to individuals' internalisation of their experiences of enacted and perceived stigma, and the consequent self-devaluation which results in changes in behaviour (Corrigan et al., 2011; Luoma et al., 2013). As with positive recovery capital, the different forms of stigma may impact the individual differently, but evidence suggests that self-stigma is the form of stigma most strongly associated with compromised outcomes related to recovery, such as treatment avoidance, failure to seek employment, and poor interpersonal relationships (Chou et al., 2013; Livingston & Boyd, 2010; Watson, Corrigan, Larson, & Sells, 2007; Yanos et al., 2012).

The relationships between *self-stigma* and *self-efficacy* have been of particular interest to researchers. For example, in a study by Vauth, Kleim, Wirtz, and Corrigan (2007) involving outpatients diagnosed with schizophrenia, self-efficacy mediated the relationship between self-stigma and psychological well-being. They found that higher levels of self-stigma contributed to lower perceived self-efficacy, which in turn was associated with poor psychological well-being. In a different study, Watson et al. (2007) also recruited outpatients who had been diagnosed with a severe mental illness to investigate the impact of group identification on constructs of self-stigma and self-efficacy. They found that strong group identification with the 'mentally ill' social category functioned as a buffer for the negative effects of self-stigma, at the same time enhancing self-esteem and self-efficacy.

However, there is mixed evidence for these relationships, as illustrated in a study by Crabtree, Haslam, Postmes, and Haslam (2010) involving members of mental health support groups. While their results did support Corrigan et al.'s (2006) findings (that identification with a mental health support group predicts increased resistance to stigma, which in turn has positive implications for self-efficacy and self-esteem), Crabtree et al. (2010) also found a significant and moderate negative correlation between group identification and self-esteem, indicating that identification with a severely stigmatised group also had negative

consequences for individuals' self-esteem. In other words, identification with a stigmatised group, when individuals already perceive the stigma to be legitimate, may increase group members' health vulnerability and harm their emotional health (Best et al., 2016, Jetten, Schmitt, Branscombe, Garza, & Mewse, 2011).

Online Recovery Networks for Alcohol Addiction

The studies that have been discussed thus far have primarily involved participants diagnosed with severe mental illnesses such as schizophrenia, bipolar disorder and major depression. Drug use is the most stigmatized health condition in the world according to the World Health Organisation, and alcohol the fourth most stigmatised (WHO, 2001), so it is plausible that individuals with substance-use disorders are less frequently regarded as mentally ill and are more frequently and to a higher degree blamed for their condition (Glass, Mowbray, Link, Kristjansson, & Bucholz, 2013; Kulesza, Ramsey, Brown, & Larimer, 2014; Schomerus et al., 2011). For this reason, many individuals may avoid attending face-to-face group meetings such as AA. Online recovery networks work in similar ways to traditional (offline) recovery networks, in that the basis of group membership is the shared experience of being in recovery. The difference is that identification with an online recovery network would reflect identification with a broader community of people going through the recovery process, while enabling a greater sense of anonymity (Rains, 2014; Tajfel & Turner, 1979). Online recovery networks can therefore provide an alternative or additional source of information and support for those who perceive their illness to be stigmatised and find self-disclosure challenging (Savic, Best, Rodda, & Lubman, 2013). Additionally, such online support groups transcend geographic boundaries and can also be convenient to those with limited time, resources, or mobility, providing them with an opportunity to access recovery capital online (Chung, 2013; Lawlor & Kirakowski, 2014; Rains, 2014; Thomas et al., 2015).

In comparison to the research on traditional, face-to-face mutual help organisations like AA, there is less empirical evidence of the potential of online support networks to shape identity formation and transformation, counter the negative impact of self-stigma, and effect positive health outcomes (Kelly, 2017). Results from a study conducted by Chou et al. (2013) do suggest that online networks confer health benefits in a similar way to face-to-face mutual help organisations, findings consistent with an emerging body of research showing that positive online interactions between members of recovery communities contribute to individuals achieving long-term identity change, which supports and sustains their recovery efforts in recovery from addiction (Best, Bliuc, Iqbal, Upton, & Hodgkins, 2017; Bliuc et al., 2016; Bliuc, Best, Iqbal, & Upton, 2017) and other disorders (including disordered eating, Hastings, McNamara, Allan, & Marriott, 2016).

Current Study

Until recently, there has been no systematic approach to quantifying self-stigma, and only a few measures specifically examining the construct of self-stigma in mental health exist (Luoma et al., 2013). Consequently, given that measured self-stigma is operationalised differently in different studies, an integration of findings in this area of research is difficult. This point is echoed in a systematic review of interventions aimed at reducing self-stigma (Griffiths, Carron-Arthur, Parsons, and Reid, 2014) which found that many of the reviewed studies were not actually confined to self-stigma with over half of them using the concepts of perceived stigma and self-stigma inter-changeably.

Further, all existing measures of self-stigma are self-reported, and are therefore inherently limited by their reduced capacity to capture spontaneous, naturally occurring behaviour and thoughts. In the context of addiction research with stigmatised groups, such methods are also likely to be susceptible to response bias (Wilson et al., 2013). Tausczik and Pennebaker (2010) proposed the use of computerised language software as an alternative

means to gain insights into several psychological states and processes. One example of such software is the Linguistic Inquiry Word Count (LIWC; Pennebaker, Boyd, Jordan, & Blackburn, 2015; Tausczik & Pennebaker, 2010), which works by counting relevant words (from over 80 LIWC categories) and calculating scores for relevant psychological dimensions based on the frequency of words that make up those dimensions. In the present study, we adopt this approach to quantifying our variables of interest (i.e., self-stigma, group identification with a broader recovery community, self-efficacy, and psychological well-being).

Thus, the present study aims to provide empirical evidence for the value of online social networks in supporting recovery from alcohol addiction. Drawing from research on recovery capital in the context of addiction, self-stigma and group identification will be investigated as variables of interest and potential targets for intervention. The following hypotheses are posed:

Hypothesis 1 (H1). Self-stigma (as a barrier to recovery) is negatively associated with self-efficacy and psychological well-being for alcohol users in an online recovery support group.

Hypothesis 2 (H2). Identification with the recovery community should mediate the negative effects of self-stigma on self-efficacy and psychological well-being for alcohol users.

Method

Participants. Naturally occurring linguistic data was extracted from SoberRecovery (<https://www.soberrecovery.com/forums/>), an online community of recovering alcoholics, addicts, and co-dependents, as well as their friends and family. Participants themselves were not recruited, but instead, the entirety of participants' posts in the 'Stories of Recovery' subforum (as of 21/08/2017) were extracted for analysis. The final data corpus was

comprised of 257 posts, made by 237 SoberRecovery members. The mean number of words for each post was 1068 words ($SD = 881$, ranging from 21 words to 5791 words). Ethics approval was obtained before data for the archival study was extracted (the researchers had no direct contact with the the forum participants).

Materials and measures.

LIWC. Linguistic variables were chosen based on the research hypotheses. Composite measures based on existing dictionary categories were created following the methods used in previous research (Mehl, Robbins, & Holleran, 2012). Analysis was conducted using LIWC2015 (Pennebaker et al., 2015).

Self-stigma. A new dictionary of stigma-related words was created for use with the linguistic analysis program LIWC. See Procedure for steps taken to construct the dictionary. By itself, the variable Stigma could be a measure of perceived stigma. A composite measure of self-stigma was derived by averaging the variable of Stigma (as measured using the newly constructed dictionary) and the variable ‘first person singular pronouns’ (e.g. I, mine, myself); the use of first-person singular pronouns is thought to increase with level of self-focus, and therefore this composite measure distinguishes self-stigma from perceived stigma (Kacewicz, Pennebaker, Davis, Jeon, & Graesser, 2014).

Self-efficacy. Participants’ sense of self-efficacy was assessed with a composite measure derived by averaging the LIWC variables Certain (e.g. confident, sure, commit), FocusPresent (e.g. can, overcome, do), and FocusFuture (e.g. gonna, shall, will). These variables were chosen based on the definition of self-efficacy as one’s belief or confidence in achieving goals (Corrigan et al., 2009).

Social identification. Social identification as one aspect of recovery capital was assessed using a composite measure derived by averaging the LIWC categories ‘We’ (e.g. we, our, us), and Affiliation (e.g. common, group, collaborative). Previous research has suggested

the use of these variables to signal a sense of group identity (Tausczik & Pennebaker, 2010; see also Best et al., 2018; Bliuc et al., 2018).

Psychological well-being. Sub-categorical variables to Affect, such as positive emotions (e.g. accepting, fantastic, wellbeing), and negative emotions (e.g. despair, weak, worry) were used as proxy measures of psychological well-being, where higher scores on the positive emotions variable indicate greater experience of positive features of life (increased psychological well-being), while higher scores on the negative emotions variable indicate decreased psychological well-being (Tausczik & Pennebaker, 2010).

Procedure. Data were extracted using Import.io; the scraping tool was trained to extract usernames and initial posts from a list of URLs that were links to individual threads in the forum. Multiple posts from the same user were collated into one cell and the content of the post checked for large portions of unwanted text, per Pennebaker et al.'s (2015) operating instructions.

Construction of dictionary. The Stigma dictionary ($M = 1.213$, $SD = .684$) was developed for use with the 2015 version of the LIWC software. Therefore, iterative techniques similar to those applied in the development of the LIWC dictionaries were used (Pennebaker et al., 2015). The process started with a comprehensive review of existing measures of stigma. We then aggregated an initial pool of all possible words that reflected each of the ten common stereotypes relevant to alcohol misusers (Luoma et al., 2013). These words were drawn from the items on various mental health and stigma questionnaires, as well as from online dictionaries and thesauruses. A group of 5 external judges then rated the goodness of fit for each of the words in terms of whether they thought the word was relevant to the concept of stigma (ratings were given as Yes, No, and Maybe). Finally, texts from several sources including blog posts, Twitter, and newspapers were searched to determine how frequently the proposed stigma words were used in various contexts. Dictionary words

that did not occur at least once across each type of source were omitted from the dictionary.

The final stigma dictionary contained 136 words.

LIWC analysis. Posts with less than 400 words were excluded to ensure strong reliability (Boyd et al., 2015). Forty-seven posts were deleted before the data was imported into SPSS for analysis. The final data corpus for statistical analysis comprised 190 posts.

Results

All statistical analyses were conducted using SPSS (IBM SPSS Version 22.0, 2013), and assessed at the conventional significance level of $p < .05$.

Bivariate descriptive statistics. Spearman's Rho correlations were examined and presented with other descriptive statistics in Table 1 (Buck, Minor, & Lysaker, 2015; Wood & Irons, 2017). Significant bivariate correlations between the variables were all weak to moderate, ranging from $r_s = -.15$ to $r_s = .41$. Results indicated significant positive associations between Self-Efficacy and both Positive, and Negative Emotion variables, and between Self-Stigma and Negative Emotion. Further, significant negative associations were found between Social Identification and the variables Negative Emotion, Self-Efficacy and Self-Stigma.

Table 1

Descriptive Statistics and Spearman's Rho Correlations Among LIWC Variables of Interest

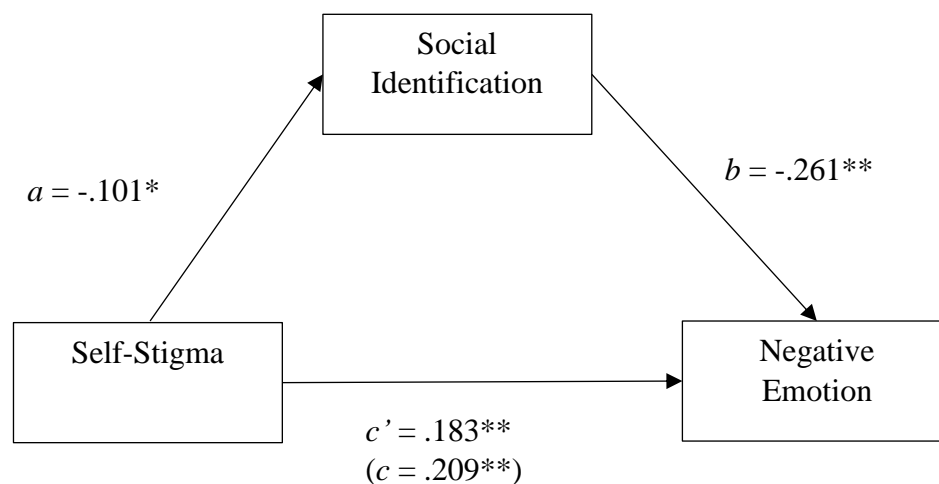
($n = 189$).

Variables	Positive Emotion	Negative Emotion	Self-Efficacy	Self-Stigma	Social Identification
Negative Emotion	.089				
Self-Efficacy	.406**	.201**			
Self-Stigma	-.129	.219**	.061		
Social Identification	-.066	-.195**	-.241**	-.145*	
<i>M</i>	2.76	2.20	3.22	6.08	1.20
<i>SD</i>	0.97	0.90	0.88	1.02	0.67

Note: * $p < .05$, ** $p < .01$

Mediation analysis. To determine if the strength of individuals' identification with the recovery group mediates the relationship between self-stigma on experience of negative emotion, a subsequent mediation analysis was conducted (Hayes & Preacher, 2010), and using the bootstrapped bias-corrected 95% confidence intervals of 5,000 bootstrapped samples (Preacher & Hayes, 2004). Figure 1 reveals the results of this mediation analysis.

There was a significant indirect effect of Self-Stigma on Negative Emotion through Identification, $ab = 0.026$, BCa CI [0.002, 0.077]. In other words, increased self-stigma predicted weaker group identification, which predicted stronger experiences of negative emotion. Moreover, Social Identification as a mediator accounted for almost 13% of the total effect, $P_M = 0.127$.



*Figure 1. Social identification mediates the relationship between self-stigma and negative emotion. Notes: a = the association between the IV and the mediator; b = the relationship between the mediator and the DV; c = the relationship between the IV and the DV, or the total effect; c' = the effect of the IV on the DV, controlling for the mediator; * $p < .05$, ** $p < .01$*

Discussion

The aims of the present study were to assess the mechanisms through which online social networks support recovery outcomes for alcohol users. Both hypotheses, H1) that self-

stigma among members of an online recovery network would be negatively associated with self-efficacy and psychological well-being; and H2) that identification with the recovery community would mediate the negative effects of self-stigma for alcohol users in an online context, were partially supported by the results of the current study.

Our results show that self-stigma was positively correlated with negative emotion. This finding is not surprising, as much research has established that self-stigma can diminish an individual's emotional wellbeing (Livingstone & Boyd, 2010). Given that our self-stigma measure includes the use of first person singular pronouns (in addition to the stigma dictionary), this finding is consistent with the literature showing that self-focus, as captured by the use of first person singular pronouns, represents a marker of depression (Edwards & Holtzman, 2017).

An interesting result was the lack of significance in the negative correlation between self-stigma and positive emotion. This finding suggests that while high levels of self-stigma may compromise individuals' emotional wellbeing, the reverse relationship is not true (suggesting that positive and negative emotions variables may capture different layers of affect which is not an unidimensional construct). In other words, individuals with low levels of self-stigma do not necessarily experience better psychological well-being, or that the relationship is mediated by other factors such as hope and social identity.

We expected that identification with the recovery community would mediate the negative effects of self-stigma on self-efficacy and psychological well-being for alcohol users (H2). We found that social identification was negatively and moderately correlated to both self-stigma, and negative emotion. Mediation analysis thus enabled a better understanding of the indirect effect of social identification on the relation between self-stigma and psychological well-being. In line with our hypothesis, we found evidence that the negative impact of self-stigma on psychological well-being was mediated by social identification with

the online recovery group. This finding is consistent with the view that social identification has a positive impact on psychological well-being because it serves as a psychological basis for individuals to achieve long-term identity change and equips individuals with adaptive coping behaviours and social support and guidance that enable them to manage the negative effects of self-stigma (Albery & Frings, 2016; Best et al., 2017; Bliuc et al., 2017; Chou et al., 2013, Frings & Albery, 2015). However, the results of our analysis have paradoxically linked social identification to both psychological well-being and lesser self-efficacy. One possible explanation for this finding considers the content of the recovery identity in this particular case. Given that data was extracted from a forum designed for members to reflect on their recovery journeys, it is possible that the group recovery identity incorporated aspects or stages where decreased self-efficacy was present. As demonstrated in prior research on student identities and risk-taking behaviours, this type of social identity content could then explain detrimental health outcomes (Tarrant & Butler, 2011).

We also found that self-stigma and self-efficacy were positively associated. This is an unexpected finding which may suggest a more complex relationship between these variables. One possible explanation for this finding may be related to the development of self-stigma in individuals; although an individual has perceived, concurred with, and internalised stigma, other social factors (e.g. enacted stigma) may exacerbate the negative effects of self-stigma on behaviour (Chan & Mak, 2015; Corrigan et al., 2012).

In the context of our research, we assumed that the salient social identity of participants on the forum is a 'recovery social identity' as captured by the use of first person plural pronouns and affiliation words. While the use first person plural pronouns should reflect a social identification which is inclusive of identification with fellow forum members, in our study, there is no definitive way of establishing that in each of the instances of use, these pronouns were used in relation to a recovery social identity. This observation applies to

different degrees to most measures based on word use and more generally to all research using computerised linguistic approaches. The existing studies comparing words usage scores with scores based on psychometric tests confirm the reliability of measures based on LIWC categories (e.g., Schwartz, Eichstaedt, Kern, et al., 2013). However, future research could further contribute to this body of research, by directly testing correlations the LIWC categories used to capture social identification and standard (self-reported) social identification measures used by social psychologists.

In demonstrating patterns which have previously been observed with samples such as those diagnosed with schizophrenia, these findings tentatively generalise to samples of more stigmatised individuals. In doing so, the outcome of the present study points to the practical value of medical professionals and policy makers taking steps to encourage patients' positive recovery identities, to capitalise on the capacity for these group affiliations to provide opportunities to accumulate recovery capital to buffer the adverse health outcomes associated with self-stigma.

Conclusions

The present research provides empirical support for the argument that online recovery networks should be considered a valuable resource, to supplement or even replace standard therapeutic approaches in the support of sustained recovery from addictive behaviours such as substance abuse. It endorses the argument that online recovery groups can help their members have a more positive recovery experience by contributing to reduce internalised stigma and negative emotions (see also Best et al., 2018; Bliuc et al., 2017). Moreover, the present study offers a novel methodological approach to assess self-stigma, which once validated, could provide a less intrusive, yet more accurate means to capture this complex construct.

References

- Albery, I. P., & Frings, D. (2016). Developing the social identity model of cessation maintenance: theory, evidence and implications. In *Addiction, Behavioral Change and Social Identity* (pp. 128-148). Routledge.
- Australian Human Rights Commission. (2013). Background paper: Human rights and cyberspace. Retrieved from https://www.humanrights.gov.au/sites/default/files/document/publication/human_rights_cyberspace.pdf
- Bathish, R., Best, D., Savic, M., Beckwith, M., Mackenzie, J., & Lubman, D. I. (2017). "Is it me or should my friends take the credit?" the role of social networks and social identity in recovery from addiction. *Journal of Applied Social Psychology, 47*(1), 35-46. doi:10.1111/jasp.12420
- Beckwith, M., Best, D., Dingle, G., Perryman, C., & Lubman, D. (2015). Predictors of flexibility in social identity among people entering a therapeutic community for substance abuse. *Alcoholism Treatment Quarterly, 33*(1), 93-104. doi:10.1080/07347324.2015.982465
- Best, D., Beckwith, M., Haslam, C., Alexander Haslam, S., Jetten, J., Mawson, E., & Lubman, D. I. (2016). Overcoming alcohol and other drug addiction as a process of social identity transition: The social identity model of recovery (SIMOR). *Addiction Research & Theory, 24*(2), 111-123. doi:10.3109/16066359.2015.1075980
- Best, D., Bliuc, A.-M., Iqbal, M., Upton, K., & Hodgkins, S. (2018). Mapping social identity change in online networks of addiction recovery. *Addiction Research & Theory, 1*-11. doi: 10.1080/16066359.2017.1347258

- Best, D., & Buckingham, S. A. (2016). Addiction, behavioural change and social identity. *Addiction, Behavioral Change and Social Identity: The path to resilience and recovery*, 196. doi: 10.4324/9781315678207
- Best, D., Irving, J., Collinson, B., Andersson, C., & Edwards, M. (2017). Recovery networks and community connections: Identifying connection needs and community linkage opportunities in early recovery populations. *Alcoholism Treatment Quarterly*, 35(1), 2-15. doi:10.1080/07347324.2016.1256718
- Bliuc, A.-M., Best, D., Iqbal, M., & Upton, K. (2017). Building addiction recovery capital through online participation in a recovery community. *Social Science & Medicine*. doi: 10.1016/j.socscimed.2017.09.050
- Bliuc, A.-M., Best, D., Beckwith, M., & Iqbal, M. (2017). Online support communities in addiction recovery: Capturing social interaction and identity change through analyses of online communication. In S. A. Buckingham & D. Best (Eds.), *Addiction, behavioural change and social identity: the path to resilience and recovery*. Abingdon, Oxon New York: NY Routledge.
- Boyd, R. L., Wilson, S. R., Pennebaker, J. W., Kosinski, M., Stillwell, D. J., & Mihalcea, R. (2015). *Values in words: Using language to evaluate and understand personal values*. Paper presented at the ICWSM.
- Buckingham, S. A., Frings, D., & Albery, I. P. (2013). Group membership and social identity in addiction recovery. *Psychology of Addictive Behaviors*, 27(4), 1132.
- Chaffey, D. (2017). Global social media research summary 2017. Retrieved from <http://www.smartinsights.com/social-media-marketing/social-media-strategy/new-global-social-media-research/>
- Chan, K. K., & Mak, W. W. (2015). Attentional bias associated with habitual self-stigma in people with mental illness. *PloS one*, 10(7), e0125545.

- Cheung, C. M., Chiu, P.-Y., & Lee, M. K. (2011). Online social networks: Why do students use facebook? *Computers in Human Behavior*, 27(4), 1337-1343.
- Chou, C.-C., Robb, J. L., Clay, M. C., & Chronister, J. A. (2013). Social support as a mediator between internalized stigma and coping behaviors of individuals with substance abuse issues. *Rehabilitation Research, Policy, and Education*, 27(2), 104-107. doi:10.1891/2168-6653.27.2.104
- Chung, J. E. (2013). Social interaction in online support groups: Preference for online social interaction over offline social interaction. *Computers in Human Behavior*, 29(4), 1408-1414. doi:10.1016/j.chb.2013.01.01
- Cloud, W. and Granfield, R. (2004). The social process of exiting addiction: A life course perspective. *Nordic Studies on Alcohol and Drugs*, 44: 185–202.
- Cloud, W., & Granfield, R. (2008). Conceptualizing recovery capital: Expansion of a theoretical construct. *Substance Use & Misuse*, 43(12-13), 1971-1986. doi:10.1080/10826080802289762
- Corrigan, P. W., Kosyluk, K. A., & Rüsch, N. (2013). Reducing self-stigma by coming out proud. *American Journal of Public Health*, 103(5), 794-800. doi:10.2105/AJPH.2012.301037
- Corrigan, P. W., Rafacz, J., & Rüsch, N. (2011). Examining a progressive model of self-stigma and its impact on people with serious mental illness. *Psychiatry Research*, 189(3), 339-343. doi:10.1016/j.psychres.2011.05.024
- Corrigan, P. W., & Rao, D. (2012). On the self-stigma of mental illness: Stages, disclosure, and strategies for change. *The Canadian Journal of Psychiatry*, 57(8), 464-469. doi:10.1177/070674371205700804

- Corrigan, P. W., Watson, A. C., & Barr, L. (2006). The self–stigma of mental illness: Implications for self–esteem and self–efficacy. *Journal of Social and Clinical Psychology, 25*(8), 875-884. doi:10.1521/jscp.2006.25.8.875
- Crabtree, J. W., Haslam, S. A., Postmes, T., & Haslam, C. (2010). Mental health support groups, stigma, and self- esteem: Positive and negative implications of group identification. *Journal of Social Issues, 66*(3), 553-569.
- Frings, D., & Albery, I. P. (2015). The social identity model of cessation maintenance: Formulation and initial evidence. *Addictive Behaviors, 44*, 35-42. doi: 0.1016/j.addbeh.2014.10.023
- Glass, J. E., Mowbray, O. P., Link, B. G., Kristjansson, S. D., & Bucholz, K. K. (2013). Alcohol stigma and persistence of alcohol and other psychiatric disorders: A modified labeling theory approach. *Drug and Alcohol Dependence, 133*(2), 685-692. doi:10.1016/j.drugalcdep.2013.08.016
- Griffiths, K. M., Carron-Arthur, B., Parsons, A., & Reid, R. (2014). Effectiveness of programs for reducing the stigma associated with mental disorders. A meta-analysis of randomized controlled trials. *World Psychiatry, 13*(2), 161-175. doi:10.1002/wps.20129
- Groshkova, T., Best, D., & White, W. (2013). The assessment of recovery capital: Properties and psychometrics of a measure of addiction recovery strengths. *Drug and Alcohol Review, 32*(2), 187-194. doi:10.1111/j.1465-3362.2012.00489.x
- Haslam, S. A., O'Brien, A., Jetten, J., Vormedal, K., & Penna, S. (2005). Taking the strain: Social identity, social support, and the experience of stress. *British Journal of Social Psychology, 44*(3), 355-370.

- Hasler, L., Ruthven, I., & Buchanan, S. (2014). Using internet groups in situations of information poverty: Topics and information needs. *Journal of the Association for Information Science & Technology*, 65(1), 25-36. doi:10.1002/asi.22962
- Hastings, A., McNamara, N., Allan, J., & Marriott, M. (2016). The importance of social identities in the management of and recovery from 'Diabulimia': A qualitative exploration. *Addictive Behaviors Reports*, 4, 78-86. doi: 10.1016/j.abrep.2016.10.003
- Hayes, A. F., & Preacher, K. J. (2010). Quantifying and testing indirect effects in simple mediation models when the constituent paths are nonlinear. *Multivariate Behavioral Research*, 45(4), 627-660. doi: 10.1080/00273171.2010.498290
- Hennessy, E. A. (2017). Recovery capital: A systematic review of the literature. *Addiction Research & Theory*, 1-12. doi:10.1080/16066359.2017.1297990
- Hobbs, W. R., Burke, M., Christakis, N. A., & Fowler, J. H. (2016). Online social integration is associated with reduced mortality risk. *Proceedings of the National Academy of Sciences*, 113(46), 12980-12984. doi:10.1073/pnas.1605554113
- Edwards, T., & Holtzman, N. S. (2017). A meta-analysis of correlations between depression and first person singular pronoun use. *Journal of Research in Personality*, 68, 63-68. doi: 10.1016/j.jrp.2017.02.005
- Jetten, J., Haslam, C., & Alexander, S. H. (Eds.). (2012). *The social cure: Identity, health and well-being*. Psychology Press.
- Jetten, J., Haslam, C., Haslam, S. A., Dingle, G., & Jones, J. M. (2014). How groups affect our health and well-being: The path from theory to policy. *Social Issues and Policy Review*, 8(1), 103-130. doi:10.1111/sipr.12003
- Jetten, J., Schmitt, M. T., Branscombe, N. R., Garza, A. A., & Mewse, A. J. (2011). Group commitment in the face of discrimination: The role of legitimacy

- appraisals. *European Journal of Social Psychology*, 41(1), 116-126. doi: 10.1002/ejsp.743
- Kacewicz, E., Pennebaker, J. W., Davis, M., Jeon, M., & Graesser, A. C. (2014). Pronoun use reflects standings in social hierarchies. *Journal of Language and Social Psychology*, 33(2), 125-143. doi:10.1177/0261927x13502654
- Kelly, J. F. (2017). Is alcoholics anonymous religious, spiritual, neither? Findings from 25 years of mechanisms of behavior change research. *Addiction*, 112(6), 929-936. doi:10.1111/add.13590
- Kelly, J. F., Magill, M., & Stout, R. L. (2009). How do people recover from alcohol dependence? A systematic review of the research on mechanisms of behavior change in alcoholics anonymous. *Addiction Research & Theory*, 17(3), 236-259.
- Kemp, S. (2017). Digital in 2017: Global overview. Retrieved from <https://wearesocial.com/special-reports/digital-in-2017-global-overview>
- Kulesza, M., Ramsey, S., Brown, R., & Larimer, M. (2014). Stigma among individuals with substance use disorders: Does it predict substance use, and does it diminish with treatment? *Journal of Addictive Behaviors, Therapy & Rehabilitation*, 3(1), 1000115. doi:10.4172/2324-9005.1000115
- Lawlor, A., & Kirakowski, J. (2014). Online support groups for mental health: A space for challenging self-stigma or a means of social avoidance? *Computers in Human Behavior*, 32, 152-161. doi: 10.1016/j.chb.2013.11.015
- Link, B. G., Struening, E. L., Neese-Todd, S., Asmussen, S., & Phelan, J. C. (2001). Stigma as a barrier to recovery: The consequences of stigma for the self-esteem of people with mental illnesses. *Psychiatric services*, 52(12), 1621-1626.

- Livingston, J. D., & Boyd, J. E. (2010). Correlates and consequences of internalized stigma for people living with mental illness: A systematic review and meta-analysis. *Social Science & Medicine*, *71*(12), 2150-2161. doi: 10.1016/j.socscimed.2010.09.030
- Luoma, J. B., Nobles, R. H., Drake, C. E., Hayes, S. C., O'Hair, A., Fletcher, L., & Kohlenberg, B. S. (2013). Self-stigma in substance abuse: Development of a new measure. *Journal of Psychopathology and Behavioral Assessment*, *35*(2), 223-234. doi:10.1007/s10862-012-9323-4
- Luoma, J. B., Twohig, M. P., Waltz, T., Hayes, S. C., Roget, N., Padilla, M., & Fisher, G. (2007). An investigation of stigma in individuals receiving treatment for substance abuse. *Addictive Behaviors*, *32*(7), 1331-1346. doi:10.1016/j.addbeh.2006.09.008
- Mawson, E., Best, D., Beckwith, M., Dingle, G., & Lubman, D. (2015). Social identity, social networks and recovery capital in emerging adulthood: A pilot study. *Substance abuse treatment, prevention, and policy*, *10*(1), 45. doi:10.1186/s13011-015-0041-2
- Mehl, M. R., Robbins, M. L., & Holleran, S. E. (2012). How taking a word for a word can be problematic: Context-dependent linguistic markers of extraversion and neuroticism. *Journal of Methods and Measurement in the Social Sciences*, *3*(2), 30-50.
- Oh, H. J., Ozkaya, E., & LaRose, R. (2014). How does online social networking enhance life satisfaction? The relationships among online supportive interaction, affect, perceived social support, sense of community, and life satisfaction. *Computers in Human Behavior*, *30*, 69-78.
- Ozbay, F., Johnson, D. C., Dimoulas, E., Morgan, C. A., Charney, D., & Southwick, S. (2007). Social support and resilience to stress: From neurobiology to clinical practice. *Psychiatry (Edgmont)*, *4*(5), 35-40.
- Pan, W., Feng, B., & Skye Wingate, V. (2017). What you say is what you get: How self-disclosure in support seeking affects language use in support provision in online

- support forums. *Journal of Language and Social Psychology*, 0261927X17706983.
doi:10.1177/0261927X17706983
- Pennebaker, J. W., Boyd, R. L., Jordan, K., & Blackburn, K. (2015). *The development and psychometric properties of liwc2015*. Retrieved from
- Preacher, K. J., & Hayes, A. F. (2004). Spss and sas procedures for estimating indirect effects in simple mediation models. *Behavior research methods*, 36(4), 717-731.
- Rains, S. A. (2014). The implications of stigma and anonymity for self-disclosure in health blogs. *Health Communication*, 29(1), 23-31. doi:10.1080/10410236.2012.714861
- Savic, M., Best, D., Rodda, S., & Lubman, D. I. (2013). Exploring the focus and experiences of smartphone applications for addiction recovery. *Journal of Addictive Diseases*, 32(3), 310-319.
- Schwartz, H. A., Eichstaedt, J. C., Kern, M. L., Dziurzynski, L., Ramones, S. M., Agrawal, M., ... & Ungar, L. H. (2013). Personality, gender, and age in the language of social media: The open-vocabulary approach. *PloS one*, 8(9), e73791.
- Schomerus, G., Corrigan, P. W., Klauer, T., Kuwert, P., Freyberger, H. J., & Lucht, M. (2011). Self-stigma in alcohol dependence: Consequences for drinking-refusal self-efficacy. *Drug and Alcohol Dependence*, 114(1), 12-17.
doi:10.1016/j.drugalcdep.2010.08.013
- Tajfel, H., & Turner, J. C. (1979). *An integrative theory of intergroup conflict* (Vol. 33).
- Tarrant, M., & Butler, K. (2011). Effects of self- categorization on orientation towards health. *British Journal of Social Psychology*, 50(1), 121-139.
- Tausczik, Y. R., & Pennebaker, J. W. (2010). The psychological meaning of words: Liwc and computerized text analysis methods. *Journal of Language and Social Psychology*, 29(1), 24-54. doi:10.1177/0261927x09351676

- Thomas, N., McLeod, B., Jones, N., & Abbott, J.-A. (2015). Developing internet interventions to target the individual impact of stigma in health conditions. *Internet Interventions*, 2(3), 351-358. doi:10.1016/j.invent.2015.01.003
- Umberson, D., & Montez, J. K. (2010). Social relationships and health: A flashpoint for health policy. *Journal of Health and Social Behavior*, 51(1_suppl), S54-S66. doi:10.1177/0022146510383501
- Vauth, R., Kleim, B., Wirtz, M., & Corrigan, P. W. (2007). Self-efficacy and empowerment as outcomes of self-stigmatizing and coping in schizophrenia. *Psychiatry Research*, 150(1), 71-80.
- Watson, A. C., Corrigan, P., Larson, J. E., & Sells, M. (2007). Self-stigma in people with mental illness. *Schizophrenia Bulletin*, 33(6), 1312-1318. doi:10.1093/schbul/sbl076
- Westerman, D., Spence, P. R., & Van Der Heide, B. (2014). Social media as information source: Recency of updates and credibility of information. *Journal of Computer-Mediated Communication*, 19(2), 171-183. doi:10.1111/jcc4.12041
- Wilson, G. B., Kaner, E. F., Crosland, A., Ling, J., McCabe, K., & Haighton, C. A. (2013). A qualitative study of alcohol, health and identities among uk adults in later life. *PloS one*, 8(8), e71792.
- Wong, C., Harrison, C., Britt, H., & Henderson, J. (2014). Patient use of the internet for health information. *Australian family physician*, 43(12), 875.
- Wood, L., & Irons, C. (2017). *Experienced stigma and its impacts in psychosis: The role of social rank and external shame*.
- World Health Organisation (2001) *The World Health Report. Mental Health: new understandings, new hope*. Geneva.
- Yanos, P. T., West, M. L., Gonzales, L., Smith, S. M., Roe, D., & Lysaker, P. H. (2012). Change in internalized stigma and social functioning among persons diagnosed with

severe mental illness. *Psychiatry Research*, 200(2–3), 1032-1034.

doi:10.1016/j.psychres.2012.06.01