Rejection and Dating-app Experiences in Those with a History of Self-harm

Rosanne Cawley

Supervised by:

Dr Peter Taylor (University of Manchester)

Dr Eleanor Pontin (University of Liverpool)

4th June 2018

Submitted in partial fulfilment of the Doctorate in Clinical Psychology

University of Liverpool

Acknowledgements

I would firstly like to thank my primary supervisor Dr Peter Taylor. The constant encouragement, guidance and time you have given to my project and to my development throughout the course has been phenomenal, you have made this process a much easier one. I would also like to thank Dr Ellie Pontin who has offered a great deal of encouragement and kindness throughout the past three years. I hope to work with both Ellie and Peter again in the future. I must also mention my research partner Dr Kate Sheehy who after agreeing to pair up with me very early on into the course has been an excellent partner and friend throughout. Thanks also to Jade Touhey and Dr James Reilly for their support in reviewing differing aspects of the work. And a huge thank you to all of those who took part, without their open and brave feedback there would have been no research project at all.

Finally, I would like to thank my wonderful family and friends, there are too many special people to name you all, but you have each played such an important role while I have completed my doctorate. To my lovely mum Sue who is ever positive, a wonderful motivator and an excellent listener you always help me to feel better and keep going. To my hilarious Dad Steve, thank you for inspiring me, helping me to steady the marker and to have self-belief that I can do whatever I put my mind to. To Joe and Rach, thank you for letting me talk about psychology again and again, it must make a change to the days of piano practice. And to all my close friends and James, thanks for helping me unwind, have a laugh and remember not to take life too seriously.

Contents

Thesis Overview ***1***

References *3*

Chapter 1: Systematic Literature Review ***7***

What is the relationship between rejection and self-harm or suicidality in adulthood? ***7***

Abstract ***8***

Introduction ***9***

Method ***13***

Pre-registration of Review Protocol 13

Study Eligibility 13

Search Strategy 13

Risk of Bias 14

Data Extraction 14

Data Analysis 14

Results ***16***

Study Characteristics 17

Risk of Bias 17

Perceived Parental Rejection 28

Gender Identity 29

Sexual Orientation 30

Rejection Sensitivity 32

Discussion ***34***

References *38*

Chapter 2: Empirical Paper ***53***

Does dating-app use increase levels of rejection and shame in a self-harming population?

Abstract ***54***

Introduction ***55***

Method ***59***

Design 59

Participants 59

Measures 59

Procedure 61

Data Analysis 63
Results**...64**
Data Screening 64
Participant Characteristics..65
Differences Between Dating-app Users and Non Dating-app Users 67
Dating App Use and Outcomes at Follow-Up 67
Associations Between App-use Experience and NSSI 69
Discussion**..71**
References...75
Appendices**...86**
Appendix A: Journal of Affective Disorders Author Guidelines.......................................86
Appendix B: Review Protocol..90
Appendix C: Email to Authors...93
Appendix D: Risk of Bias Tool...94
Appendix E: Empirical Paper Questionnaire Measures..96
Appendix F: Consultation on Experience of Dating-Apps Questionnaire........................104
Appendix G: HRA Approval..107
Appendix H: REC Approval 108
Appendix I: University Sponsorship...112
Appendix J: Study Advertisement..113
Appendix K: Participant Information Sheet..114
Appendix L: Study Consent Form…………………………………………………..118
Appendix M: Normality of Data 119
Appendix N: Exploratory Correlational Analysis...121
Appendix O: Experience of Dating-Apps Questionnaire Correlations.............................122

Word Count for Appendices: 8,093

List of Tables

Chapter 1: Literature Review

Table 1: Characteristics of Included Studies……………………………………………….19

Table 2: Risk of Bias Assessment………………………………………………………….22

Table 3: Outcome data……………………………………………………………………..24

Chapter 2: Empirical paper

Table 1: Demographics……………………………………………………………………66

Table 2: Descriptive Statistics Between Groups……………………………………….....67

Table 3: Multiple Regression………………………………………...……………69

Table 4: Correlational Analysis……………………………………………………………69

List of Figures

Chapter 1: Literature Review

Figure 1: PRISMA Diagram……………………………………………………………….16

Chapter 2: Empirical paper

Figure 1: Flow of respondents through study……………………………………………63

Word Count for Table and Figure: 2,021

Total Word Count: 21,633 (excluding references 6,303)

Thesis Overview

The national and international concern about self-harm, both with and without suicidal ideation, has risen in recent times (Daine et al., 2013; Hawton et al., 2012; Muehlenkamp et al., 2012; Perry et al., 2012). Understanding the motivations and mechanisms for self-harm is important to establish clinical implications (Edmondson et al., 2016; Nock et al., 2009; Nock and Prinstein, 2005; Taylor et al., 2017). One aspect of experience less researched in the evidence base is the interpersonal relationships of those who self-harm. Research has indicated that interpersonal relationships are important to offer support and connection (Hilt et al., 2008; Turner et al., 2016), yet interpersonal difficulties can also often influence and contribute to self-harm (Adrian et al., 2011; Heath et al., 2009; Hilt et al., 2008). The interpersonal experience of rejection is associated with other challenging emotions of shame (Gausel et al., 2012; Thomas, 1997), stigma (Adelson et al., 2016; Kantor et al., 2017) and victimisation (Arseneault et al., 2010; Schuster, 2001; Willoughby et al., 2010) which are all associated with increased risk of self-harm (Hay and Meldrum, 2010; King et al., 2008; Schoenleber et al., 2014).

To the author's knowledge there is no current systematic review investigating the association between interpersonal rejection and self-harm. To address this gap in the literature, chapter one questions what evidence exists that assesses the relationship between rejection and self-harm in adulthood. Several rejection and self-harm measures were included from both clinical and non-clinical adult population studies. The methodologies across the included studies both directly and indirectly measured this relationship through mediation, moderation or within a model constituting other variables. Eighteen studies were identified and due to diversity in the measures the findings were synthesised narratively.

Another form of interpersonal experience is the relatively recent phenomenon of mobile dating-applications (dating-apps) (Ward, 2017). Dating-apps can promote instantaneous and multiple relationships, and critics question the potential they have to create instability in the way relationships are formed (Hobbs et al., 2017; Wu and Ward, 2018). Research into online-dating websites has shown an association between dating website use and increased experiences of rejection (Pizzato et al., 2011; Tom Tong and Walther, 2011). The second chapter therefore seeks to address whether there is an association between dating-app use and self-harm, as well as to explore whether the experience of dating-app use, including potential experiences of rejection and shame are associated with self-harm. The study utilised an online survey design and specified non-suicidal self-injury (NSSI) as it is an experience seen commonly across both clinical and non-clinical populations (Swannell et al., 2014) in the hope of recruiting a widely representative sample.

This thesis was developed alongside a wider research trial looking at interpersonal resources in self-harm (the OSIRIS study), resulting in a joint-recruitment strategy alongside one other trainee for the empirical study. Outside of recruitment the conception, design, analysis and write-up of the work remained independent to the author. Appendices are limited to the word count but do include author guidelines for the Journal of Affective Disorders, and this thesis has been formatted in-line with their requirements. The quality assessment tool for the systematic review is included, alongside questionnaire measures used in the empirical study, participant information sheet and consent form, additional data, and University and NHS study approval.

References

Adelson, S.L., Stroeh, O.M., Ng, Y.K.W., 2016. Development and Mental Health of Lesbian, Gay, Bisexual, or Transgender Youth in Pediatric Practice. Pediatr. Clin. North Am. 63, 971–983. https://doi.org/10.1016/j.pcl.2016.07.002

Adrian, M., Zeman, J., Erdley, C., Lisa, L., Sim, L., 2011. Emotional dysregulation and interpersonal difficulties as risk factors for nonsuicidal self-injury in adolescent girls. J. Abnorm. Child Psychol. 39, 389–400.

Arseneault, L., Bowes, L., Shakoor, S., 2010. Bullying victimisation in youths and mental health problems:“Much ado about nothing”? Psychol. Med. 40, 717–729.

Daine, K., Hawton, K., Singaravelu, V., Stewart, A., Simkin, S., Montgomery, P., 2013. The power of the web: a systematic review of studies of the influence of the internet on self-harm and suicide in young people. PLoS One. 8, e77555.

Edmondson, A.J., Brennan, C.A., House, A.O., 2016. Non-suicidal reasons for self-harm: A systematic review of self-reported accounts. J. Affect. Disord. 191, 109–117. https://doi.org/10.1016/j.jad.2015.11.043

Gausel, N., Leach, C.W., Vignoles, V.L., Brown, R., 2012. Defend or repair? Explaining responses to in-group moral failure by disentangling feelings of shame, rejection, and inferiority. J. Pers. Soc. Psychol. 102, 941.

Hawton, K., Saunders, K.E.A., O’Connor, R.C., 2012. Self-harm and suicide in adolescents. Lancet. 379, 2373–2382. https://doi.org/10.1016/S0140-6736(12)60322-5

Hay, C., Meldrum, R., 2010. Bullying victimisation and adolescent self-harm: Testing hypotheses from general strain theory. J. Youth Adolesc. 39, 446–459.

Heath, N.L., Ross, S., Toste, J.R., Charlebois, A., Nedecheva, T., 2009. Retrospective analysis of social factors and nonsuicidal self-injury among young adults. Can. J. Behav. Sci. 41, 180–186. https://doi.org/10.1037/a0015732

Hilt, L.M., Nock, M.K., Lloyd-Richardson, E.E., Prinstein, M.J., 2008. Longitudinal study of nonsuicidal self-injury among young adolescents: Rates, correlates, and preliminary test of an interpersonal model. J. Early Adolesc. 28, 455–469.

Hobbs, M., Owen, S., Gerber, L., 2017. Liquid love? Dating apps, sex, relationships and the digital transformation of intimacy. J. Sociol. 53, 271–284.

Kantor, V., Knefel, M., Lueger-Schuster, B., 2017. Perceived barriers and facilitators of mental health service utilization in adult trauma survivors: A systematic review. Clin. Psychol. Rev. 52, 52–68. https://doi.org/10.1016/j.cpr.2016.12.001

King, M., Semlyen, J., Tai, S.S., Killaspy, H., Osborn, D., Popelyuk, D., Nazareth, I., 2008. A systematic review of mental disorder, suicide, and deliberate self harm in lesbian, gay and bisexual people. BMC Psychiatry. 8, 70.

Muehlenkamp, J.J., Claes, L., Havertape, L., Plener, P.L., 2012. International prevalence of adolescent non-suicidal self-injury and deliberate self-harm. Child Adolesc. Psychiatry Ment. Health. 6, 1–9. https://doi.org/10.1186/1753-2000-6-10

Nock, M.K., Prinstein, M.J., 2005. Contextual features and behavioral functions of self-mutilation among adolescents. J. Abnorm. Psychol. 114, 140–146. https://doi.org/10.1037/0021-843X.114.1.140

Nock, M.K., Prinstein, M.J., Sterba, S.K., 2009. Revealing the form and function of self-injurious thoughts and behaviors: A real-time ecological assessment study among adolescents and young adults. J. Abnorm. Psychol. 118, 816.

Perry, I.J., Corcoran, P., Fitzgerald, A.P., Keeley, H.S., Reulbach, U., Arensman, E., 2012. The incidence and repetition of hospital-treated deliberate self harm: findings from the world's first national registry. PLoS One. 7, e31663.

Pizzato, L.A., Rej, T., Yacef, K., Koprinska, I., Kay, J., 2011. Finding someone you will like and who won't reject you, in: International Conference on User Modeling, Adaptation, and Personalization. Springer, pp. 269–280.

Schoenleber, M., Berenbaum, H., Motl, R., 2014. Shame-related functions of and motivations for self-injurious behavior. Personal. Disord. Theory, Res. Treat. 5, 204.

Schuster, B., 2001. Rejection and victimisation by peers. Peer Harass. Sch. plight vulnerable Vict. 290–309.

Swannell, S. V., Martin, G.E., Page, A., Hasking, P., St John, N.J., 2014. Prevalence of nonsuicidal self-injury in nonclinical samples: Systematic review, meta-analysis and meta-regression. Suicide Life-Threatening Behav. 44, 273–303. https://doi.org/10.1111/sltb.12070

Taylor, P.J., Jomar, K., Dhingra, K., Forrester, R., Shahmalak, U., Dickson, J.M., 2017. A meta-analysis of the prevalence of different functions of non-suicidal self-injury. J. Affect. Disord. 227, 759–769. https://doi.org/10.1016/j.jad.2017.11.073

Thomas, H.E., 1997. The shame response to rejection. Albanel Publishers Sewickley, PA.

Tom Tong, S., Walther, J.B., 2011. Just say "'no thanks'": Romantic rejection in computer-mediated communication. J. Soc. Pers. Relat. 28, 488–506.

Turner, B.J., Cobb, R.J., Gratz, K.L., Chapman, A.L., 2016. The Role of Interpersonal Conflict and Perceived Social Support in Nonsuicidal Self-Injury in Daily Life. J.

Abnorm. Psychol. 125, 588–598. https://doi.org/10.1037/abn0000141

Ward, J., 2017. What are you doing on Tinder? Impression management on a matchmaking mobile app. Inf. Commun. Soc. 20, 1644–1659. https://doi.org/10.1080/1369118X.2016.1252412

Willoughby, B.L.B., Doty, N.D., Malik, N.M., 2010. Victimisation, family rejection, and outcomes of gay, lesbian, and bisexual young people: The role of negative GLB identity. J. GLBT Fam. Stud. 6, 403–424.

Wu, S., Ward, J., 2018. The mediation of gay men's lives: A review on gay dating app studies. Sociol. Compass. 12, 1–10. https://doi.org/10.1111/soc4.12560.

Chapter 1: Systematic Literature Review

What is the relationship between rejection and self-harm or suicidality in adulthood?

Rosanne Cawley

Institute of Psychology, Health and Society, University of Liverpool

Correspondence Address:

The University of Liverpool

Institute of Psychology, Health and Society

The Whelan Building

Brownlow Hill

Liverpool

L69 3GB

Tel: 0151 774 5530

Email: Rosanne.cawley@liverpool.ac.uk

Word Count: 6,704 (1,673 in tables)

Note: Literature Review prepared for submission to the Journal of Affective Disorders- word limit: 8000 excluding tables, figures and references (author instructions and author contributions can be found in Appendix A).

Abstract

Background: Rejection is an adverse experience that may help explain the heightened risk of self-harm and suicide amongst many societal groups. The aim of this systematic review was to determine the relationship between rejection experiences and self-harm and suicidal ideation.

Methods: The databases PsychINFO, CINAHL, Medline and Web of Science were searched from inception until May 2017 using key search terms. Quantitative studies were included if they had: i) mean sample age over 18, ii) in the English language, iii) and had a measure of self-harm or suicidal behaviour and a measure of rejection. The results were synthesised narratively.

Results: Eighteen studies were identified for the review. Fifteen out of the eighteen studies found a significant positive association between rejection and self-harm. This association was identified within several marginalised groups known to be at risk of self-harm, including those from lesbian, gay or bisexual sexuality or those who identify as transgender. However, heterogeneity between the measures of self-harm, suicidal behaviour and rejection, as well as the lack of longitudinal analyses made it difficult to draw firm conclusions.

Conclusion: Perceived rejection may leave some individuals at risk of self-harm and might account for the elevated risk in marginalised societal groups. Interventions focused on modifying rejection experiences may help reduce the risk of self-harm in this population.

Keywords: rejection, self-harm, suicidal ideation, adult

Systematic Review Registration Number: CRD42017055355

Introduction

Suicide and self-harm are major health concerns with over 800,000 people worldwide dying by suicide annually (World Health Organization, 2014), with 6,639 recorded in the UK last year (Office for National Statistics, 2017). As suicide is one of the leading causes of death (Rudd et al., 2013) determining the risk factors associated has become a global health priority (World Health Organization, 2014). After suicidal ideation the strongest predictor of a completed suicide is self-harm frequency, both with or without suicidal intent (Bergen et al., 2012; Owens et al., 2014; Ribeiro et al., 2016). Therefore, self-harm and suicidal ideation are important risk factors for completed suicide (Beghi et al., 2013; Hawton et al., 2012; Muehlenkamp et al., 2012; Ribeiro et al., 2016) as well as being indicative of considerable distress (Laye-Gindhu and Schonert-Reichl, 2005; Williams and Hasking, 2010; Fox et al., 2015) and are therefore important targets for intervention in their own right.

Multiple societal groups have been identified as at elevated risk of self-harm, including lesbian, gay, bisexual, transsexual or questioning (LGBTQ) individuals (King et al., 2008; Liu and Mustanski, 2012; Marshall, 2016), those affiliated with alternative subcultures (Garland and Hodkinson, 2014; Hughes et al., 2018), those who hold a psychiatric diagnosis (Taylor et al., 2015) and those from ethnic minority groups (Crawford et al., 2005; Bhui et al., 2007; Gholamrezaei et al., 2017). One common experience shared by these minority groups is social rejection, often through the greater risk of experiences such as social exclusion, victimisation and stigma (Garland and Hodkinson, 2014; Karlsen and Nazroo, 2002; Meyer et al, 2003; Takács, 2006). Understanding the psychological mechanisms that leave these individuals vulnerable to self-harm may help support prevention and intervention efforts, such as identifying those most at risk and implementing tailored therapies. There is currently no existing review looking at the relationship between experiences of rejection and self-harm or suicidal ideation.

Self-harm, an intentional action is described as self-poisoning or self-injury, irrespective of the purpose of the act (National Institute for Health and Care Excellence [NICE], 2013). Common methods of self-harm include biting, cutting, scratching or burning the skin, overdosing on medication or drugs (Morgan et al., 2017), and inflicting injury to oneself through hitting or punching (Zetterqvist, 2017). There are risk factors associated with self-harm (Bergen et al., 2012; Ribeiro et al., 2016), one of which is social exclusion (Fliege et al., 2009).

Rejection can be defined as experiences of social exclusion directed explicitly at the person (Molden et al., 2009) differing it from thwarted belonging (Baumeister and Leary, 1995; Van Orden et al., 2012) or being ignored (Molden et al., 2009). This is because although rejection may result in similar psychological distress the other definitions do not carry the same sense of being actively pushed away. The experience of rejection is subjective for the person and the feeling of rejection is in how the event is perceived (Leary, 2015). Therefore, the term rejection characterises both the external event and the emotional experience. As human beings are social creatures (Bocknek, 2006; Cheung et al., 2004), rejection can be damaging when the exclusion is long-term (Maslow, 1943; Wright et al., 2000), when the attachment is important (Bowlby, 1969) or when the person is very sensitive to rejection (Downey and Feldman, 1996; Horney, 1937).

Why rejection may be associated with self-harm can be understood in evolutionary terms, as social inclusivity is key for survival (Silk et al., 2003). Experiences of rejection or feeling rejected are inherently aversive, as being a part of a social group is a core psychological need (Baumeister and Leary, 1995; Richman and Leary, 2009), deriving from evolutionary importance of belonging to a social group and being valued and accepted by others (Leary, 2001). Being socially excluded can result in a number of difficulties, one of which is loneliness (Koivumaa-Honkanen et al., 2001; Leary, 1990) which is then associated

with increased low mood, poorer problem-solving skills and heightened risk of suicidal behaviours (Hawton et al., 1999; Hirsch et al., 2012; Turvey et al., 2002). Another reason why rejection elevates risk is that the exclusion is perceived as a threat to safety and results in raised anxiety and physical pain (Macdonald and Leary, 2005). Self-harm may therefore emerge as a way to regulate or escape the pain of rejection for some individuals (Taylor et al., 2017). Being excluded also places relational devaluation on a person resulting in hurt feelings, shame and social pain (Leary, 2015; Leary et al., 1998) which is associated with depression and elevated risk of self-harm (Allen and Badcock, 2003). Self-harm may function to regulate the distressing feelings or to cut-off from aversive internal states (Edmondson, 2016; Taylor et al., 2017).

From an attachment theory perspective rejection from a caregiver may be particularly painful and impact in a lasting way on the attachment security of the individual, which again heightens the risk of self-harm and suicide (Bowlby, 1969; Heider et al., 2007; Palitsky et al., 2013). Persistent rejection during aversive early experiences may mean some individuals are termed *'rejection sensitive'* (Downey and Feldman, 1996; Romero-Canyas et al., 2010). Those with greater rejection sensitivity are more likely to experience anxiety, depression, loneliness, personality difficulties and interpersonal problems (Gao et al., 2017; Meehan et al., 2018), as well as being at higher risk of self-harm (De Rubeis et al., 2017). Aversive relational experiences can also be internalised into maladaptive schemas (Beck, 1979; Dozois and Rnic, 2015), and so repeated rejection may have a lasting impact on self-perceptions or self-esteem, which in turn may lead to self-harm (Forrester et al., 2017). Where experiences of rejection are internalised to form a self-attacking way of relating to oneself (Forrester et al., 2017; Taylor et al., 2017), self-harm may serve as a means of punishing oneself (Taylor et al., 2017). Feelings of shame are predictive of self-harm (Brown et al., 2010) and may also emerge as a concomitant of rejection. Self-harm may also act as a function to disassociate

from difficult negative emotions rooted in traumatic and aversive experiences (Edmondson et al., 2016; Swannell et al., 2008). Furthermore, as rejection can also signify a loss of social support it may also leave individuals with fewer alternative ways of coping with emotional pain so self-harming becomes more utilised (Nock and Mendes, 2008; Tatnell et al., 2014).

In a minority of cases where the function of self-harm is to influence or affect others (Nock and Prinstein, 2005; Taylor et al., 2017) rejection may trigger self-harm as a way of keeping important individuals close, or as a means of harming those who did the rejecting. Self-harm is positively associated with depression (Bentley et al., 2014) and may also elicit care and communicate need (Gratz, 2003; Allen and Badcock, 2003), especially where there is a desire to remain within the relationship (MacDonald et al., 2003). Although it must be noted that this function of self-harm is often highly reported in the literature but is far rarer seen clinically (Caicedo and Whitlock, 2009).

The aim of this study is to systematically review and synthesise the extant literature concerning the relationship between rejection and self-harm or suicidal ideation in adults. In particular, to evaluate the evidence that rejection is associated with the onset and maintenance of self-harm or suicidal ideation.

Method

Pre-registration of Review Protocol

The protocol was pre-registered on PROSPERO (CRD42017055355) in January 2017 (https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=55355). The protocol and details of any departures from its original format can be found in Appendix B.

Study Eligibility

The inclusion criteria in this review required studies to have: i) a mean sample age of 18 years or over, ii) English language, iii) quantitative research using cross-sectional, correlational, case-control, or prospective study design, iv) a measure of rejection and v) a measure of self-harm behaviour or ideation. The widely used definition of self-harm as an act of intentional self-injury encompassing both Non-Suicidal Self-Injury (NSSI) and suicidal behaviour (e.g. suicide attempts) was adopted in this review (NICE, 2013; Royal college of psychiatry, 2010). More indirect forms of self-injury such as excess drinking of alcohol, drug use, eating disorders or reckless driving were not classed as self-harm for the purposes of this review.

The studies excluded from this review were: qualitative research due to problems in synthesising qualitative and quantitative methodology (Boland et al., 2014), case studies, reviews, commentaries or discussion articles.

Search Strategy

The electronic databases PsycINFO, CINAHL, Medline and Web of Science were searched by the author from earliest date until May 2017, using the following search terms combined with Boolean operators: Self-harm* or self-injur* or self-mutilation or NSSI or DSH or suicid* AND “social acceptance” or rejection.

Initially two reviewers (RC, JT) independently screened all titles and abstracts, and any disagreements were arbitrated by a third reviewer (PT). In addition to the articles

identified through the search method, the author (RC) checked the reference lists and cited articles of all included studies. Furthermore, the authors of the included studies were then contacted to see whether there were any relevant published or unpublished papers that may fit the inclusion criteria (Appendix C). In a minority of cases authors were also contacted to request further data not published to include in the review.

Risk of Bias

To assess the risk of bias across the included studies, the methodological quality assessment tool for observational research, adapted from the Agency for Healthcare Research and Quality was used (AHRQ; Williams et al., 2010; Appendix D). This tool provides quality ratings of *'yes'*, *'no'*, *'partial'* or *'cannot tell'*. To address subjectivity, independent assessments of all papers included were undertaken by author RC and author EP, with author PT resolving any disagreement in quality ratings.

Data Extraction

Authors RC and KS independently extracted data relevant to the study question, using a data extraction spreadsheet, to ensure reliability, and uncertainties were resolved by author PT or via contact with the author themselves. Extracted information included: study design, participant characteristics, study measures and outcome data related to the relationship between rejection and self-harm/suicidal behaviours.

Data Analysis

Due to the wide variety of measures and definitions of rejection (seven different standardised measures and four study designed questionnaires) and the series of self-harm or suicidality measures (seven different standardised measures and four study designed questionnaires), aggregation of effect sizes would be limited by high heterogeneity and low

precision and so meta-analysis was not used. Therefore, the results were synthesised narratively.

Results

The search flow diagram is outlined in figure 1.

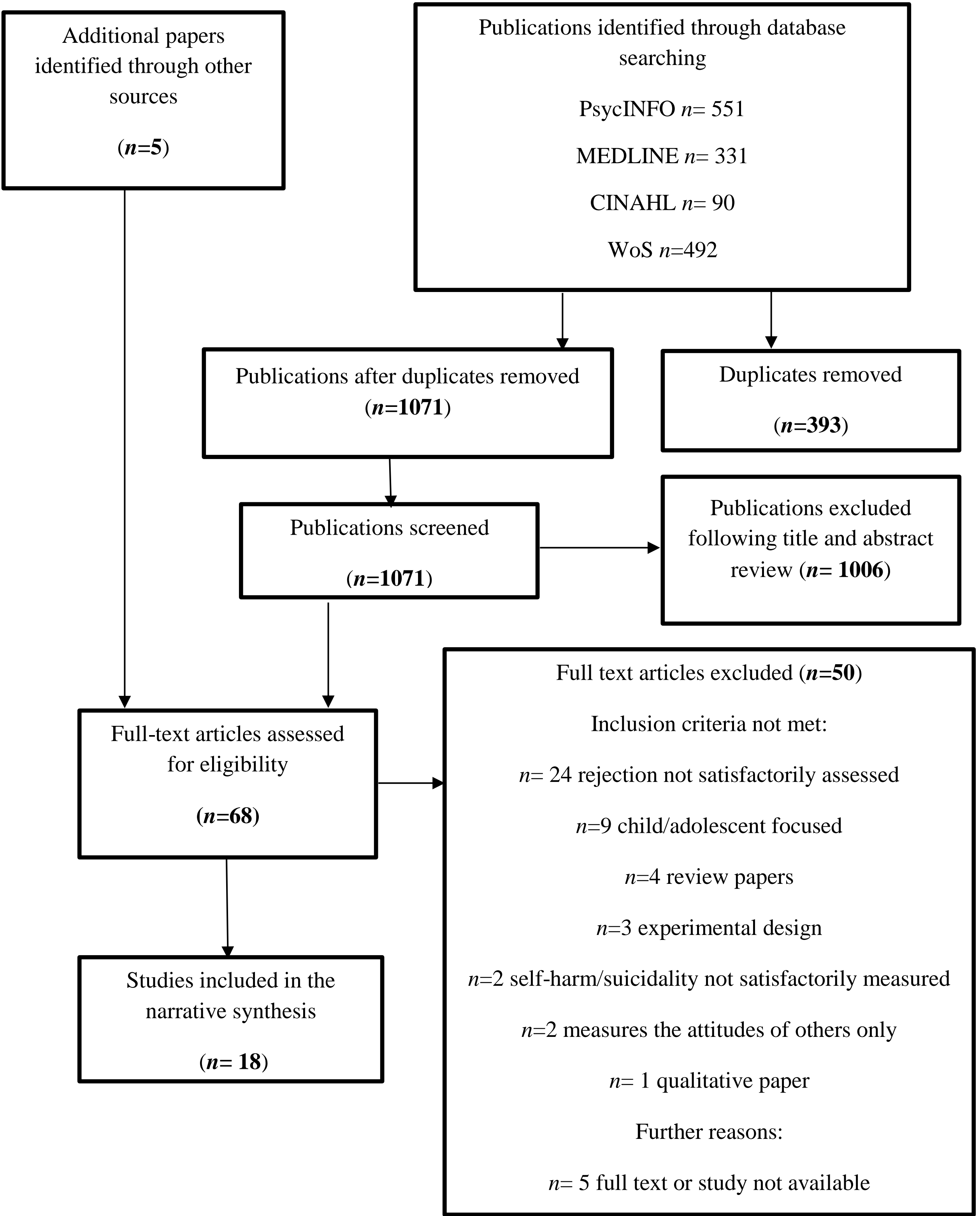


Figure 1. *PRISMA Diagram*

Study Characteristics

Following the literature searches and screening, *k*=18 eligible studies were identified as suitable for this review. Figure 1 outlines the details of the screening process. Table 1 details the study characteristics of the papers included in this review. Rejection experiences and self-harm behaviour or ideation were rarely the primary focus of the research papers, therefore only data and outcomes relevant to this review are reported.

Risk of Bias

Table 2 details the risk of bias assessment for each study. There were common methodological problems across the studies included in the review. None of the studies reported a power calculation for their sample size, the lack of sample size justification is particularly problematic for smaller sample studies (*k*=5) where analyses may have lacked power. In terms of recruitment strategy and participant characteristics, six of the studies solely recruited from a student sample, decreasing generalisability to other populations (i.e. those with lower socio-economic status or educational achievement). Due to the nature of the research many studies purposively targeted recruitment from support organisations for Lesbian Gay or Bisexual (LGB) or transgender rights (*k*=5), yet only one had a comparison group (Yadegarfard et al., 2014), making it difficult to determine if findings are specific to these populations or not. Across many of the studies (*k*=15) recruitment was facilitated by participants responding to adverts, which increases the risk of self-selection bias. However, the remaining three studies used national surveys or a consecutive cohort recruited from a service limiting this bias (Ehnvall et al., 2008; Klein and Golub, 2016; Testa et al., 2017). Studies also had an over-reliance on self-report measures, which may have helped encourage honest responses, but still does increase the risk of shared method bias. A further methodological problem was that many studies either did not report their missing data or reported large amounts of data missing (*k*=13), affecting the validity of findings.

When assessing the relationships between rejection and self-harm the literature indicates that this relationship is likely to be confounded by depression or mood difficulties (Hawton et al., 2013). Six of the studies did not control for this key confounding variable. Of those who did there were also other potential confounding constructs controlled for, including self-criticism (*k*=2), belongingness (*k*=2), hopelessness (*k*=1), victimisation (*k*=2), shame (*k*=1), substance misuse (*k*=2), sexual risk behaviour (*k*=2) and social support (*k*=4). A number of studies also utilised measures that did not have established psychometric properties and so lacked face validity and reliability in the measurement of rejection, self-harm or suicidal ideation. Nonetheless there were strengths across the studies: the majority of studies (*k*=12) had moderate to large sample sizes (>200), reducing difficulties with power. Across the studies participant characteristics were well described and details of recruitment strategies were helpful to understand how the researchers had reached and included those from marginalised groups. There was also consistency across the studies in the way included confounding variables were considered in terms of the key factors in experience that would likely impact the role of rejection and self-harm.

Table 1

Characteristics of Included Studies (n=18)

Author Year Country	Design	Sample Source	Sample Characteristics	Rejection Measure	Self-harm/Suicidality Measure
Baumkirchner (2009) USA	Cross-sectional	General population	N= 352 (88.4% female); Age M=23.86; Ethnicity= 86% White	Rejection Sensitivity Questionnaire (RSQ)	Deliberate Self-Harm Inventory (DSHI)
Campos, Besser & Blatt (2013) Portugal	Cross-sectional	General population	N= 200 (96 female); Age M=35.83, SD=11.62; Ethnicity not stated	The Inventory for accessing memories of parental rearing behaviour (EMBU)	Part of the Suicide Behaviour Questionnaire (SBQ-R) (thoughts and attempts of suicide)
Campos & Holden (2015) Portugal	Cross-sectional	General population	N= 203 (103 female); Age M=37.86, SD=11.68; Ethnicity not stated	EMBU	SBQ-R
Chesin & Jeglic (2016) USA	Cross-sectional	Student population	N= 118 (86% female); Age Mode =18; Ethnicity= 49% Hispanic	RSQ	Beck Scale for Suicidal Ideation (BSS)
Ehnvall et al., (2008) Australia	Cross-sectional	Clinical population	N= 343 (60.6% female); Age M=41.7, SD=13.1; Ethnicity not stated	Rejection sensitivity as rated by a psychiatrist	Previous suicide attempts
Hill & Pettit (2012) USA	Cross-sectional	Student population	N= 198 (59.6% female); Age M=21.28, SD=4.46; Ethnicity= White & Hispanic figures not stated	The Acceptance Rejection Scale	The Adult Suicide Ideation Questionnaire
Klein & Golub (2016) USA	Cross-sectional	National representative survey	N= 5612 (61% transfemale); Age M= 36.6, SD=13.11; Ethnicity= 77.5% White	Study designed scale	Previous suicide attempts

Author Year Country	Design	Sample Source	Sample Characteristics	Rejection Measure	Self-harm/Suicidality Measure
Maggio (1998) USA	Cross-sectional	Student population	N=139 (104 female); Age M=19, SD= 1.06; Ethnicity not stated	Parent Acceptance Rejection Questionnaire (PARQ)	Suicidal Ideation Questionnaire (SIS)
Mereish, Peters & Yen (2018) USA	Cross-sectional	Via LGBTQ Organisations	N=719 (42.3% female); Age M=42.07, SD= 41.98; Ethnicity= 76% White	Brief Fear of Negative Evaluations Scale (BFNE)	SBQ-R
Peters, Smart & Baer (2015) USA	Cross-sectional	Student population	N=451 (67.9% female); Age M=19.19, SD=2.09; Ethnicity not stated	RSQ	Personality Assessment Inventory (PAI-BOR)
Quirk et al., (2014) USA	Cross-sectional	Student population	N=566 (75% female); Age M=19.41, SD= 2.01; Ethnicity not stated	EMBU	Study designed scale for NSSI
Ross, Clayer & Campbell (1983) Australia	Cross-sectional	Student population	N=85 (44 female); Age M=18.6, SD= 1.7; Ethnicity not stated	EMBU	Study designed scale on suicidal ideation
Ryan et al., (2009) USA	Cross-sectional	Via LGBTQ Organisations	N=245 (110 female); Age 21-25; Ethnicity not stated	Study designed scale	Study designed scale on suicidal ideation and attempts

Author Year Country	**Design**	**Sample Source**	**Sample Characteristics**	**Rejection Measure**	**Self-harm/Suicidality Measure**
Sobrinho, Holden & Campos (2016) Portugal	Longitudinal (Five month follow-up)	Student population	N=165 (75.2 female); Age M=20.2, SD= 3.2; Ethnicity= 95% White	EMBU	SBQ-R
Testa et al., (2017) USA	Cross-sectional	National data set	N=816 (30.9% transwoman, 45.6% transman, 23.5% other); Age M=32.5.2, SD= 13.3; Ethnicity not stated	Gender Minority Stress & Resilience Measure (GMSR)	SIS
Trujillo et al., (2017) USA	Cross-sectional	Via LGBTQ organisations	N=78 (28 transwoman, 26 transman, 23 other); Age M=29.6, SD= 10.46; Ethnicity= 61.5% White	Heterosexist Harassment Rejection Discrimination Scale (HHRDS)	SBQ-R
VanderWaal, Sedlacek & Lane (2017) USA	Cross-sectional	Via LGBTQ Christian organisations	N=495 (44.2% female), Age not stated; Ethnicity= 55.8% White	Study designed scale	Study designed scale on suicidal thoughts and attempts
Yadegarfard, Meinhold-Bergmann & Ho (2014) Thailand	Cross-sectional	Via LGBTQ organisations & student population	N=260 (130 transwoman, 130 cisgender male); Age M=20; Ethnicity= not stated	Study designed scale	Positive and Negative Suicidal Ideation Inventory (PANSI)

The Inventory for accessing memories of parental rearing behaviour (EMBU) (Arrindell et al., 1986); Rejection Sensitivity Questionnaire (RSQ) (Downey and Feldman, 1996); Deliberate Self-Harm Inventory (DSHI) (Gratz, 2001); Suicide Behaviour Questionnaire (SBQ-R) (Osman et al., 2001); Beck Scale for Suicidal Ideation (BSS) (Beck and Steer, 1991); The Acceptance Rejection Scale (Ross, 1985); The Adult Suicide Ideation Questionnaire (Reynolds, 1991); Parent Acceptance Rejection Questionnaire (PARQ) (Khaleque and Rohner, 2002); Suicidal Ideation Questionnaire (SIS) (Rudd, 1989); Brief Fear of Negative Evaluations Scale (BFNE) (Leary, 1983); Personality Assessment Inventory (PAI-BOR) (Morey, 2007); Gender Minority Stress & Resilience Measure (GMSR) (Testa et al., 2015); Heterosexist Harassment Rejection Discrimination Scale (HHRDS) (Szymanski, 2006); Positive and Negative Suicidal Ideation Inventory (PANSI) (Fischer and Corcoran, 2007),

Table 2. ***Risk of Bias Assessment***

Author	Unbias selection of cohort	Selection minimizes baseline differences	Sample size calculated	Adequate description of the cohort	Validated method for assessing rejection experiences	Validated method for assessing self-injury and suicidality	Outcome assessment blind to exposure?	Adequate follow-up	Minimal missing data	Controls for confounding factors	Analytic methods appropriate
Baumkirchner (2009)	Yes	N/A	No	Yes	Yes	Yes	Yes	N/A	No	Partial	No
Campos, Besser & Blatt (2013)	Partial	N/A	No	Yes	Yes	Partial	Cannot Tell	N/A	Yes	Yes	Yes
Campos & Holden (2015)	Partial	N/A	Partial	Yes	Yes	Yes	Cannot Tell	N/A	Yes	Yes	Yes
Chesin & Jeglic (2016)	Partial	Yes	No	Yes	Yes	Yes	Yes	N/A	Cannot Tell	Yes	Cannot Tell
Ehnvall et al., (2008)	Yes	N/A	No	Yes	No	No	No	N/A	Cannot Tell	No	Yes
Hill & Pettit (2012)	Partial	N/A	Partial	Yes	Partial	Yes	Cannot Tell	N/A	Yes	Yes	Yes
Klein & Golub (2016)	Partial	N/A	No	Yes	No	No	Yes	N/A	Yes	Partial	Partial
Maggio (1998)	No	N/A	No	Partial	Yes	Yes	Cannot Tell	N/A	Cannot Tell	No	Yes
Mereish, Peters & Yen (2018)	Partial	Yes	No	Yes	Yes	Yes	Yes	N/A	Cannot Tell	Partial	Yes
Peters, Smart & Baer (2015)	Partial	N/A	No	Yes/Unsure	Yes	Partial	Yes	N/A	Cannot Tell	Partial	Yes
Quirk et al., (2014)	Partial	Yes	No	Yes	Yes	Partial	Yes	N/A	Yes	Yes	Yes

Author	Unbias selection of cohort	Selection minimizes baseline differences	Sample size calculated	Adequate description of the cohort	Validated method for assessing rejection experiences	Validated method for assessing self-injury and suicidality	Outcome assessment blind to exposure?	Adequate follow-up	Minimal missing data	Controls for confounding factors	Analytic methods appropriate
Ross, Clayer & Campbell (1983)	No	N/A	No	Partial	Yes	Partial	Cannot Tell	N/A	Cannot Tell	No	Partial
Ryan et al., (2009)	Yes	Unsure	No	Yes	Partial	No	Cannot Tell	N/A	Cannot Tell	Yes	No
Sobrinho, Holden & Campos (2016)	Partial	N/A	No	Yes	Yes	Yes	Yes	Partial	No	Yes	Yes
Testa et al., (2017)	Yes	No	Partial	Yes	Yes	Yes	Yes	N/A	Partial	Partial	Yes
Trujillo et al., (2017)	Yes	N/A	No	Yes	Yes	Yes	Yes	N/A	Cannot Tell	Yes	Yes
VanderWaal, Sedlacek & Lane (2017)	Partial	N/A	No	Yes	No	No	Yes	N/A	No	Cannot Tell	No
Yadegarfard, Meinhold-Bergmann & Ho (2014)	Partial	N/A	No	Yes	Partial	Yes	Cannot Tell	N/A	Cannot Tell	Yes	Cannot Tell

Table 3*: Outcome Data - Exploration of Relationship Between Rejection and Self-harm/Suicidality*

Author	Rejection Variable	Self-harm/Suicidality Variable	Bivariate Association	Multivariate Association	Control Variables
Perceived parental rejection					
Campos, Besser & Blatt (2013) Portugal	Parental rearing behaviour	Suicidal behaviours	Mother rejection & suicidality r= .27 Father rejection & suicidality r= .37	β= .68 (p<.001)	Self- criticism Depression
Campos & Holden (2015) Portugal	Parental rearing behaviour	Suicidal behaviours	Mother rejection & suicidality r= .31 Father rejection & suicidality r= .38	β = .18 (p < .05)	Psychache Interpersonal needs
Maggio (1998) USA	Perceived parental acceptance-rejection	Suicidal ideation	Perceived maternal rejection r=.20 (p< .05) Perceived paternal rejection r=.34 (p< .05)	β=.52 (p < .04) β=.49 (p < .03)	Global self-worth
Quirk et al., (2014) USA	Parental rearing behaviour	NSSI severity NSSI recency	Maternal rejection r=.20 (p < .05) Paternal rejection r=. 15 (p < .05) Maternal rejection r=.10 (p >.05) Paternal rejection r=. 10 (p >.05)		Rumination Maladaptive schemas
Ross, Clayer & Campbell (1983) Australia	Parental rearing behaviour	Suicidal ideation	Father rejecting r=.17 (p<.01) Mother rejecting r=.16 (p<.01)	Not reported	
Sobrinho, Holden & Campos (2016) Portugal	Parental rearing	Suicidal ideation and previous suicide attempts	Mother rejection & suicidality r= .35 (p<.01) Father rejection & suicidality r= .34 (p<.01)	β= .28 significant (p < .001)	Depression Self-criticism Neediness

Author	Rejection Variable	Self-harm/Suicidality Variable	Bivariate Association	Multivariate Association	Control Variables
Gender identity					
Klein & Golub (2016) USA	Family rejection	Lifetime history of suicide attempts (binary measure)	Odds Ratio = 3.20 (p<.001)	Adjusted Odds Ratio= 3.34 (p<.001)	Age, Ethnicity, Sex, Education, Annual income, Employment, Binary gender identity.
Testa et al., (2017) USA	Gender minority stress and resilience.	Suicidal ideation	r= .18 (p<.001)	Rejection mediated by transphobia predicted SI β=.8 (p < .01) Rejection mediated by negative expectations predicted SI β= .11(p < .01)	Victimisation Non-discloure
Trujillo et al., (2017) USA	Harassment/rejection scale	Suicidal Ideation		Harassment/Rejection β=.48 (p<.001)	Depression Social Support
Yadegarfard, Meinhold-Bergmann & Ho (2014) Thailand	Family rejection	Suicidal thoughts and attempts.		Cisgender FR related to higher suicidal thinking β=.27 (p<.05) For transgender FR related sig to depression β=.19 but not to suicidality. (p>.05)	Depression

Author	Rejection Variable	Self-harm/Suicidality Variable	Bivariate Association	Multivariate Association	Control Variables
Sexual orientation					
Hill & Pettit (2012) USA	Perceived acceptance or rejection of sexual orientation.	Suicidal ideation	r=.49 (*p*<.001)	Not completed for the acceptance/rejection scale.	Depression Burdensomeness Thwarted belonging
Mereish, Peters & Yen (2018) USA	Rejection sensitivity	Suicide risk (binary measure)	*r*=.35 (*p*<.01)	Gender & LGBT victimisation & rejection sensitivity & suicide risk: AOR=1.54 (*p*<.01) Sexual orientation & LGBT victimisation & rejection sensitivity & suicide risk: AOR= 1.5 (*p*<.01)	Gender LGBT Victimisation Shame Rejection Sensitivity Sexual orientation (LG or B)
Ryan et al., (2009) USA	Family rejection	Suicidal Ideation (SI) Suicidal Attempts (SA)		Odds Ratio: Moderate rejection SI=2.12 Moderate rejection SA=2.29 High rejection SI=5.64 High rejection SA=8.35 (*p* < .001)	Substance Use Sexual Risk Behaviours
VanderWaal, Sedlacek & Lane (2017) USA	Family Rejection	Suicidality	Parental rejection & suicidal thoughts *r*=.18 (*p*<.05) Parental rejection & suicide attempts *r*=.08 (*p*>.05)		

Author	Rejection Variable	Self-harm/Suicidality Variable	Bivariate Association	Multivariate Association	Control Variables
Rejection sensitivity					
Baumkirchner (2009) USA	Rejection sensitivity	Non-suicidal self-injury	r=.19 ($p < .01$)	β=.131 ($p < .05$)	Psychological distress
Chesin & Jeglic (2016) USA	Rejection sensitivity	Comparing past student suicide attempters with and without current ideation.	Z= 1.1 (p=.27)	β= .42 (B= .34) (p=.23)	Depression Hopelessness Discrimination Social Stress Mindfulness
Ehnvall et al., (2008) Australia	Rejection sensitivity	Previous suicide attempts	Not reported	Maternal rejection β=.245 (p=0.36) & paternal rejection β=.363(p=0.19)	Gender Age Maternal or Paternal indifference, abuse or overcontrol Melancholia
Peters, Smart & Baer (2015) USA	Rejection sensitivity	BPD	r= .22 (p<.001)	β=-.4 (R2 =.27) (p>.05)	Anger rumination Non-acceptance Difficulties Goals-Related Behaviour Impulse control difficulties Lack of emotional awareness Lack of emotional clarity

Perceived Parental Rejection

Six studies focused on rejection experiences in childhood and utilised questionnaires of parental rearing styles to measure rejection (Campos et al., 2013; Campos and Holden, 2015; Maggio, 1998; Quirk et al., 2015; Ross et al., 1983; Sobrinho et al., 2016). Five reported significant positive associations with suicidal ideation or suicidal ideation and behaviour composites (β=.18-.68; *r*=.10-.38). These relationships remained significant accounting for a number of additional covariates, including depression, self-criticism, psych-ache, neediness and global self-worth. Whilst Sobrinho and colleagues (2016) utilised a longitudinal design, suicide risk was only measured at follow-up and therefore the analyses remain cross-sectional. A single study focused on NSSI, reporting small, non-significant associations with NSSI recency (*r*=.10) and small, but significant associations with NSSI frequency (*r*=.15-.20). The measure of NSSI frequency is limited as it relied on general public ratings of severity based on the general type of NSSI (e.g. cutting). This study modelled indirect associations between parental rejection and these NSSI outcomes but did not report model parameters or significance tests for these indirect effects. In summary, there is evidence that reported parental rejection in adults is positively associated with suicidal ideation and behaviour, but the lack of longitudinal analyses means the direction of this association is unclear. These studies focused on retrospective accounts of parental rejection, which may be affected by current difficulties and feelings. Moreover, there was an over-reliance on student samples and so these results may not generalise to other populations. There is little evidence of a relationship between parental rejection and NSSI and again the lack of longitudinal analyses mean that the direction and order of any effects found is not known.

In Campos et al (2013) in addition to direct associations between parental rejection and suicidality, high levels of self-criticism were also indirectly associated with high levels of

perceived rejection and suicide risk through depression. In Campos and Holden (2015) perceived parental rejection was related directly to suicide risk and indirectly via depression and interpersonal needs. In Quirk et al (2014) perceptions of greater parental rejection were indirectly significantly associated with self-harm through inter and intrapersonal maladaptive schemas. These mediational models were frequently complex, involving multiple paths and mediating steps. They were not all contrasted against plausible alternative models (Campos et al., 2015; Campos et al., 2013 were an exception), or developed in an iterative way, which limits the confidence we can have in these models.

Gender Identity

Four studies looked at rejection experiences, namely from family, as a reaction to a change in gender identity (Klein and Golub, 2016; Testa et al., 2017; Trujillo et al., 2017; Yadegarfard et al., 2014). Three of the studies reported significant association with suicidal ideation or previous suicide attempts (β=.11-.80; *r*=.18; Odds Ratio [OR] =3.20). These relationships remained significant accounting for a number of additional covariates, including depression, social support, transphobia and negative expectations.

In Klein & Golub (2016) family rejection for those who identified as gender nonconforming was a significant predictor of suicidal thinking and the risk of attempting suicide [OR=3.2]. Yadegarfard et al (2014) also looked at family rejection in reaction to gender non-conformity, this relationship was found to be a significant predictor of depression but not of suicidality. Interestingly the relationship between family rejection and suicidal behaviour was significant for the cisgender participants (β=.27; the control group in this study), but not for the transgendered participants (β=.19). This suggests that rejection had less impact for this population than hypothesised. In Trujillo et al (2017) rejection was measured alongside harassment and had a strong association with suicidal ideation, mediated by depression (β =.48). Testa et al (2017) used a complex model to measure how discrimination,

rejection, victimisation and non-affirmation, when mediated by transphobia, negative expectations and non-disclosure predicted suicidal ideation. Significant associations were found between rejection, negative expectations and suicidal ideation (β=.11), and rejection, transphobia and suicidal ideation (β =.80). This study was limited, however, by a cross-sectional design.

In summary, the majority of these studies do evidence that those from non-conforming gender identities may experience more rejection and that this is positively associated with suicidal ideation and behaviour. As Yadegarfard et al (2014) was the only study to compare with cisgendered participants it is difficult to draw conclusions to whether those of a transgender identity do experience or perceive greater rejection, and how this enhanced experience can explain a direct association between rejection and self-harm. However, two of the studies which found significant associations between rejection experiences and suicidal ideation in this population, did draw their data from large national datasets (n= 816, n=5612) and both reported high levels of discrimination and transphobia in the client sample. In both of these studies (Klein and Golub, 2016; Testa et al., 2017) the lack of longitudinal analyses means the direction of this association is unclear.

Sexual Orientation

Four studies focused on rejection experiences as a reaction to LGB (Lesbian, Gay, Bisexual) sexual orientation (Hill and Pettit, 2012; Mereish et al., 2018; Ryan et al., 2009; VanderWaal et al., 2017). All four reported a significant association with suicidal ideation or suicidal ideation and behavior composites (r=.08-.49). These relationships remained significant accounting for a number of additional covariates, including victimisation, shame, burdensomeness and thwarted belonging.

In Ryan et al (2009) family rejection was significantly associated with greater risk of attempting suicide, with those experiencing high levels of family rejection having 8.35 times the odds of attempting suicide. In Mereish (2018) both mediation and moderation models found that gender and homophobic victimisation (Adjusted Odds Ratio [AOR]=1.54), and sexual orientation (bisexual or gay) and homophobic victimisation [AOR=1.50] were associated with rejection sensitivity which was a significant risk factor for suicidal ideation, although these effects were small. In Vanderwaal et al. (2017) suicidal thinking and suicide attempts were higher in Christian individuals who reported low family acceptance of being LGB (r=.18; data obtained from author). This low acceptance was defined as a form of rejection by the authors, although the effect size was small. Hill and Petit (2012) also measured rejection experiences on a continuum from acceptance to rejection related to sexuality. They reported a significant, moderate correlation between suicidal ideation and acceptance/rejection of sexual orientation (r =.49), although multivariate analysis was not completed.

Three of the studies targeted their recruitment at LGB support organisations (Mereish et al., 2018; Ryan et al., 2009; VanderWaal et al., 2017), meaning that the sample of participants may have been more representative of those who needed or sought help. The sample sizes across these studies were moderate to large (n=198-719), but again a lack of longitudinal analyse make the direction of association between sexuality, rejection experiences and suicidal ideation difficult to ascertain. The methodology in two of the studies also raised concerns to whether they were appropriate for the research question (Hill and Pettit, 2012; VanderWaal et al., 2017) as they measured rejection on a continuum between acceptance and rejection. Due to the definitions within these papers and the analysis shared it was felt that the research question was still answered, however this highlighted the ambiguity of rejection definitions. Furthermore, the findings from a Christian journal raised issues

around the position of the paper and some of its recommendations (celibacy). However, from contacting the authors it was felt that including a paper that showed a diversity of experience was important, and the correlational analysis received did describe a relationship between the variables, even if this was small.

Rejection Sensitivity

The final four studies focused on rejection sensitivity and its association with self-harm or suicidal behaviour (Baumkirchner, 2010; Chesin and Jeglic, 2016; Ehnvall et al., 2008; Peters et al., 2015). In Enhvall (2008) female patients in the clinical sample who perceived themselves as rejected in childhood had a greater chance of making at least one suicide attempt than males. However, rejection sensitivity did not predict suicide attempts related to either maternal or paternal parenting styles (β=.25; β=.36). Chesin and Jeglic (2016) found that there was no significant difference between individuals with current suicidal ideation and those without current suicidal ideation, and rejection sensitivity was not a predictor of the severity of suicidal ideation (β=.42).

Two studies reported a significant but small correlation between NSSI or self-harm more broadly, and rejection sensitivity (=.19-.22; Baumkirchner, 2009; Peters et al., 2015). However, when personality was adjusted for, rejection sensitivity was no longer a predictor of self-harm (β=-.04) (Peters et al., 2015).

In summary the studies included for review found limited evidence for a positive association between rejection sensitivity and self-harm or suicidal behaviours. Moreover, although the samples were varied (student, general population, clinical) the way they measured rejection sensitivity and self-harm was heterogeneous, meaning some studies focused on the traits of personality where others did not. Further research into each specific

area is needed to be able to robustly answer whether rejection sensitivity is a risk factor for self-harm or suicidal behaviours.

Discussion

The aim of this review was to synthesise the literature on the relationship between rejection experiences and self-harm or suicidality. The findings suggest that rejection experiences are associated with the risk of self-harm and suicidal ideation, with 15 of the 18 studies citing significant associations. Across the studies what was commonly reported was that parental rejection, in many cases due to sexuality or gender was significantly associated with later psychological need and increased likelihood of self-harm or suicide risk. However, as the results were cross-sectional the causality of this relationship cannot be assumed and further longitudinal research is needed. The findings were largely consistent across the general population samples, student and clinical groups. Findings were weakest for rejection sensitivity, and so evidence that this construct is meaningfully related to self-harm or suicidal ideation is currently lacking.

The literature indicates that belonging to minority sexuality or a transgender population significantly increases the likelihood of self-harming behaviours, suicidal ideation and suicide attempts (Haas et al., 2011; Oswalt and Wyatt, 2011). This is mirrored in the statistics that state that *34%* of those with LGB sexuality and *48%* of those who identify as transgender report having made one or more suicide attempt, compared with *6-18%* of their heterosexual peers (McManus et al., 2016; Nodin et al., 2015). The papers included in this review reported how experiences of transphobia, harassment, victimisation and low social-support are all associated with likelihood of being suicidal. The current study emphasises how identifying with a minority group increases the likelihood of being rejected by others and how this is then positively associated with self-harm and suicidal behaviours. For these LGBTQ individuals rejection may be a part of a pattern of discrimination, social stress and

victimisation, which together explains the heightened risk of self-harm and suicidal ideation (Haas et al., 2011).

In considering the psychological mechanisms that link rejection to self-harm or suicidal ideation, the mediation analysis completed by many of the studies offer plausible hypotheses. The first is that rejecting experiences cause social exclusion that result in psychological distress and pain, evoking experiences of depression, shame or self-criticism. These all enhance risk factors for suicidal ideation (Scoliers et al., 2009) and individuals may then use self-harm to tolerate these difficult and complex feelings (Taylor et al., 2017).

The second is that being rejected heightens a sense of thwarted belonging and burdensomeness towards those who you are connected to. Feeling a burden and not having connectedness to a group are both risk factors for self-harm and suicide (Leary and Baumeister, 2000), as they are also associated with key predictors hopelessness and guilt (Joiner et al., 2005; McMillan et al., 2007). However, it is important to note that all these constructs overlap, and the lack of prospective designs means that the direction of effects within these mediational models cannot be ascertained. It may be that rejection emerges as part of a cascade of aversive emotional experience that can lead to self-harm in some.

The third is that rejection and self-harm or suicidal ideation may exist as a reciprocal relationship as the more rejected a person feels the more likely they are to cause harm to themselves, but that those who have attempted suicide or self-harmed also may then experience shame and rejection following this experience (McElroy and Sheppard, 1999; Pyke and Steers, 1992). As the studies included did not utilise longitudinal data the direction of effect cannot be stated. However, a vicious cycle of increasing rejection, marginalisation, isolation and self-harm can be hypothesised, accounting for the escalated risk seen in some

individuals. Rejection specifically linked to psychiatric diagnosis was not assessed by any studies identified in this review, and so is an area requiring further attention.

The risk of bias assessment identified that none of the studies reported power calculations or justified their sample size, however as many had moderate sample sizes >200 (*n*=12) the risk of a type ii error is reduced. The general characteristics of the samples were largely female and where ethnicity was stated it was majority White, which could influence the rejection and self-harm or suicidality relationship. As studies not in the English language were removed, key findings may have been overlooked and this could have also contributed to an under-representation of ethnicities other than White. The range of outcomes used, the varying forms of rejection assessed and methods used to assess the relationship were broad, which prevented the application of a meta-analysis. Future prospective research could track the temporal relationship between emerging feelings of rejection and subsequent urges to self-harm or suicidal ideation. Studies employing large surveys could also focus on whether rejection explains the elevated self-harm risk seen in some marginalised groups

The current review focused specifically on an adult population, yet as self-harm and suicide is so prevalent in younger people (Brent et al., 2013; Hawton et al., 2012) a separate review on rejection and self-harm or suicidality in children and adolescents would be warranted. This review also focused solely on quantitative research methodology as advised by the guidance (Boland et al., 2014; Harden and Thomas, 2005) but a future qualitative review would add depth and further understanding to the research area.

This review highlights how impactful rejection experiences may be, and their link with self-harm and suicidal behaviour. Therefore, clinical understanding of the potential harm of rejection must be enhanced to better support individuals with their psychological wellbeing. The review particularly highlighted the experiences of those from marginalised

groups who may encounter more rejection as a result of discrimination or lack of acceptance by wider society. It is important clinically that those from marginalised groups are not further rejected by services and that they have equal access and acceptance from those they may seek help from (Public Health England and RCN, 2015). Greater consideration is needed in how services offer resources and support for those who are more likely to experience rejection. This could be in out-reach or community settings where support is more easily accessible and is aimed at addressing negative and stigmatising climates (Kosciw et al., 2013; Takács, 2017) Social policy and initiatives have the potential to reduce experiences of rejection faced by some marginalised groups (Cook et al., 2014). Community-level interventions may help increase access to support for affected groups, including those in the LGBTQ community.

This is the first systematic review of the literature exploring the relationship between rejection experiences and self-harm or suicidality. It provides initial evidence that perceived rejection experiences are positively associated with self-harm and suicidal ideation. However, it also identifies gaps in the research particularly concerning other forms of relationships outside of parental attachment.

References

Allen, N.B., Badcock, P.B.T., 2003. The Social Risk Hypothesis of Depressed Mood: Evolutionary, Psychosocial, and Neurobiological Perspectives. Psychol. Bull. 129, 887–913. https://doi.org/10.1037/0033-2909.129.6.887

Arrindell, W.A., Perris, C., Perris, H., Eisemann, M., Van der Ende, J., Von Knorring, L., 1986. Cross-national invariance of dimensions of parental rearing behaviour: comparison of psychometric data of Swedish depressives and healthy subjects with Dutch target ratings on the EMBU. Br. J. Psychiatry. 148, 305–309.

Baumeister, R.F., Leary, M.R., 1995. The need to belong: Desire for interpersonal attachments as a fundamental human motivation. Psychol. Bull. 117, 497–529. https://doi.org/10.1037/0033-2909.117.3.497

Baumkirchner, B.E., 2010. Non-suicidal self-injury and rejection sensitivity: An exploration of sensitivity to rejection in adult self-mutilators and subsequent clinical implications a quantitative study. Diss. Abstr. Int. Sect. B Sci. Eng. ProQuest Information & Learning, US.

Beck, A.T., 1979. Cognitive Therapy of Depression. Guilford Press, New York.

Beck, A.T., Steer, R.A., 1991. BSS: Beck Scale for Suicide Ideation. Psychological Corporation.

Beghi, M., Cerri, C., Cornaggia, C.M., Rosenbaum, J.F., 2013. Risk factors for fatal and nonfatal repetition of suicide attempts: A literature review. Neuropsychiatr. Dis. Treat. 9, 1725–1736. https://doi.org/10.2147/NDT.S40213

Bentley, K.H., Barlow, D.H., Nock, M.K., 2014. The four-function model of nonsuicidal self-injury: Key directions for future research. Clin. Psychol. Sci. 2, 638–656.

https://doi.org/10.1177/2167702613514563

Bergen, H., Hawton, K., Kapur, N., Cooper, J., Steeg, S., Ness, J., Waters, K., 2012. Shared characteristics of suicides and other unnatural deaths following non-fatal self-harm? A multicentre study of risk factors. Psychol. Med. 42, 727–741. https://doi.org/10.1017/S0033291711001747

Bhui, K., McKenzie, K., Rasul, F., 2007. Rates, risk factors & methods of self harm among minority ethnic groups in the UK: A systematic review. BMC Public Health. 7. https://doi.org/10.1186/1471-2458-7-336

Bocknek, 2006. Effects of parental supportiveness on toddlers' emotion regualtion over the first three years of life in a low-income African American sample. Infant Ment. Health J. 27, 5–25. https://doi.org/10.1002/imhj.

Boland, A., Cherry, M.G., Dickson, R., 2014. Doing a systematic review : a student's guide. Thousand Oaks, CA. SAGE Publications, London.

Bowlby, J., 1969. Attachment and loss. Routledge, London.

Brent, D.A., McMakin, D.L., Kennard, B.D., Goldstein, T.R., Mayes, T.L., Douaihy, A.B., 2013. Protecting adolescents from self-harm: a critical review of intervention studies. J. Am. Acad. Child Adolesc. Psychiatry. 52, 1260–1271.

Brown, M.Z., Linehan, M.M., Comtois, K.A., Murray, A., Chapman, A.L., 2010. Shame as a prospective predictos of self-inflicted injury in borderline personality disorder: a multi-modal analysis. Behav. Res. Ther. 47, 815–822. https://doi.org/10.1016/j.brat.2009.06.008.Shame

Caicedo, S.,Whitlock, J., 2009. Top 15 misconceptions of self-injury. Peaditrics, 117, 1939-

1948.

Campos, R.C., Besser, A., Blatt, S.J., 2013. Recollections of parental rejection, self-criticism and depression in suicidality. Arch. Suicide Res. 17, 58–74. https://doi.org/10.1080/13811118.2013.748416

Campos, R.C., Holden, R.R., 2015. Testing models relating rejection, depression, interpersonal needs, and psychache to suicide risk in nonclinical individuals. J. Clin. Psychol. 71, 994–1003. https://doi.org/10.1002/jclp.22196

Chesin, M.S., Jeglic, E.L., 2016. Factors associated with recurrent suicidal ideation among racially and ethnically diverse college students with a history of suicide attempt: The role of mindfulness. Arch. Suicide Res. 20, 29–44. https://doi.org/10.1080/13811118.2015.1004488

Cheung, M.S.P., Gilbert, P., Irons, C., 2004. An exploration of shame, social rank and rumination in relation to depression. Pers. Individ. Dif. 36, 1143–1153. https://doi.org/10.1016/S0191-8869(03)00206-X

Cook, J.E., Purdie-Vaughns, V., Meyer, I.H., Busch, J.T.A., 2014. Intervening within and across levels: A multilevel approach to stigma and public health. Soc. Sci. Med. 103, 101–109. https://doi.org/10.1016/j.socscimed.2013.09.023

Crawford, M.J., Nur, U., McKenzie, K., Tyrer, P., 2005. Suicidal ideation and suicide attempts among ethnic minority groups in England: Results of a national household survey. Psychol. Med. 35, 1369–1377. https://doi.org/10.1017/S0033291705005556

De Rubeis, J., Lugo, R.G., Witthöft, M., Sütterlin, S., Pawelzik, M.R., Vögele, C., 2017. Rejection sensitivity as a vulnerability marker for depressive symptom deterioration in men. PLoS One. 12, 1–12. https://doi.org/10.1371/journal.pone.0185802

Downey, G., Feldman, S.I., 1996. Implications of rejection sensitivity for intimate relationships. J. Pers. Soc. Psychol. 70, 1327–1343. https://doi.org/10.1037/0022-3514.70.6.1327

Dozois, D.J.A., Rnic, K., 2015. Core beliefs and self-schematic structure in depression. Curr. Opin. Psychol. 4, 98–103. https://doi.org/10.1016/j.copsyc.2014.12.008

Edmondson, A.J., Brennan, C.A., House, A.O., 2016. Non-suicidal reasons for self-harm: A systematic review of self-reported accounts. J. Affect. Disord. 191, 109–117. https://doi.org/10.1016/j.jad.2015.11.043

Ehnvall, A., Parker, G., Hadzi-Pavlovic, D., Malhi, G., 2008. Perception of rejecting and neglectful parenting in childhood relates to lifetime suicide attempts for females but not for males. Acta Psychiatr. Scand. 117, 50–56.

Fischer, J., Corcoran, K., 2007. Measures for clinical practice and research: A sourcebook: Vol. 2. Adults.

Fliege, H., Lee, J.R., Grimm, A., Klapp, B.F., 2009. Risk factors and correlates of deliberate self-harm behavior: A systematic review. J. Psychosom. Res. 66, 477–493. https://doi.org/10.1016/j.jpsychores.2008.10.013

Forrester, R.L., Slater, H., Jomar, K., Mitzman, S., Taylor, P.J., 2017. Self-esteem and non-suicidal self-injury in adulthood: A systematic review. J. Affect. Disord. 221, 172–183. https://doi.org/10.1016/j.jad.2017.06.027

Fox, K.R., Franklin, J.C., Ribeiro, J.D., Kleiman, E.M., Bentley, K.H., Nock, M.K., 2015. Meta-analysis of risk factors for nonsuicidal self-injury. Clin. Psychol. Rev. 42, 156–167. https://doi.org/10.1016/j.cpr.2015.09.002

Gao, S., Assink, M., Cipriani, A., Lin, K., 2017. Associations between rejection sensitivity and mental health outcomes: A meta-analytic review. Clin. Psychol. Rev. 57, 59–74. https://doi.org/10.1016/j.cpr.2017.08.007

Garland, J., Hodkinson, P., 2014. “F**king Freak! What the Hell Do You Think You Look Like?”: Experiences of Targeted Victimisation Among Goths and Developing Notions of Hate Crime. Br. J. Criminol. 54, 613–631. https://doi.org/10.1093/bjc/azu018

Gholamrezaei, M., De Stefano, J., Heath, N.L., 2017. Nonsuicidal self-injury across cultures and ethnic and racial minorities: A review. Int. J. Psychol. 52, 316–326. https://doi.org/10.1002/ijop.12230

Gratz, K.L., 2003. Risk factors for and functions of deliberate self-harm: An empirical and conceptual review. Clin. Psychol. Sci. Pract. 10, 192–205. https://doi.org/10.1093/clipsy/bpg022

Gratz, K.L., 2001. Measurement of deliberate self-harm: Preliminary data on the Deliberate Self-Harm Inventory. J. Psychopathol. Behav. Assess. 23, 253–263.

Haas, A.P., Eliason, M., Mays, V.M., Mathy, R.M., Cochran, S.D., D’Augelli, A.R., Silverman, M.M., Fisher, P.W., Hughes, T., Rosario, M., Russell, S.T., 2011. Suicide and Suicide Risk in Lesbian, Gay, Bisexual, and Transgender Populations : Review and Recommendations. J. Homosex. 58, 10–51. https://doi.org/10.1080/00918369.2011.534038

Harden, A., Thomas, J., 2005. Methodological issues in combining diverse study types in systematic reviews. Int. J. Soc. Res. Methodol. 8, 257–271.

Hawton, K., Casanas I Comabella, C., Haw, C., Saunders, K., 2013. Risk factors for suicide in individuals with depression: a systematic review. J. Affect. Disord. 147, 17–28.

https://doi.org/10.1016/j.jad.2013.01.004

Hawton, K., Kingsbury, S., Steinhardt, K., James, A., Fagg, J., 1999. Repetition of deliberate self-harm by adolescents: The role of psychological factors. J. Adolesc. 22, 369–378. https://doi.org/10.1006/jado.1999.0228

Hawton, K., Saunders, K.E.A., O'Connor, R.C., 2012. Self-harm and suicide in adolescents. Lancet. 379, 2373–2382. https://doi.org/10.1016/S0140-6736(12)60322-5

Heider, D., Bernert, S., Matschinger, H., Haro, J.M., Alonso, J., Angermeyer, M.C., 2007. Parental bonding and suicidality in adulthood. Aust. N. Z. J. Psychiatry. 41, 66–73.

Hill, R.M., Pettit, J.W., 2012. Suicidal ideation and sexual orientation in college students: The roles of perceived burdensomeness, thwarted belongingness, and perceived rejection due to sexual orientation. Suicide Life-Threatening Behav. 42, 567–579. https://doi.org/10.1111/j.1943-278X.2012.00113.x

Hirsch, J.K., Chang, E.C., Jeglic, E.L., 2012. Social Problem Solving and Suicidal Behavior: Ethnic Differences in the Moderating Effects of Loneliness and Life Stress. Arch. Suicide Res. 16, 303–315. https://doi.org/10.1080/13811118.2013.722054

Horney, K., 1937. The neurotic personality of our time. Franklin Watts, New York.

Hughes, M.A., Knowles, S.F., Dhingra, K., Nicholson, H.L., Taylor, P.J., 2018. This corrosion: A systematic review of the association between alternative subcultures and the risk of self-harm and suicide. Br. J. Clin. Psychol. 1–23. https://doi.org/10.1111/bjc.12179

Joiner Jr, T.E., Brown, J.S., Wingate, L.R., 2005. The psychology and neurobiology of suicidal behavior. Annu. Rev. Psychol. 56, 287–314.

Karlsen, S., Nazroo, J., 2002. Relation Between Racial Discrimination, Social Class, and Health Among Ethnic Minority Groups. Am. J. Public Health. 92, 624–631.

Khaleque, A., Rohner, R.P., 2002. Reliability of measures assessing the pancultural association between perceived parental acceptance-rejection and psychological adjustment: A meta-analysis of cross-cultural and intracultural studies. J. Cross. Cult. Psychol. 33, 87–99.

King, M., Semlyen, J., Tai, S.S., Killaspy, H., Osborn, D., Popelyuk, D., Nazareth, I., 2008. A systematic review of mental disorder, suicide, and deliberate self harm in lesbian, gay and bisexual people. BMC Psychiatry. 8, 1–17. https://doi.org/10.1186/1471-244X-8-70

Klein, A., Golub, S.A., 2016. Family rejection as a predictor of suicide attempts and substance misuse among transgender and gender nonconforming adults. LGBT Heal. 3, 193–199. https://doi.org/10.1089/lgbt.2015.0111

Koivumaa-Honkanen, H., Honkanen, R., Viinamaki, H., Heikkila, K., Kaprio, J., Koskenvuo, M., 2001. Life satisfaction and suicide: a 20-year follow-up study. Am J Psychiatry. 158, 433–439. https://doi.org/10.1176/appi.ajp.158.3.433

Kosciw, J.G., Palmer, N.A., Kull, R.M., Greytak, E.A., 2013. The effect of negative school climate on academic outcomes for LGBT youth and the role of in-school supports. J. Sch. Violence 12, 45–63.

Laye-Gindhu, A., Schonert-Reichl, K.A., 2005. Nonsuicidal self-harm among community adolescents: Understanding the “whats” and “whys” of self-harm. J. Youth Adolesc. 34, 447–457. https://doi.org/10.1007/s10964-005-7262-z

Leary, M.R., 2015. Emotional responses to interpersonal rejection. Dialogues Clin. Neurosci. 17, 435–441. https://doi.org/10.1093/acprof:oso/9780195130157.003.0006

Leary, M.R., 2001. Interpersonal rejection. Oxford University Press, New York.

Leary, M.R., 1990. Responses to social exclusion: Social anxiety, jealousy, loneliness, depression, and low self-esteem. J. Soc. Psychol. 9, 221.

Leary, M.R., 1983. A brief version of the Fear of Negative Evaluation Scale. Personal. Soc. Psychol. Bull. 9, 371–375.

Leary, M.R., Baumeister, R.F., 2000. The nature and function of self-esteem: Sociometer theory, in: Advances in Experimental Social Psychology. Elsevier, pp. 1–62.

Leary, M.R., Springer, C., Negel, L., Ansell, E., Evans, K., 1998. The causes, phenomenology, and consequences of hurt feelings. J. Pers. Soc. Psychol. 74, 1225–1237. https://doi.org/10.1037/0022-3514.74.5.1225

Liu, R.T., Mustanski, B., 2012. Suicidal ideation and self-harm in lesbian, gay, bisexual, and transgender youth. Am. J. Prev. Med. 42, 221–228. https://doi.org/10.1016/j.amepre.2011.10.023

MacDonald, G., Leary, M.R., 2005. Why does social exclusion hurt? The relationship between social exclusion and physical pain. Psychol. Bull. 131, 202-223.

MacDonald, G., Saltzman, J.L., Leary, M.R., 2003. Social approval and trait self-esteem. J. Res. Pers. 37, 23–40. https://doi.org/10.1016/S0092-6566(02)00531-7

Maggio, M.J., 1998. Perceived parenting style and global self-worth as predictors of suicidal ideation in college students. Diss. Abstr. Int. Sect. B Sci. Eng. ProQuest Information & Learning, US.

Marshall, A., 2016. Suicide prevention interventions for sexual & gender minority youth: An unmet need. Yale J. Biol. Med. 89, 205–213.

Maslow, A.H., 1943. A theory of human motivation. Psychol. Rev. 50, 370–396. https://doi.org/10.1037/h0054346

McElroy, a, Sheppard, G., 1999. The assessment and management of self-harming patients in an accident and emergency department: an action research project. J. Clin. Nurs. 8, 66–72. https://doi.org/10.1046/j.1365-2702.1999.00185.x

McManus, S., Bebbington, P., Jenkins, R., Brugha, T., 2016. Mental Health and Wellbeing in England: Adult Psychiatric Morbidity Survey 2014: a Survey Carried Out for NHS Digital by NatCen Social Research and the Department of Health Sciences, University of Leicester. NHS Digital.

McMillan, D., Gilbody, S., Beresford, E., Neilly, L.I.Z., 2007. Can we predict suicide and non-fatal self-harm with the Beck Hopelessness Scale? A meta-analysis. Psychol. Med. 37, 769–778.

Meehan, K.B., Cain, N.M., Roche, M.J., Clarkin, J.F., De Panfilis, C., 2018. Rejection sensitivity and interpersonal behavior in daily life. Pers. Individ. Dif. 126, 109–115. https://doi.org/10.1016/j.paid.2018.01.029

Mereish, E.H., Peters, J.R., Yen, S., 2018. Minority Stress and Relational Mechanisms of Suicide among Sexual Minorities: Subgroup Differences in the Associations Between Heterosexist Victimisation, Shame, Rejection Sensitivity, and Suicide Risk. Suicide Life-Threatening Behav. 1–14. https://doi.org/10.1111/sltb.12458

Meyer, I.H., 2003. Prejudice, social stress and mental health in lesbian, gay, and bisxual populations: Conceptual issues and research evidence. Psychol. Bull. 129, 674-697.

Molden, D.C., Lucas, G.M., Gardner, W.L., Dean, K., Knowles, M.L., 2009. Motivations for prevention or promotion following social exclusion: Being rejected versus being

ignored. J. Pers. Soc. Psychol. 96, 415–431. https://doi.org/10.1037/a0012958

Morey, L.C., 2007. Personality assessment inventory (PAI): professional manual. PAR (Psychological Assessment Resources).

Morgan, C., Webb, R.T., Carr, M.J., Kontopantelis, E., Green, J., Chew-Graham, C.A., Kapur, N., Ashcroft, D.M., 2017. Incidence, clinical management, and mortality risk following self harm among children and adolescents: cohort study in primary care. Bmj, 359. https://doi.org/10.1136/bmj.j4351

Muehlenkamp, J.J., Claes, L., Havertape, L., Plener, P.L., 2012. International prevalence of adolescent non-suicidal self-injury and deliberate self-harm. Child Adolesc. Psychiatry Ment. Health. 6, 1–9. https://doi.org/10.1186/1753-2000-6-10

National Institute of Health and Care Excellence., 2013. Self-Harm: The short-term physical and psychological management and secondary prevention of self-harm in primary and secondary care. NICE, London.

Nock, M.K., Mendes, W.B., 2008. Physiological Arousal, Distress Tolerance, and Social Problem-Solving Deficits Among Adolescent Self-Injurers. J. Consult. Clin. Psychol. 76, 28–38. https://doi.org/10.1037/0022-006X.76.1.28

Nock, M.K., Prinstein, M.J., 2005. Contextual features and behavioral functions of self-mutilation among adolescents. J. Abnorm. Psychol. 114, 140.

Nodin, N., Peel, E., Tyler, A., Rivers, I., 2015. The RaRE Research Report: LGB&T mental health–risk and resilience explored.

Office for National Statistics, 2017. Suicides in Great Britain : 2016 registrations. Off. Natl. Stat. 1–27. https://doi.org/10.1371/journal.pmed.1001213

Osman, A., Bagge, C.L., Gutierrez, P.M., Konick, L.C., Kopper, B.A., Barrios, F.X., 2001. The Suicidal Behaviors Questionnaire-Revised (SBQ-R): validation with clinical and nonclinical samples. Assessment. 8, 443–454.

Oswalt, S.B., Wyatt, T.J., 2011. Sexual orientation and differences in mental health, stress, and academic performance in a national sample of U.S. college students. J. Homosex. 58, 1255–1280. https://doi.org/10.1080/00918369.2011.605738

Owens, D., Horrocks, J., House, A., 2014. Fatal and non-fatal repetition of self-harm : Systematic review. Br J Psychiatry. 181, 193–199. https://doi.org/10.1192/bjp.181.3.193

Palitsky, D., Mota, N., Afifi, T.O., Downs, A.C., Sareen, J., 2013. The association between adult attachment style, mental disorders, and suicidality: Findings from a population-based study. J. Nerv. Ment. Dis. 201, 579–586. https://doi.org/10.1097/NMD.0b013e31829829ab

Peters, J.R., Smart, L.M., Baer, R.A., 2015. Dysfunctional responses to emotion mediate the cross-sectional relationship between rejection sensitivity and borderline personality features. J. Pers. Disord. 29, 231–240. https://doi.org/10.1521/pedi_2014_28_151

Public Health England., RCN., 2015. Preventing suicide among lesbian , gay and bisexual young people A toolkit for nurses.

Pyke, J., Steers, M.J., 1992. Suicide in a community based case management service. Community Ment. Health J. 28, 483–489.

Quirk, S.W., Wier, D., Martin, S.M., Christian, A., 2015. The influence of parental rejection on the development of maladaptive schemas, rumination, and motivations for self-injury. J. Psychopathol. Behav. Assess. 37, 283–295.

Reynolds, W.M., 1991. Psychometric characteristics of the Adult Suicidal Ideation Questionnaire in college students. J. Pers. Assess. 56, 289–307.

Ribeiro, J.D., Franklin, J.C., Fox, K.R., Bentley, K.H., Kleiman, E.M., Chang, B.P., Nock, M.K., Disorders, R., 2016. Self-injurious thoughts and behaviours as risk factors for future suicide ideation, attemps and death. Psychol Med. 46, 225–236. https://doi.org/10.1017/S0033291715001804.Self-injurious

Richman, L.S., Leary, M.R., 2009. Forms of Interpersonal Rejection : Psychol. Rev. 116, 365–383. https://doi.org/10.1037/a0015250.

Romero-Canyas, R., Downey, G., Berenson, K., Ayduk, O., Kang, N.J., 2010. Rejection sensitivity and the rejection-hostility link in romantic relationships. J. Pers. 78, 119–148. https://doi.org/10.1111/j.1467-6494.2009.00611

Ross, M.W., 1985. Actual and anticipated societal reaction to homosexuality and adjustment in two societies. J. Sex Res. 21, 40–55.

Ross, M.W., Clayer, J.R., Campbell, R.L., 1983. Parental rearing patterns and suicidal thoughts. Acta Psychiatr. Scand. 67, 429–433. https://doi.org/10.1111/j.1600-0447.1983.tb09723

Royal College of Psychiatry, 2010. Self-harm, Suicide and Risk: A Summary. 1–15.

Rudd, M.D., 1989. The prevalence of suicidal ideation among college students. Suicide Life-Threatening Behav. 19, 173–183.

Rudd, M.D., Goulding, J.M., Carlisle, C.J., 2013. Stigma and Suicide Warning Signs. Arch. Suicide Res. 17, 313–318. https://doi.org/10.1080/13811118.2013.777000

Ryan, C., Huebner, D., Diaz, R.M., Sanchez, J., 2009. Family rejection as a predictor of

negative health outcomes in white and Latino lesbian, gay, and bisexual young adults. Pediatrics. 123, 346–352. https://doi.org/10.1542/peds.2007-3524

Scoliers, G., Portzky, G., Madge, N., Hewitt, A., Hawton, K., Wilde, E.J., Ystgaard, M., Arensman, E., Leo, D., Fekete, S., Heeringen, K., 2009. Reasons for adolescent deliberate self-harm: A cry of pain and/or a cry for help? Findings from the child and adolescent self-harm in Europe (CASE) study. Soc. Psychiatry Psychiatr. Epidemiol. 44, 601–607. https://doi.org/10.1007/s00127-008-0469-z

Silk, J.B., Alberts, S.C., Altmann, J., 2003. Social Bonds of Female Baboons Enhance Infant Survival. Science. 302, 1231–1234. https://doi.org/10.1126/science.1088580

Sobrinho, A.T., Campos, R.C., Holden, R.R., 2016. Parental rejection, personality, and depression in the prediction of suicidality in a sample of nonclinical young adults. Psychoanal. Psychol. 33, 554–570. https://doi.org/10.1037/pap0000051

Swannell, S., Martin, G., Scott, J., Gibbons, M., Gifford, S., 2008. Motivations for self-injury in an adolescent inpatient population: Development of a self-report measure. Australas. Psychiatry 16, 98–103. https://doi.org/10.1080/10398560701636955

Szymanski, D.M., 2006. Does internalised heterosexism moderate the link between heterosexist events and lesbians' psychological distress? Sex Roles. 54, 227–234.

Takács, J., 2017. Our gender ghosts and gender angels: A review of *Supporting Transgender & Gender Creative Youth: Schools, Families, and Communities in Action*. J. LGBT Youth. 14, 233–236. https://doi.org/10.1080/19361653.2016.1264911

Takács, J., 2006. Social exclusion of young lesbian, gay, bisexual and transgender (LGBT) people in Europe. Brussels, Belgium: ILGA Europe.

Tatnell, R., Kelada, L., Hasking, P., Martin, G., 2014. Longitudinal analysis of adolescent NSSI: The role of intrapersonal and interpersonal factors. J. Abnorm. Child Psychol. 42, 885–896. https://doi.org/10.1007/s10802-013-9837-6

Taylor, P.J., Hutton, P., Wood, L., 2015. Are people at risk of psychosis also at risk of suicide and self-harm? A systematic review and meta-analysis. Psychol. Med. 45, 911–926. https://doi.org/10.1017/S0033291714002074

Taylor, P.J., Jomar, K., Dhingra, K., Forrester, R., Shahmalak, U., Dickson, J.M., 2017. A meta-analysis of the prevalence of different functions of non-suicidal self-injury. J. Affect. Disord. 227, 759–769. https://doi.org/10.1016/j.jad.2017.11.073

Testa, R.J., Habarth, J., Peta, J., Balsam, K., Bockting, W., 2015. Development of the Gender Minority Stress and Resilience Measure. Psychol. Sex. Orientat. Gend. Divers. 2, 65.

Testa, R.J., Michaels, M.S., Bliss, W., Rogers, M.L., Balsam, K.F., Joiner, T., 2017. Suicidal ideation in transgender people: Gender minority stress and interpersonal theory factors. J. Abnorm. Psychol. 126, 125–136. https://doi.org/10.1037/abn0000234

Trujillo, M.A., Perrin, P.B., Sutter, M., Tabaac, A., Benotsch, E.G., 2017. The buffering role of social support on the associations among discrimination, mental health, and suicidality in a transgender sample. Int. J. Transgenderism. 18, 39–52. https://doi.org/10.1080/15532739.2016.1247405

Turvey, C.L., Conwell, Y., Jones, M.P., Phillips, C., Simonsick, E., Pearson, J.L., Wallace, R., 2002. Risk factors for late-life suicide: A prospective, community-based study. Am. J. Geriatr. Psychiatry 10, 398–406. https://doi.org/10.1097/00019442-200207000-00006

Van Orden, K.A., Cukrowicz, K.C., Witte, T.K., Joiner, T.E., 2012. Thwarted belongingness and perceived burdensomeness: Construct validity and psychometric properties of the

Interpersonal Needs Questionnaire. Psychol. Assess. 24, 197–215. https://doi.org/10.1037/a0025358

VanderWaal, C., Sedlacek, D., Lane, L., 2017. The impact of family rejection or acceptance among LGBT+ millennials in the Seventh-Day Adventist Church. Soc. Work Christ. 44, 72–95.

Williams, F., Hasking, P., 2010. Emotion regulation, coping and alcohol use as moderators in the relationship between non-suicidal self-injury and psychological distress. Prev. Sci. 11, 33–41. https://doi.org/10.1007/s11121-009-0147-8

Williams, J.W., Plassman, B.L., Burke, J., Holsinger, T., Benjamin, S., 2010. Preventing Alzheimer's disease and cognitive decline. Evid. Rep. Technol. Assess. (Full. Rep). 193, 1–727.

World Health Organization, 2014. Preventing suicide. CMAJ. 143, 609–610. https://doi.org/ISBN: 978 92 4 156477 9

Wright, E.R., Gronfein, W.P., Owens, T.J., 2000. Deinstitutionalization, Social Rejection, and the Self-Esteem of Former Mental Patients. J. Health Soc. Behav. 41, 68. https://doi.org/10.2307/2676361

Yadegarfard, M., Meinhold-Bergmann, M.E., Ho, R., 2014. Family rejection, social isolation, and loneliness as predictors of negative health outcomes (depression, suicidal ideation, and sexual risk behavior) among Thai male-to-female transgender adolescents. J. LGBT Youth. 11, 347–363. https://doi.org/10.1080/19361653.2014.910483

Zetterqvist, M., 2017. Nonsuicidal Self-Injury in Adolescents: Characterization of the Disorder and the Issue of Distress and Impairment. Suicide Life-Threatening Behav. 47, 321–335. https://doi.org/10.1111/sltb.12283

Chapter 2: Empirical Paper

Does dating-app use increase levels of rejection and shame in a self-harming population?

Rosanne Cawley

Institute of Psychology, Health and Society, University of Liverpool

Correspondence Address:

The University of Liverpool

Institute of Psychology, Health and Society

The Whelan Building

Brownlow Hill

Liverpool

L69 3GB

Tel: 0151 774 5530

Email: Rosanne.cawley@liverpool.ac.uk

Word Count: 5,095 (348 in tables)

Note: Article prepared for submission to the Journal of Affective Disorders- word limit: 5000 excluding abstract, tables and references (author instructions Appendix A).

Abstract

Objective: Dating applications are an increasingly popular way of forming romantic relationships but they may have an adverse effect upon the mental health of some individuals. This study sought to investigate the association between dating-app use and non-suicidal self-injury (NSSI), cross-sectionally, and over a one-month follow-up.

Method: One-hundred and eighty-three adults with a history of NSSI were recruited to the online study with n=74 of these being dating-app users. Self-report measures captured experiences of actual NSSI, NSSI urges, shame, rejection sensitivity and experiences of dating-app use.

Results: In multiple regression analysis actual NSSI, urges to use NSSI and feelings of shame were all not significantly associated with dating-app use. However, in correlational analysis certain questionnaire variables about experiences when using dating-apps were positively correlated with NSSI urges. This included *'not feeling liked'*, *'feeling ignored'* and not *'feeling wanted'* by others when using dating-apps.

Conclusions: This study found that dating-app use did not predict greater NSSI urges compared with non dating-app use, in a sample with a history of NSSI. Further research could focus on individuals with more frequent or excessive dating-app use.

Key Words: Dating-apps, NSSI, rejection sensitivity, shame, adults.

Introduction

Non-suicidal self-injury (NSSI), defined as deliberate harm caused to the body without suicidal intent (Nixon et al., 2008), is a common clinical problem worldwide (Kerr et al., 2010; Muehlenkamp et al., 2012; Skegg, 2005; Swannell et al., 2014). NSSI is frequently associated with significant psychological distress (Klonsky and Muehlenkamp, 2007), mental health difficulties (Fox et al., 2015; Mangnall and Yurkovich, 2008) and despite the lack of suicidal motive it is still a key risk factor for suicide attempts and completion (Asarnow et al., 2011; Franklin et al., 2016; Guan et al., 2012; Hawton et al., 2013). In identifying the potential causes of NSSI, it is notable that interpersonal relationships, conflicts and associated feelings like rejection have been linked to the risk of NSSI (Edmondson et al., 2016; Franklin et al., 2016). Interpersonal experiences may therefore be an important factor, but there remains a dearth of evidence regarding the impact of different forms of interpersonal relationships, amongst individuals who self-injure.

Romantic relationships play a central role in our individual physical and emotional wellbeing (Finkel et al., 2012) and help to form our self-identity and social goals (Collins, 2003; Fitzsimons and Bargh, 2003; Furman and Shaffer, 2003). The presence of a satisfying intimate relationship is one of the strongest predictors of emotional wellbeing and distressed or absent intimate relationships predict increased risk of depression (Cacioppo et al., 2002). How individual's form intimate relationships and in-particular how young people do has been transformed in recent years by the use of mobile dating-apps. The dating-app evolved from online dating websites with a focus predominantly on physical appearance with individuals making quick *'accept or reject'* decisions about others, by swiping right for '*yes'* and left for '*no'* (Quiroz, 2013; Ward, 2016). While the app is linked to a Facebook profile, the information is limited to a handful of photographs and a small text biography, prompting concern that the apps are superficial (Blackwell et al., 2015; Sumter et al., 2017).

The dating-app was first developed and used by those within the gay community, with the launch of Grindr in 2009 (Blackwell et al., 2015). The most popular dating-app Tinder was launched in 2012 and now has more than fifty million users in 196 countries, creating nine billion matches since it launched (Ward, 2016). On average people log-on eleven times a day with each *'swiping session'* lasting seven to nine minutes (Bilton, 2014), with most frequent use by 25-34-year olds (Ayers, 2014). The vast numbers of dating-app users in recent years has been described as a social revolution (Hobbs et al., 2017; Miles, 2017). Some critics worry that the eruption of new possibilities in dating behaviour has meant that dating has become more of a fluid experience, with individuals viewed as commodities in a relational game, reducing the solidarity and security of romantic partnerships (Bauman, 2003; Hobbs et al., 2017).

To date, research into dating-apps has been largely focused on the increase of sexually transmitted diseases including HIV, referring to them as *'hook-up apps'* and attributing this to a rise in unprotected sex (Beymer et al., 2014; Chan, 2017; Choi et al., 2016). Social psychology research has investigated how users navigate the uncertainty of the response to their profile (Corriero and Tong, 2016). This has included researching the increased use of impression management (the 'selfie generation') and self-presentation when using apps, and how these tools may transcend usual dating boundaries, but may also negatively impact self-esteem (Blackwell et al., 2015; Ellison et al., 2012; Ward, 2017).

There has been limited academic research on the psychological effects of using dating-apps and no research has examined the impact of dating-app use on individuals with a history of NSSI. There are hypothesised reasons why dating-apps may be harmful for this client group. First, research shows that interpersonal or relationship difficulties are associated with the risk of NSSI and are reported as a trigger for NSSI for those with a history of these difficulties (Nock, 2009; Tatnell et al., 2014; Turner et al., 2016b). Dating-app use may have this impact as they may encourage less secure relationships, which could contribute to greater relationship

anxieties and impact NSSI. A lack of dating success and perceptions of not being wanted by others may also impact on self-esteem (Goncu and Sumer, 2011), which in turn is associated with the risk of NSSI (Forrester et al., 2017).

Second, rejection has been associated with the risk of NSSI across multiple studies (Baumkirchner, 2010; Peters et al., 2015; Quirk et al., 2015). Dating-apps are characterised by creating instantaneous but not always durable relationships (Yeo and Fung, 2018) therefore within the abundance of choice of partners there is also a large potential for experiences and feelings of rejection. Rejection experiences are also positively associated with feelings of shame (Claesson and Sohlberg, 2002; Dennison and Stewart, 2006; Gausel et al., 2012). High levels of shame have also been observed amongst individuals who engage in NSSI (Gilbert et al., 2010; Xavier et al., 2016). Therefore, a combination of feelings of rejection and shame enhanced by dating-app use experiences may trigger NSSI (Glazebrook et al., 2015; Tangney and Dearing, 2002) as NSSI may be used to reduce or escape from the negative emotions or thoughts (Nock and Prinstein, 2004; Taylor et al., 2017a).

Third, motives for dating-app use include seeking social approval, gaining belongingness and socialising with peers (Chan, 2017; Sumter et al., 2017). These motivations may also act as risk factors for NSSI, as those who self-injure may have increased vulnerability when socialising and seeking approval from others (Hasking et al., 2013; Hughes et al., 2018; Young et al., 2014). NSSI is higher in groups of people who do not conform to social norms such as those who are lesbian, gay, bisexual, transsexual or questioning (LGBTQ) (Batejan et al., 2015; Whitlock et al., 2011). While LGBTQ individuals are at higher risk of suicide and NSSI (Jackman et al., 2016; King et al., 2008), they are also a group who have been at the forefront of the dating-app revolution (Taylor et al., 2017b). App-use in this population is common (Van De Wiele and Tong, 2014) and the way dating-apps are experienced may differ from those who are heterosexual as use may be mediated by a wish for anonymity to limit

'outness' (Wu and Ward, 2018). This is in line with common difficulties experienced in the LGBTQ population such as thwarted belonging (Baams et al., 2015), a lack of acceptance (Fuller, 2017) and stigma, victimisation or harassment (Almeida et al., 2009). While dating-apps were developed to help individuals meet a wider scope of people they may also enhance the chances of individuals experiencing victimisation (Scott, 2016). However, the direction of these factors is not known, and dating-apps may indeed offer a place of connection, particularly for those who previously would have had more limited opportunities (Hance et al., 2017).

The aim of the research was to investigate the association between dating-app use and NSSI urges and behaviour in those with a history of this behaviour, cross-sectionally, and over a one-month follow-up. We also aim to explore whether the psychological experience of dating-app use, including feelings of rejection and shame are associated with NSSI. It was hypothesised that: 1a) dating-app use will be positively associated with greater NSSI urges and behaviour at baseline, 1b) dating-app use will positively predict the risk of NSSI urges and behaviour over the one-month follow-up, 2a) dating-app use will be positively associated with shame at baseline, 2b) dating-app use will positively predict shame over the one-month follow-up, and 3) experiences of rejection linked to dating-app use will be associated with NSSI urges and behaviour.

Method

Design

The study adopted an observation, longitudinal online survey design. An initial baseline survey was followed up with a briefer assessment at one-month.

Participants

Participants were recruited using a convenience sampling method from January 2017 to December 2017. Participants were eligible if they were aged over 18 years and self-reported two days or more where NSSI took place within the last twelve months. This latter criterion excluded individuals where NSSI was a single uncharacteristic event. Due to the online nature of the study design, those who had inadequate English language ability were also excluded.

Measures

All questionnaire measures can be found in Appendix E.

Demographic questionnaire.

A brief questionnaire on demographic and clinical information for each participant was collected. This included: age, gender, ethnicity, employment status, previous contact with mental health services, psychiatric diagnosis, physical health difficulties and previous or current substance abuse.

Experience of Dating-Apps Questionnaire.

This questionnaire was developed by the author and tested via consultation with university students and experts by experience (Appendix F), relating to participant usage of dating-apps. This resulted in a six-item questionnaire, made up of multiple choice options and a final Likert scale question. The questionnaire sought to gather information on relationship status, frequency of dating-app use, motivation to use dating-apps and perceived positive or negative experiences of using dating-apps.

Self-Injurious Thoughts and Behaviour Interview (SITBI-SF).

The SITBI-SF (Nock et al., 2007) was developed from the full SITBI, which is a self-report questionnaire that assesses the presence, frequency and severity of self-injurious thoughts and behaviours. Only questions on NSSI were included (questions 62-72), and questions on frequency of self-injury were given closed answer choices rated from 1 for *'1-4 times'* to 5 for *'over 100 times'*, previous research has indicated that this is a helpful way of quantifying the frequency variable (Franklin et al., 2014). As actual NSSI behaviour is likely to be rarer for analysis, the focus was placed upon urges to use NSSI as the main outcome. The NSSI module of the SITBI has shown strong construct validity in relation to other measures of NSSI (average κ=.87; Franklin et al., 2014). The measure is widely used and the authors suggest strong interrater reliability (average κ=.99, r=1.0) and test-retest reliability (average κ=.70, intraclass correlation coefficient=.44) over a six-month period (Nock et al., 2007).

Alexian Brothers Urge to Self-Injure Scale (ABUSI).

The ABUSI (Washburn et al., 2010) was designed to assess the severity of motivation to engage in self-injury and was originally adapted from the Penn Alcohol Craving Scale (PACS). The ABUSI assesses the frequency, intensity, and duration of urges to self-injure, as well as the difficulty resisting urges, and the overall urge to engage in self-injury in the past week. This five-item seven-point Likert questionnaire has a maximum score of 30, with higher scores reflecting greater urges to self-injure. The authors report high internal consistency α=.92 and high test–retest reliability α=.84, they also report strong convergent and predictive validity across five similar measures (Washburn et al, 2010). Internal consistency of this measure was also high α=.94 in this sample.

State Shame and Guilt Scale (SSGS).

The SSGS (Marschall et al., 1994) is a 15-item self-report questionnaire assessing shame, guilt and pride experiences. Response items are rated on 5-point Likert scale according

to the severity of the shame experience or feeling, with 1 for *'not feeling this way at all'* to 5 for *'feeling this way very strongly'*. There is a maximum score of 75, with higher scores being indicative of greater shame. The authors report that the SSGS has good internal consistency for all three subscales (shame *a*=.89; guilt *a*=.82; pride *a*=.87), validity is supported by correlations with measures of empathy (Marschall, 1996). In this sample, for the shame subscale used in the data analysis internal consistency was good α=.83.

Rejection Sensitivity Questionnaire, adult version (A-RSQ).

The A-RSQ (Downey and Feldman, 1996) is used for assessing rejection sensitivity in adult research participants. The A-RSQ assesses expectations and anxiety about whether other people will be accepting or rejecting. Rejection sensitivity is calculated by multiplying the level of rejection concern by the level of rejection expectancy. The 18 items are based on hypothetical situations where participants make requests of others. In each situation they indicate how anxious they would be for each request, and their expected response from another. The total rejection sensitivity score is the mean score across the nine situations, with higher scores indicating higher rejection sensitivity. Previous research has reported good internal consistency *a*=.89, with good test re-test reliability =.91, in terms of validity the measure is associated with attachment anxiety (*r*=.21) and interpersonal sensitivity (*r*=.18) (Berenson et al., 2009). Internal consistency in this study was also good α=.79.

Procedure

Health Research Authority and NHS ethical approval was gained following University sponsorship, which was granted in April 2017 (Appendix G, H, I). Experts by experience (EBE) were consulted throughout the project on initial research plans, project advertisements and the accessibility of the online study. The researchers also attended support groups and NHS services to discuss the study and placed posters within relevant services. Advertising was conducted through multiple routes to ensure a large and representative sample, this included

through advertisements on websites including support groups, University sites and study related social media accounts (Appendix J).

Potential participants were directed to a secure link, using the University approved Qualtrics software, where they were first provided with an information sheet (Appendix K) and consent form (Appendix L). Participants were then invited to complete a battery of baseline questionnaire measures, lasting approximately 30 minutes, and on completion were invited to take part in the longitudinal component.

At follow-up, consent to take part in the study was re-sought and a new information sheet given. In the follow-up questionnaire participants were asked to score their activity over the past month. The questionnaire included the full ABUSI to measure urges to self-injure and the SSGS to measure shame, with one item from the SITBI on NSSI frequency, one item about dating-app use frequency and one item on experiences of rejection and shame in relation to dating-app use. The study offered every participant entry into a prize draw.

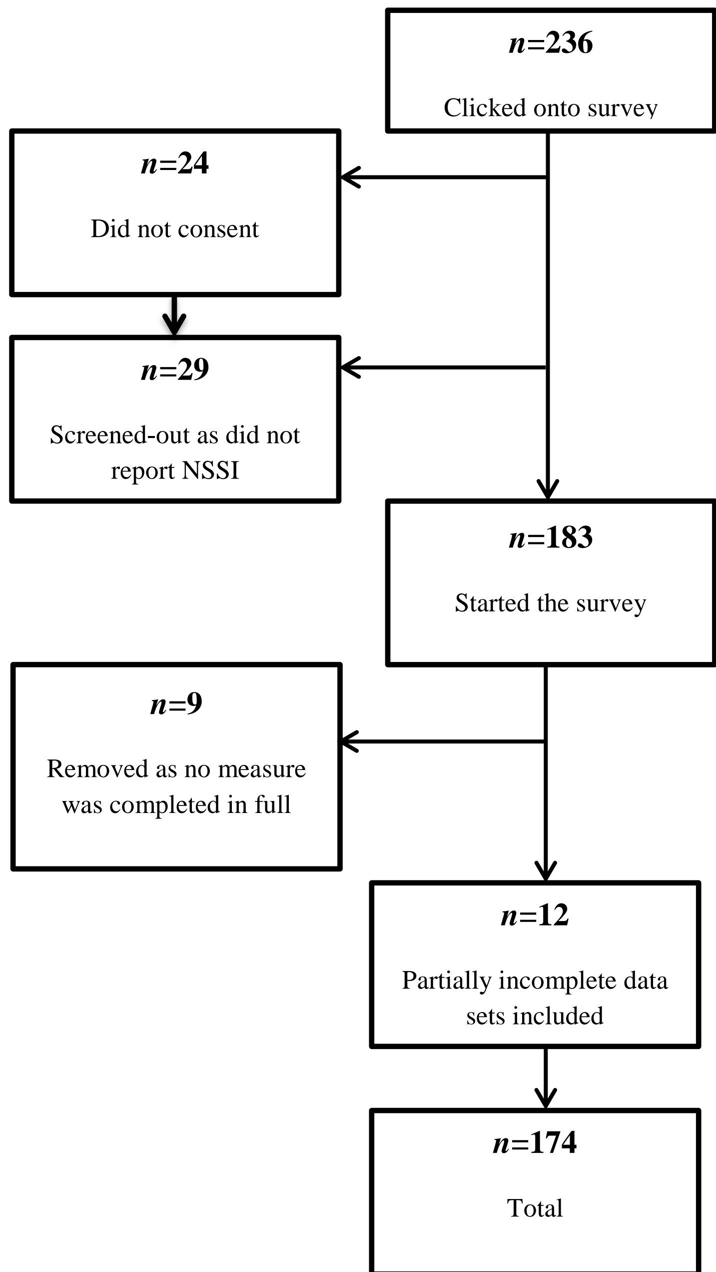


Figure 1. Flow of respondents through the study

Data Analysis

All analyses were conducted using IBM SPSS statistics package, version 22.0 (IBM_Corp, 2010). Bivariate differences between dating-app users and non dating-app users on continuous outcomes were assessed via Mann-Whitney-U tests due to positively skewed

variable distributions. Other associations between the outcomes (NSSI urges and actual NSSI) and the continuous predictors (dating-app experiences) were assessed via Spearman's correlations. Multiple linear regression was used to test the independent association between the predictor variables (dating app use, baseline NSSI urges and sexuality) with NSSI urges at follow-up. Linear regression was also used to test the association between predictor variables dating-app use and baseline shame, with shame at follow-up. Logistic regression was used to test the independent association between predictor variables (dating app use, baseline NSSI behaviour and sexuality) with NSSI behaviour at follow-up. From reviewing the participant characteristics and from the research that suggests individuals who identify as LGBQ are more likely to use dating apps (Taylor et al., 2017b; Van De Wiele and Tong, 2014) and are more likely to engage in NSSI (Jackman et al., 2016; Liu and Mustanski, 2012), this was added as a covariate.

Using G*Power, version 3.1 (Faul et al., 2007), an approximate sample size of n=115 was required to detect a medium effect (Odds Ratio [OR] = *2.00*) with a power of *80%*, for the three variables per model. G* Power was also used to determine the sample size needed for the linear regression, which was n=73, with a medium effect size (f^2=.11), and 80% power, with three predictor variables. As the sample needed for logistical regression was greater, this larger sample size became the recruitment target.

Results

Data Screening

Figure 1 reports the flow of participants into the study. There were n=183 eligible participants consenting to take part. Nine data-sets were then removed due to incomplete data

where no measure was completed in full (*4%*). Of the remaining *n*=174, *n*=12 (*6%*) had incomplete data. Mean imputation was used to generate a total score where fewer than four items were missing on a specific scale or subscale. This was done for one case, resulting in *n*=21 (*11%*) of cases with missing data. Results of Little's MCAR test indicated that the data was missing completely at random (X=7.45, df=5, *p*=.18). As levels of missing data were low, missing data was handled via listwise deletion of incomplete cases. To assess the distribution of data visual inspection of histograms, calculation of the skewness and kurtosis scores, and the use of the Kolmogorov-Smirnov test were used (Appendix M). This revealed that scores on the rejection sensitivity scale were normally distributed, but that the other variables were positively skewed.

Participant Characteristics

Seventy-four (*43%*) participants self-reported using dating-apps. The majority were female *n*=152 (*87.4%*), and White *n*=153 (*87.9%*) and across the sample the modal age category was 18-24 (*n*=93, *53%*). There were *n*=73 students (*42%*) with a further *n*=54 in full or part-time employment (*31.6%*). A total of *64.4%* disclosed that they had a mental health diagnosis. The most prevalent methods of NSSI were cutting (*n*=150), hitting (*n*=120), pulling hair (*n*=60), picking at a wound (*n*=89) and burning skin (*n*=70); participants chose as many methods as applied to them.

Table 1

Demographics

Demographic	Dating-app users *n= 74*	Non dating-app users *n= 100*
Gender		
Female	60 (*81.1%*)	92 (*92.0%*)
Male	11 (*14.9%*)	7 (*7.0%*)
Other	3 (*4.1%*)	1 (*1.0%*)
Sexuality		
Bisexual	31 (*41.9%*)	23 (*23.0%*)
Heterosexual	30 (*40.5%*)	57 (*57.0%*)
Gay/Lesbian	6 (*8.1%*)	10 (*10.0%*)
Unsure	6 (*8.1%*)	4 (*4.0%*)
Asexual	1 (*1.4%*)	2 (*2.0%*)
Other	0 (*0.0%*)	4 (*4.0%*)
Relationship Status		
Single	45 (*60.8%*)	37 (*37.0%*)
In a relationship	18 (*24.4%*)	53 (*53.0%*)
Dating	7 (*9.5%*)	7 (*7.0%*)
Other	4 (*5.4%*)	3 (*3.0%*)
NSSI Frequency (lifetime)		
Over 100 times	27 *(36.5%)*	43 *(43.0%)*
50 to 100 times	15 *(20.3%)*	20 *(20.0%)*
10 to 50 times	22 *(29.7%)*	26 *(26.0%)*
5 to 10 times	8 *(10.8%)*	7 *(7.0%)*
1 to 4 times	2 *(2.7%)*	4 *(4.0%)*
NSSI Frequency (past month)		
0 times	40 *(54.1%)*	43 *(43.0%)*
1 to 4 times	18 *(24.3%)*	42 *(42.0%)*
5 to 10 times	7 *(9.5%)*	9 *(9.0%)*
10 to 50 times	7 *(9.5%)*	6 *(6.0%)*
50 to 100 times	2 *(2.7%)*	0 *(0.0%)*

Data limited to 1 decimal place.

In terms of dating-app use: *3.4%* (*n*=6) said they logged-on every day, *6.9%* (*n*=12) every week, *9.2%* (*n*= 16) once a month, *8.6%* (*n*=15) once in the past 6-months, *6.3%* (*n*=11)

once in the last year and *8%* (*n*=14) once in the last two years. When asked about motivation for dating-app use: *61%* (*n*=45) reported they were motivated to find a long-term relationship, *49%* (*n=36*) to date new people, *24%* (*n*= 18) to have casual sex, *57%* (*n*=42) to see if others find them attractive and *24%* (*n*=18) to find friends. Participants could choose as many motivations as applied to them.

Differences Between Dating-app Users and Non Dating-app Users

Initial exploratory correlations of the data showed that rejection, shame and NSSI urges significantly correlated (Appendix N). However, rejection sensitivity, U=3432, *z*=.24, *p*=.81, *r*=.01, experiences of shame, U= 3300, *z* =-. 24, *p*=.81, *r* =-.02, and NSSI urges did not differ significantly between dating-app users and non-app users, U=3502, *z* =-.60, *p*=.55, *r*=-.04. The mean frequency of self-injury between the two groups also did not significantly differ across the lifespan *p*=.36, past year *p*=.80, or past month *p*=.55.

Table 2
Descriptive Statistics Between Groups

Scale	Dating-app users				Non dating-app users			
	N	*Mean*	*Median*	*S.D*	*N*	*Mean*	*Median*	*S.D*
Rejection Sensitivity	70	16.81	16.72	5.50	96	16.50	16.39	5.80
Shame	71	15.91	16.00	4.97	95	15.85	17.00	5.70
NSSI Urges	74	12.51	11.00	9.39	100	13.19	13.00	8.38

Dating App Use and Outcomes at Follow-Up

At the one-month follow-up *n*=85 participants took part. Analysis was undertaken to determine if those who did not take part in the follow-up differed significantly from those who did, but no significant differences between the groups were found. Regression analysis was undertaken to investigate whether baseline dating-app use (*n*=74) was associated with

NSSI at follow-up. Inspection of residuals suggested that the assumptions of normality, linearity, and homoscedascity were met. There was no evidence of multicollinearity as no variables had a bivariate correlation above .7.

Logistic regression was performed to assess the impact of dating-app use and sexuality on NSSI (1 = present, 0 = absent) at follow-up (one month later). The model adjusted for baseline frequency of NSSI. The model was statistically significant X (3, n=85) = 24.48 p<.001. The model as a whole explained between approximately 25% (Cox and Snell R^2) and 33% (Nagelkerke R^2) of the variance in actual NSSI. As shown in Table 3, dating-app use and LGBQ sexuality (0 = heterosexual 1 = not heterosexual) were not significantly associated with NSSI at follow-up. Linear regression was used to assess the impact of dating app-use and LGBQ sexuality on NSSI urges at the one-month follow-up. The model adjusted for baseline NSSI urges. The overall model was significant, F(3, n=85)= 27.58, p<.001, R^2 =.50, but dating app use and LGBQ sexuality were not significantly associated with NSSI urges at follow-up. Linear regression was then used to assess the impact of dating-app use on shame at follow-up, adjusting for baseline shame. The overall model was significant, F(2, n=81)=36.85, p<.001, R^2 =.48, but dating app use was unrelated to shame at follow-up.

In summary, dating-app users did not differ from non dating-app users with regards to NSSI urges, behaviour or shame at either baseline or follow-up. Across all three analyses, no cases had associated Cook’s distances over 1 or Mahalanobis distance scores exceeding the critical chi square value of 16.27. Suggesting that no cases were having an undue influence upon the results.

Table 3
Multiple Regression

			95% Confidence Interval		
Outcome	Predictor	OR	Lower	Upper	
NSSI	Baseline NSSI	4.25**	1.96	9.19	
	Dating-app use	.53	.179	1.54	
	LGBQ Sexuality	.59	.216	1.63	
Outcome	Predictor	B	Lower	Upper	β
NSSI urges	Baseline NSSI urges	.67**	.52	.81	.71**
	Dating-app use	-.72	-3.42	1.97	-.04
	LGBQ Sexuality	-.53	-3.15	2.07	-.03
Shame	Baseline Shame	.74**	.59	.88	.66**
	Dating-app use	-.49	2.30	1.38	-.04

*** = p <0.01, data limited to 2 decimal places.*

Associations Between App-use Experience and NSSI

For the subgroup of participants who reported using dating-apps at baseline (*n*=74) and over the follow-up period (*n*=17), we examined correlations between the Experience of Dating-App Questionnaire variables and the ABUSI which measured NSSI urges. These correlations are reported in Table 4.

Table 4
Correlation Analysis - Dating-app Use Experience and NSSI Urges

Experiences of Dating-Apps Questionnaire Variables	NSSI urges at baseline (*n* = 74.00)	NSSI urges at follow-up (*n* = 17.00)
Rejected Dating	.18	.38
Not liked Dating	.26*	.46
Wanted Dating	-.24*	-.53*
Liked Dating	-.11	-.48*
Ignored Dating	.17	.51*

**=p<0.05, Spearman's correlational analysis used*

At baseline greater reported NSSI urges were mildly negatively associated with feeling *'wanted'* whilst using apps, and mildly negatively associated with feeling *'not liked'* whilst using apps. Over the follow-up period, *'feeling wanted'* and *'feeling liked'* while using apps were strongly negatively associated with NSSI urges. *'Feeling ignored'* was strongly positively correlated with NSSI urges. The strong associations seen in the follow-up likely reflects the shorter time period where dating-app use is compared with recent NSSI, rather than lifetime data at baseline. Correlations were also found between items on the Experience of Dating-App Questionnaire and the standardised measures. Shame experiences were negatively correlated at baseline with *'feeling wanted'* on dating-apps (r=.-258, p>0.05). For rejection sensitivity positive correlations were found between *'not feeling liked'* on apps (r=.246, p>0.05) and *'feeling ignored'* on apps (r=.308, p<0.001) (Appendix O).

Discussion

The aim of this study was to investigate whether dating-app use was associated with NSSI risk. The study hypothesised that dating-app use would positively predict risk of NSSI urges and behaviour at baseline and at the one-month follow-up. It was also hypothesised that dating-app use would be positively associated with shame at baseline and at follow-up, and that experiences of rejection would be associated with NSSI urges and behaviour. The results of this study suggest that dating-app use was not significantly related to NSSI in this sample population. Experiences of shame and rejection sensitivity were also not related to dating-app use at either baseline or follow-up. Research on dating-apps and their potential impact is in its infancy and this remains the first study, to our knowledge, that looks at app-use within a sample of those who engage in NSSI.

The initial findings may give an alternative view-point from the consensus in the literature that places focus on the negative impact of dating-app-use (Beymer et al., 2014; Chan, 2017; Choi et al., 2016; Ward, 2016; Wu and Ward, 2018). Perhaps just as some dating-app users may find the use detrimental, others may find app-use an important way of connecting with others and seeking romantic partners. Surveys of dating-app-users have shown that the majority find apps help them to feel in control of their romantic lives and gives them greater opportunity to meet new people (Hobbs et al., 2017; Smith and Duggan, 2013). Particularly for individuals who identify with non-conforming sexuality dating-app use may be one channel that makes meeting others easier and less-stigmatising (Blackwell et al., 2015; Campbell, 2014; Fox and Ralston, 2016). Furthermore, while there is evidence of dating-app-use being related to casual sex, an over-focus on this removes the fact that the majority of people who use apps still report they do so to seek a relationship (Hobbs et al., 2017), as did 61% of this study sample.

There are other plausible explanations for the findings too. While evidence that dating-app use is harmful for those with a history of NSSI was not identified, preliminary findings that the actual experience of dating-app use may relate to NSSI risk were found. Analysis of the Experience of Dating-Apps Questionnaire did show correlations between experiences of app-use, such as feeling unwanted and not liked, with the ABUSI measure of urges to self-injure. This indicates that those who have more regular negative experiences on dating-apps are more at risk of experiencing NSSI urges. This is in line with the research that highlights an association between NSSI and emotion regulation difficulties (Hasking et al., 2010; Tatnell et al., 2014; Williams and Hasking, 2010) as these emotional difficulties can mediate the relationship between romantic attachment and NSSI (Levesque et al., 2017; Turner et al., 2016a). The Dating-App Experience Questionnaire also had items which were correlated with shame and rejection sensitivity (Appendix O). While these findings were small, they do indicate how experiences on dating-apps can be linked to shame and rejection, both of which are related to enhanced risk of NSSI (Glazebrook et al., 2015b; Tangney and Dearing, 2002). However, the results from this study are based on the smaller numbers of participants who endorsed dating app-use within this sample (n=74), and so should be treated with caution. Furthermore, these cross-sectional correlations do not clarify whether NSSI urges are a consequence or precursor to experiencing dating-apps in a certain way. That said, these preliminary results do suggest an avenue for future research focusing on how the varying experience of dating-app use interacts with NSSI.

When looking at the characteristics of the sample, two important aspects are clear the frequency of dating-app use and the frequency of NSSI. Modal self-injury prevalence for those with and without app use was in the lowest category; 1-4 times over the past year. This seems low for a sample with a history of NSSI and may indicate that this sample may not be representative of those with more severe NSSI. Furthermore, in contrast to the general

population dating-app statistics (Bilton, 2014), in this sample only *3.4%* said they logged on every day. Therefore, while we can hypothesise that using dating-apps does not impact NSSI it is difficult to expand these findings beyond those who use the apps infrequently. Future research could specifically aim to recruit individuals who are regular or excessive dating-app users, as this may highlight the pattern between perceived experience and emotional reactivity to app-use in a clearer way. In addition, researching the effect of online-connectedness and romantic attachment with more frequent NSSI may diversify the understanding of experience. In addition, as this study wanted to focus on those with clinical need or vulnerability to NSSI, it only recruited those with a history of NSSI. This exclusion criterion does not tell us whether dating-app experiences can be a trigger for NSSI in the first instance.

While this study attempted to draw understanding on a new and innovative area of research, the research lacked a standardised measure of the impact and experiences of dating-apps. Therefore, reliability and validity of assessments is not known and further validation of this questionnaire is important. Additionally, relying on self-report tools may also have increased response biases, however, this may have also encouraged greater openness in relation to personal topics like NSSI and romantic life (McDonald, 2008). Further qualitative research would help to bring richness and direction to the potential positives and negatives of dating-app-use (Ritchie et al., 2013). Finally, while this study did hold a longitudinal component it remained limited to one-month and was a smaller sample size due to poor attrition. Therefore, a larger study sample with greater time components would further expand the findings of this research area.

Clinically it is important to facilitate research that evolves alongside societal changes, as these changes are likely to impact the presenting needs in services. While this study did not indicate a relationship between dating-app use and NSSI, it did evidence that certain perceived experiences while using dating-apps could increase urges to NSSI. It is important when

working clinically that a person's online connectiveness is assessed, to ask specifically whether online social media has ever been problematic (Chiu and Chang, 2015; Frost and Rickwood, 2017; Naslund et al., 2016). Research into other forms of social media have highlighted a difficult culture, particularly for young people, of enhanced expectations, over-focus on physical appearance and the need for larger and larger social networks (Frost and Rickwood, 2017; Rafla et al., 2014; Richards et al., 2015). As more research is conducted into online-media for friendship and relationship formation this will help to establish what aspects of social media may be helpful and what aspects may be harmful, which will inform clinically what support is needed. There are currently no guidelines on how to work clinically with social media influences, despite their exponential growth and impact within our society (Fuchs, 2017). This study suggests that there is no overt risk from minimal dating-app use for those with a history of NSSI, which may be an important contributor to developing clinical guidance based on evidence.

This study found that dating-app use did not predict greater NSSI urges, feelings of shame or rejection compared with non-dating-app users, in a sample of those who use NSSI. Certain negative experiences of dating-app use were correlated with greater NSSI urges, but further longitudinal analyses are needed to establish the direction of this relationship. Future research is needed looking at participant samples that include a broader representation of both dating-app use and NSSI, to be able to generalise findings further.

References

Almeida, J., Johnson, R., Corliss, H., Molnar, B., Azrael, D., 2009. Emotional distress among LGBT youth: The influence of perceived discrimination based on sexual orientation. J. Youth Adolesc. 38, 1001–1014. https://doi.org/10.1007/s10964-009-9397-9

Asarnow, R., Porta, G., Spirito, A., Emslie, G., Clarke, G., Wagner, K., Vitiello, B., Keller, M., 2011. Suicide Attempts and Nonsuicidal Self-Injury in the Treatment of Resistant Depression in Adolescents: Findings from the TORDIA Trial. J Am Acad Child Adolesc Psychiatry. 50, 772–781. https://doi.org/10.1016/j.jaac.2011.04.003

Ayers, C., 2014. Tinder: the app that's setting the dating scene on fire. Aust. May 31.

Baams, L., Grossman, A.H., Russell, S.T., 2015. Minority stress and mechanisms of risk for depression and suicidal ideation among lesbian, gay, and bisexual youth. Dev Psychol 51, 688–696. https://doi.org/10.1037/a0038994

Batejan, K.L., Jarvi, S.M., Swenson, L.P., 2015. Sexual Orientation and Non-Suicidal Self-Injury: A Meta-Analytic Review. Arch. Suicide Res. 19, 131–150. https://doi.org/10.1080/13811118.2014.957450

Bauman, Z., 2003. Intimations of postmodernity. Routledge.

Baumkirchner, B.E., 2010. Non-suicidal self-injury and rejection sensitivity: An exploration of sensitivity to rejection in adult self-mutilators and subsequent clinical implications a quantitative study. Diss. Abstr. Int. Sect. B Sci. Eng. ProQuest Information & Learning, US.

Berenson, K.R., Gyurak, A., Ayduk, Ö., Downey, G., Garner, M.J., Mogg, K., Bradley, B.P., Pine, D.S., 2009. Rejection sensitivity and disruption of attention by social threat cues. J. Res. Pers. 43, 1064–1072.

Beymer, M., Weiss, R., Bolan, R., Rudy, E., Bourque, L., Rodriguez, J., Morisky, D., 2014. Sample of Men who have Sex with Men in Los Angeles County. Sex. Transm. Infect.

90, 567–572. https://doi.org/10.1136/sextrans-2013-051494

Bilton, N., 2014. Tinder, the fast-growing dating app, taps an age-old truth. New York Times Oct 29, 2014.

Blackwell, C., Birnholtz, J., Abbott, C., 2015. Seeing and being seen: Co-situation and impression formation using Grindr, a location-aware gay dating app. New Media Soc. 17, 1117–1136. https://doi.org/10.1177/1461444814521595

Cacioppo, J.T., Hawkley, L.C., Crawford, L.E., Ernst, J.M., Burleson, M.H., Kowalewski, R.B., Malarkey, W.B., Van Cauter, E., Berntson, G.G., 2002. Loneliness and health: Potential mechanisms. Psychosom. Med. 64, 407–417. https://doi.org/10.1097/00006842-200205000-00005

Campbell, J.E., 2014. Getting it on online: Cyberspace, gay male sexuality, and embodied identity. Routledge.

Chan, L.S., 2017. Who uses dating apps? Exploring the relationships among trust, sensation-seeking, smartphone use, and the intent to use dating apps based on the Integrative Model. Comput. Human Behav. 72, 246–258.

Chiu, Y.P., Chang, S.C., 2015. Leverage Between the Buffering Effect and the Bystander Effect in Social Networking. Cyberpsychology, Behav. Soc. Netw. 18, 450–456. https://doi.org/10.1089/cyber.2014.0377

Choi, E.P.H., Wong, J.Y.H., Lo, H.H.M., Wong, W., Chio, J.H.M., Fong, D.Y.T., 2016. The association between smartphone dating applications and college students' casual sex encounters and condom use. Sex. Reprod. Healthc. 9, 38–41. https://doi.org/10.1016/j.srhc.2016.07.001

Claesson, K., Sohlberg, S., 2002. Internalised shame and early interactions characterised by indifference, abandonment and rejection: Replicated findings. Clin. Psychol. Psychother. 9, 277–284. https://doi.org/10.1002/cpp.331

Collins, W.A., 2003. More than myth: The developmental significance of romantic relationships during adolescence. J. Res. Adolesc. 13, 1–24.

Corriero, E.F., Tong, S.T., 2016. Managing uncertainty in mobile dating applications: Goals, concerns of use, and information seeking in Grindr. Mob. Media Commun. 4, 121–141. https://doi.org/10.1177/2050157915614872

Dennison, S.M., Stewart, A., 2006. Facing rejection: New relationships, broken relationships, shame, and stalking. Int. J. Offender Ther. Comp. Criminol. 50, 324–337. https://doi.org/10.1177/0306624X05278077

Downey, G., Feldman, S.I., 1996. Implications of rejection sensitivity for intimate relationships. J. Pers. Soc. Psychol. 70, 1327–1343. https://doi.org/10.1037/0022-3514.70.6.1327

Edmondson, A.J., Brennan, C.A., House, A.O., 2016. Non-suicidal reasons for self-harm: A systematic review of self-reported accounts. J. Affect. Disord. 191, 109–117. https://doi.org/10.1016/j.jad.2015.11.043

Ellison, N.B., Hancock, J.T., Toma, C.L., 2012. Profile as promise: A framework for conceptualizing veracity in online dating self-presentations. New Media Soc. 14, 45–62. https://doi.org/10.1177/1461444811410395

Faul, F., Erdfelder, E., Lang, A.-G., Buchner, A., 2007. G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. Behav. Res. Methods. 39, 175–191.

Finkel, E.J., Eastwick, P.W., Karney, B.R., Reis, H.T., Sprecher, S., 2012. Online dating: A critical analysis from the perspective of psychological science. Psychol. Sci. Public Interes. 13, 3–66.

Fitzsimons, G.M., Bargh, J.A., 2003. Thinking of you: nonconscious pursuit of interpersonal goals associated with relationship partners. J. Pers. Soc. Psychol. 84, 148.

Forrester, R.L., Slater, H., Jomar, K., Mitzman, S., Taylor, P.J., 2017. Self-esteem and non-suicidal self-injury in adulthood: A systematic review. J. Affect. Disord. 221, 172–183. https://doi.org/10.1016/j.jad.2017.06.027

Fox, J., Ralston, R., 2016. Queer identity online: Informal learning and teaching experiences of LGBTQ individuals on social media. Comput. Human Behav. 65, 635–642. https://doi.org/10.1016/j.chb.2016.06.009

Fox, K.R., Franklin, J.C., Ribeiro, J.D., Kleiman, E.M., Bentley, K.H., Nock, M.K., 2015. Meta-analysis of risk factors for nonsuicidal self-injury. Clin. Psychol. Rev. 42, 156–167. https://doi.org/10.1016/j.cpr.2015.09.002

Franklin, J.C., Puzia, M.E., Lee, K.M., 2014. Recent and frequent nonsuicidal self-injury is associated with diminished implicit and explicit aversion toward self-cutting stimuli. Clin. Psychol. 2, 306-318.

Franklin, J.C., Ribeiro, J.D., Fox, K.R., Bentley, K.H., Kleiman, E.M., Huang, X., Musacchio, K.M., Jaroszewski, A.C., Chang, B.P., Nock, M.K., 2016. Risk Factors for Suicidal Thoughts and Behaviors: A Meta-Analysis of 50 Years of Research. Psychol. Bull. 143, 187–232. https://doi.org/10.1037/bul0000084

Frost, R.L., Rickwood, D.J., 2017. A systematic review of the mental health outcomes associated with Facebook use. Comput. Human Behav. 76, 576–600. https://doi.org/10.1016/j.chb.2017.08.001

Fuchs, C., 2017. Social media: A critical introduction. Sage. London.

Fuller, K.A., 2017. Interpersonal Acceptance–Rejection Theory: Application to Lesbian, Gay, and Bisexual Persons. J. Fam. Theory Rev. 9, 507–520. https://doi.org/10.1111/jftr.12226

Furman, W., Shaffer, L., 2003. The role of romantic relationships in adolescent development. Adolesc. Romant. relations Sex. Behav. Theory, Res. Pract. Implic. 3–22.

Goncu, A., Sumer, N., 2011. Rejection sensitivity, self-esteem instability, and relationship outcomes: The mediating role of responsibility attributions. Eur. Psychol. 16, 303–313. https://doi.org/10.1027/1016-9040/a000066

Gausel, N., Leach, C.W., Vignoles, V.L., Brown, R., 2012. Defend or repair? Explaining responses to in-group moral failure by disentangling feelings of shame, rejection, and inferiority. J. Pers. Soc. Psychol. 102, 941–960. https://doi.org/10.1037/a0027233

Gilbert, P., McEwan, K., Irons, C., Bhundia, R., Christie, R., Broomhead, C., Rockliff, H., 2010. Self-harm in a mixed clinical population: The roles of self-criticism, shame, and social rank. Br. J. Clin. Psychol. 49, 563–576. https://doi.org/10.1348/014466509X479771

Glazebrook, K., Townsend, E., Sayal, K., 2015. The Role of Attachment Style in Predicting Repetition of Adolescent Self Harm: A Longitudinal Study. Suicide life-threatening Behav. 45, 664–678.

Guan, K., Fox, K.R., Prinstein, M.J., 2012. Adolescent Suicide Ideation and Attempts in a Diverse Community Sample. 80, 842–849. https://doi.org/10.1037/a0029429

Hance, M.A., Blackhart, G., Dew, M., 2017. Free to be me: The relationship between the true self, rejection sensitivity, and use of online dating sites. J. Soc. Psychol. 0, 1–9. https://doi.org/10.1080/00224545.2017.1389684

Hasking, P.A., Coric, S.J., Swannell, S., Martin, G., Thompson, H.K., Frost, A.D.J., 2010. Brief report: Emotion regulation and coping as moderators in the relationship between personality and self-injury. J. Adolesc. 33, 767–773. https://doi.org/10.1016/j.adolescence.2009.12.006

Hasking, P., Andrews, T., Martin, G., 2013. The Role of Exposure to Self-Injury Among Peers in Predicting Later Self-Injury. J. Youth Adolesc. 42, 1543–1556. https://doi.org/10.1007/s10964-013-9931-7

Hawton, K., Casanas I Comabella, C., Haw, C., Saunders, K., 2013. Risk factors for suicide in individuals with depression: a systematic review. J. Affect. Disord. 147, 17–28. https://doi.org/10.1016/j.jad.2013.01.004

Hobbs, M., Owen, S., Gerber, L., 2017. Liquid love? Dating apps, sex, relationships and the digital transformation of intimacy. J. Sociol. 53, 271–284. https://doi.org/10.1177/1440783316662718

Hughes, M.A., Knowles, S.F., Dhingra, K., Nicholson, H.L., Taylor, P.J., 2018. This corrosion: A systematic review of the association between alternative subcultures and the risk of self-harm and suicide. Br. J. Clin. Psychol. 1–23. https://doi.org/10.1111/bjc.12179

IBM_Corp, R., 2010. IBM SPSS statistics for windows. IBM Corp, Armonk, NY.

Jackman, K., Honig, J., Bockting, W., 2016. Nonsuicidal self-injury among lesbian, gay, bisexual and transgender populations: an integrative review. J. Clin. Nurs. 25, 3438–3453. https://doi.org/10.1111/jocn.13236

Kerr, P.L., Muehlenkamp, J.J., Turner, J.M., 2010. Nonsuicidal self-injury: a review of current research for family medicine and primary care physicians. J. Am. Board Fam. Med. 23, 240–259.

King, M., Semelyn, J., Tai, S., Killaspy, H., Osborn, D., Popelyuk, D., Nazareth, I., 2008. Mental disorders, suicide, and deliberate self harm in lesbian, gay and bisexual people: a systematic review of the literature. Natl. Inst. Ment. Heal. England, London.

Klonsky, E.D., Muehlenkamp, J.J., 2007. Self-injury: A research review for the practitioner. J. Clin. Psychol. 63, 1045–1056.

Levesque, C., Lafontaine, M.F., Bureau, J.F., 2017. The Mediating Effects of Emotion Regulation and Dyadic Coping on the Relationship Between Romantic Attachment and Non-suicidal Self-injury. J. Youth Adolesc. 46, 277–287.

https://doi.org/10.1007/s10964-016-0547-6

Liu, R.T., Mustanski, B., 2012. Suicidal ideation and self-harm in lesbian, gay, bisexual, and transgender youth. Am. J. Prev. Med. 42, 221–228. https://doi.org/10.1016/j.amepre.2011.10.023

Mangnall, J., Yurkovich, E., 2008. A literature review of deliberate self-harm. Perspect. Psychiatr. Care 44, 175–184. https://doi.org/10.1111/j.1744-6163.2008.00172

Marschall, D., Sanftner, J., Tangney, J.P., 1994. The state shame and guilt scale. Fairfax, VA Georg. Mason Univ.

Marschall, D.E., 1996. Effects of Induced Shame on Subsequent Empathy and Altruistic Behavior Unpublished Master's Thesis. Georg. Mason Univ. Fairfax, VA.

McDonald, J.D., 2008. Measuring personality constructs: The advantages and disadvantages of self-reports, informant reports and behavioural assessments. Enquire. 1, 1–19.

Miles, S., 2017. Sex in the digital city: location-based dating apps and queer urban life. Gender, Place Cult. 1–16.

Muehlenkamp, J.J., Claes, L., Havertape, L., Plener, P.L., 2012. International prevalence of adolescent non-suicidal self-injury and deliberate self-harm. Child Adolesc. Psychiatry Ment. Health. 6, 1–9. https://doi.org/10.1186/1753-2000-6-10

Naslund, J.A., Aschbrenner, K.A., Bartels, S.J., 2016. Psychiatric Rehabilitation Journal How People With Serious Mental Illness Use Smartphones, Mobile Apps, and Social Media Psychiatr. Rehabil. J. 39, 364–367. https://doi.org/10.1037/prj0000207

Nixon, M.K., Cloutier, P., Jansson, S.M., 2008. Nonsuicidal self-harm in youth: a population-based survey. Can. Med. Assoc. J. 178, 306–312.

Nock, M.K., 2009. Why do people hurt themselves?: New insights into the nature and functions of self-injury. Curr. Dir. Psychol. Sci. 18, 78–83. https://doi.org/10.1111/j.1467-8721.2009.01613

Nock, M.K., Holmberg, E.B., Photos, V.I., Michel, B.D., 2007. Self-Injurious Thoughts and Behaviors Interview: Development, Reliability, and Validity in an Adolescent Sample. Psychol. Assess. 19, 309–317. https://doi.org/10.1037/1040-3590.19.3.309

Nock, M.K., Prinstein, M.J., 2004. A functional approach to the assessment of self-mutilative behavior. J. Consult. Clin. Psychol. 72, 885.

Peters, J.R., Smart, L.M., Baer, R.A., 2015. Dysfunctional responses to emotion mediate the cross-sectional relationship between rejection sensitivity and borderline personality features. J. Pers. Disord. 29, 231–240. https://doi.org/10.1521/pedi_2014_28_151

Quirk, S.W., Wier, D., Martin, S.M., Christian, A., 2015. The influence of parental rejection on the development of maladaptive schemas, rumination, and motivations for self-injury. J. Psychopathol. Behav. Assess. 37, 283–295. https://doi.org/10.1007/s10862-014-9453-y

Quiroz, P.A., 2013. From Finding the Perfect Love Online to Satellite Dating and “Loving-the-One-You”re Near’ A Look at Grindr, Skout, Plenty of Fish, Meet Moi, Zoosk and Assisted Serendipity. Humanity Soc. 37, 181–185.

Rafla, M., Carson, N.J., DeJong, S.M., 2014. Adolescents and the internet: what mental health clinicians need to know. Curr. Psychiatry Rep. 16, 472.

Richards, D., Caldwell, P.H.Y., Go, H., 2015. Impact of social media on the health of children and young people. J. Paediatr. Child Health. 51, 1152–1157.

Ritchie, J., Lewis, J., Nicholls, C.M., Ormston, R., 2013. Qualitative research practice: A guide for social science students and researchers. Sage.

Scott, W.S., 2016. Electronic Boundary Violations among Gay and Bisexual Men (Doctoral dissertation, Roosevelt University).

Skegg, K., 2005. Self-harm. Lancet. 366, 1471–1483.

Smith, A., Duggan, M., 2013. Online dating & relationships. Pew Internet Am. Life Proj. 1–

57.

Sumter, S.R., Vandenbosch, L., Ligtenberg, L., 2017. Love me Tinder: Untangling emerging adults' motivations for using the dating application Tinder. Telemat. Informatics 34, 67–78. https://doi.org/10.1016/j.tele.2016.04.009

Swannell, S. V., Martin, G.E., Page, A., Hasking, P., St John, N.J., 2014. Prevalence of nonsuicidal self-injury in nonclinical samples: Systematic review, meta-analysis and meta-regression. Suicide Life-Threatening Behav. 44, 273–303. https://doi.org/10.1111/sltb.12070

Tangney, J.P., Dearing, R.L., 2002. Emotions and social behavior. Shame and guilt.

Tatnell, R., Kelada, L., Hasking, P., Martin, G., 2014. Longitudinal analysis of adolescent NSSI: The role of intrapersonal and interpersonal factors. J. Abnorm. Child Psychol. 42, 885–896. https://doi.org/10.1007/s10802-013-9837-6

Taylor, P.J., Jomar, K., Dhingra, K., Forrester, R., Shahmalak, U., Dickson, J.M., 2017a. A meta-analysis of the prevalence of different functions of non-suicidal self-injury. J. Affect. Disord. 227, 759–769. https://doi.org/10.1016/j.jad.2017.11.073

Taylor, S.H., Hutson, J.A., Alicea, T.R., 2017b. Social Consequences of Grindr Use. Proc. 2017 CHI Conf. Hum. Factors Comput. Syst. 6645–6657. https://doi.org/10.1145/3025453.3025775

Turner, B., Cobb, R., Gratz, K., Chapman, A., 2016a. The Role of Interpersonal Conflict and Perceived Social Support in Nonsuicidal Self-Injury in Daily Life. J. Abnorm. Psychol. 125, 588–598. https://doi.org/10.1037/abn0000141

Turner, B.J., Yiu, A., Claes, L., Muehlenkamp, J.J., Chapman, A.L., 2016b. Occurrence and co-occurrence of nonsuicidal self-injury and disordered eating in a daily diary study: Which behavior, when? Psychiatry. Res. 246, 39–47. https://doi.org/10.1016/j.psychres.2016.09.012

Van De Wiele, C., Tong, S.T., 2014. Breaking boundaries. Proc. 2014 ACM Int. Jt. Conf. Pervasive Ubiquitous Comput. 619–630. https://doi.org/10.1145/2632048.2636070

Ward, J., 2017. What are you doing on Tinder? Impression management on a matchmaking mobile app. Inf. Commun. Soc. 20, 1644–1659. https://doi.org/10.1080/1369118X.2016.1252412

Ward, J., 2016. Swiping, matching, chatting: Self-Presentation and self-disclosure on mobile dating apps, Human IT. https://doi.org/10.1177/1529100612436522

Washburn, J.J., Juzwin, K.R., Styer, D.M., Aldridge, D., 2010. Measuring the urge to self-injure: Preliminary data from a clinical sample. Psychiatry Res. 178, 540–544. https://doi.org/10.1016/j.psychres.2010.05.018

Whitlock, J., Muehlenkamp, J., Purington, A., Eckenrode, J., Barreira, P., Baral, A.G., Marchell, T., Kress, V., Girard, K., Chin, C., Knox, K., 2011. Nonsuicidal self-injury in a college population: general trends and sex differences. J Am.Coll.Health. 59, 691–698.

Williams, F., Hasking, P., 2010. Emotion regulation, coping and alcohol use as moderators in the relationship between non-suicidal self-injury and psychological distress. Prev. Sci. 11, 33–41. https://doi.org/10.1007/s11121-009-0147-8

Wu, S., Ward, J., 2018. The mediation of gay men's lives: A review on gay dating app studies. Sociol. Compass. 12, 1–10. https://doi.org/10.1111/soc4.12560

Xavier, A., Pinto Gouveia, J., Cunha, M., 2016. Non-suicidal Self-Injury in Adolescence: The Role of Shame, Self-Criticism and Fear of Self-Compassion. Child Youth Care Forum. 45, 571–586. https://doi.org/10.1007/s10566-016-9346-1

Yeo, T.E.D., Fung, T.H., 2018. "Mr Right Now": Temporality of relationship formation on gay mobile dating apps. Mob. Media Commun. 6, 3–18. https://doi.org/10.1177/2050157917718601

Young, R., Sproeber, N., Groschwitz, R.C., Preiss, M., Plener, P.L., 2014. Why alternative

teenagers self-harm: Exploring the link between non-suicidal self-injury, attempted suicide and adolescent identity. BMC Psychiatry. 14. https://doi.org/10.1186/1471-244X-14-137

Appendices

Appendix A: Journal of Affective Disorders Author Guidelines

Description

The Journal of Affective Disorders publishes papers concerned with **affective disorders** in the widest sense: **depression, mania, anxiety and panic**. It is interdisciplinary and aims to bring together different approaches for a diverse readership. High quality papers will be accepted dealing with any aspect of affective disorders, including biochemistry, pharmacology, endocrinology, genetics, statistics, epidemiology, psychodynamics, classification, clinical studies and studies of all types of treatment.

Language (usage and editing services)

Please write your text in good English (American or British usage is accepted, but not a mixture of these). Authors who feel their English language manuscript may require editing to eliminate possible grammatical or spelling errors and to conform to correct scientific English may wish to use the English Language Editing service available from Elsevier's WebShop.

Submission

Our online submission system guides you stepwise through the process of entering your article details and uploading your files. The system converts your article files to a single PDF file used in the peer-review process. Editable files (e.g., Word, LaTeX) are required to typeset your article for final publication. All correspondence, including notification of the Editor's decision and requests for revision, is sent by e-mail.

Types of Papers

The Journal primarily publishes: Full-Length Research Papers (up to 5000 words, excluding references and up to 6 tables/figures). Review Articles and Meta-analyses (up to 8000 words, excluding references and up to 10 tables/figures). Short Communications (up to 2000 words, 20 references, 2 tables/figures). Correspondence (up to 1000 words, 10 references, 1 table/figure). At the discretion of the accepting Editor-in-Chief, and/or based on reviewer feedback, authors may be allowed fewer or more than these guidelines.

Preparation of Manuscripts

Articles should be in English. The title page should appear as a separate sheet bearing title (without article type), author names and affiliations, and a footnote with the corresponding author's full contact information, including address, telephone and fax numbers, and e-mail address (failure to include an e-mail address can delay processing of the manuscript).

Papers should be divided into sections headed by a caption (e.g., Introduction, Methods, Results, Discussion). A structured abstract of no more than 250 words should appear on a separate page with the following headings and order: Background, Methods, Results, Limitations, Conclusions (which should contain a statement about the clinical relevance of the research). A list of three to six key words should appear under the abstract. **Authors should note that the 'limitations' section both in the discussion of the paper AND IN A STRUCTURED ABSTRACT are essential. Failure to include it may delay in processing the paper, decision making and final publication.**

Figures and Photographs

Figures and Photographs of good quality should be submitted online as a separate file. Please use a lettering that remains clearly readable even after reduction to about 66%. For every figure or photograph, a legend should be provided. All authors wishing to use illustrations

already published must first obtain the permission of the author and publisher and/or copyright holders and give precise reference to the original work. This permission must include the right to publish in electronic media.

Tables
Tables should be numbered consecutively with Arabic numerals and must be cited in the text in sequence. Each table, with an appropriate brief legend, comprehensible without reference to the text, should be typed on a separate page and uploaded online. Tables should be kept as simple as possible and wherever possible a graphical representation used instead. Table titles should be complete but brief. Information other than that defining the data should be presented as footnotes. Please refer to the generic Elsevier artwork instructions: http://authors.elsevier.com/artwork/jad.

Abstract
A concise and factual abstract is required. The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separately from the article, so it must be able to stand alone. For this reason, References should be avoided, but if essential, then cite the author(s) and year(s). Also, non-standard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself.

Highlights
Highlights are mandatory for this journal. They consist of a short collection of bullet points that convey the core findings of the article and should be submitted in a separate editable file in the online submission system. Please use 'Highlights' in the file name and include 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point). You can view example Highlights on our information site.

Keywords
Immediately after the abstract, provide a maximum of 6 keywords, using American spelling and avoiding general and plural terms and multiple concepts (avoid, for example, 'and', 'of'). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.

Abbreviations
Define abbreviations that are not standard in this field in a footnote to be placed on the first page of the article. Such abbreviations that are unavoidable in the abstract must be defined at their first mention there, as well as in the footnote. Ensure consistency of abbreviations throughout the article.

References

Citation in text
Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications are not recommended in the reference list, but may be mentioned in the text. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the publication date with either 'Unpublished results' or 'Personal communication'. Citation of a reference as 'in press' implies that the item has been accepted for publication.

Reference management software
Most Elsevier journals have their reference template available in many of the most popular reference management software products. These include all products that support Citation Style Language styles, such as Mendeley and Zotero, as well as EndNote. Using the word processor plug-ins from these products, authors only need to select the appropriate journal template when preparing their article, after which citations and bibliographies will be automatically formatted in the journal's style. If no template is yet available for this journal, please follow the format of the sample references and citations as shown in this Guide. If you use reference management software, please ensure that you remove all field codes before submitting the electronic manuscript. More information on how to remove field codes.

Users of Mendeley Desktop can easily install the reference style for this journal by clicking the following link:
http://open.mendeley.com/use-citation-style/journal-of-affective-disorders
When preparing your manuscript, you will then be able to select this style using the Mendeley plug-ins for Microsoft Word or LibreOffice.

Reference style
Text: All citations in the text should refer to:
1. *Single author:* the author's name (without initials, unless there is ambiguity) and the year of publication;
2. *Two authors:* both authors' names and the year of publication;
3. *Three or more authors:* first author's name followed by 'et al.' and the year of publication.
Citations may be made directly (or parenthetically). Groups of references should be listed first alphabetically, then chronologically.
Examples: 'as demonstrated (Allan, 2000a, 2000b, 1999; Allan and Jones, 1999). Kramer et al. (2010) have recently shown ....'
List: References should be arranged first alphabetically and then further sorted chronologically if necessary. More than one reference from the same author(s) in the same year must be identified by the letters 'a', 'b', 'c', etc., placed after the year of publication.
Examples:
Reference to a journal publication:
Van der Geer, J., Hanraads, J.A.J., Lupton, R.A., 2010. The art of writing a scientific article. J. Sci. Commun. 163, 51–59.
Reference to a book:
Strunk Jr., W., White, E.B., 2000. The Elements of Style, fourth ed. Longman, New York.
Reference to a chapter in an edited book:
Mettam, G.R., Adams, L.B., 2009. How to prepare an electronic version of your article, in: Jones, B.S., Smith , R.Z. (Eds.), Introduction to the Electronic Age. E-Publishing Inc., New York, pp. 281–304.
Reference to a website:
Cancer Research UK, 1975. Cancer statistics reports for the UK. http://www.cancerresearchuk.org/aboutcancer/statistics/cancerstatsreport/ (accessed 13 March 2003).
Reference to a dataset:
[dataset] Oguro, M., Imahiro, S., Saito, S., Nakashizuka, T., 2015. Mortality data for Japanese oak wilt disease and surrounding forest compositions. Mendeley Data, v1. https://doi.org/10.17632/xwj98nb39r.1.

Author Statement

Contributors

Rosanne Cawley and Dr Taylor were involved in study conception, design, data extraction, data analysis and write-up of this paper. Dr Eleanor Pontin supported the searching process, quality assessment and write up of the paper. Dr Kate Sheehy supported the data extraction of included papers for the systematic review write-up and jointly recruited for the wider OSIRIS study. Jade Touhey supported the searching processes of the systematic review in all its stages. All authors have approved the final article to be true.

Appendix B: Review Protocol

***= departures from the original proposal*

Rejection and self-harm: A systematic review

Review question(s)

What is the relationship between rejection and self-harm in adulthood?

Searches

Electronic databases, PsycINFO, Medline, CINAHL and Web of Science will be searched.

The following search terms will be used: Self-harm* or self-injur* or self-mutilation or NSSI or DSH or suicid* AND "social acceptance" or rejection. The MeSH headings "Self-injurious Behavior" AND "Rejection (psychology)" will also be used.

***MeSH terms were searched but they did not add to the volume of papers searched and were subsequently dropped*

1. The selected databases will be searched using the search terms indicated.
2. An initial screening of paper titles and abstracts will be completed by the first author (RC), utilising the inclusion and exclusion criteria to determine eligibility.
3. Where eligibility is unclear, the article/paper will be read in full. In the event that eligibility remains unclear, this will be discussed with the wider review team.
4. Papers that do not meet inclusion criteria at this stage will be excluded from the review.
5. Papers that do meet the inclusion criteria will be read by the first author (RC) and again reviewed for suitability. Those papers deemed unsuitable (not related to the research question or on further review do not meet the inclusion criteria) will be excluded. In the event that eligibility remains unclear, this will be discussed with the wider review team.
6. Papers that are suitable will be screened by reading the full text in parallel with another researcher to ensure quality.
7. Following the quality assessment, authors of the suitable papers will be contacted for any other relevant published or unpublished work.

Following this, the trainee will review the reference lists of relevant research papers and any relevant review articles. Contact will also be made with corresponding authors of relevant papers to review whether they have any further published or unpublished research that is eligible. Conference abstracts and theses/dissertations identified through the searches and from searching databases for dissertations will also be followed-up.

Types of study to be included
Eligibility criteria for studies to be included in the review
Inclusion Criteria

Inclusion criteria for studies to be included in this review are as follows: 1) quantitative research studies using cross-sectional, correlational, case-control, or prospective study design, 2) original research, 3) written in English language, 4) involves a participant sample where all participants are aged 18 years and over, 5) measures self-harm*, and 6) analyses the relationship between rejection and self-harm.

**Self-harm in this review refers to behavior with and without suicidal motive. To define further the following review will only include studies that define self-harm as action or*

behavior to deliberately harm oneself. Methods of self-harm included in the review will be; cutting, biting, burning or scratching the skin, hair pulling, inserting objects into the body or overdosing on medication or poisonous items.

Exclusion Criteria

Studies will be excluded from this review if they are as follows: 1) qualitative research, 2) case studies, 3) experimental designs, 4) review, commentary or discussion articles, or 5) focus on form of self-harm not included in the inclusion criteria above - such as excess drinking of alcohol, drug use, eating disorders or reckless driving.

Condition or domain being studied

Self-harm (with and without suicidal motive). Defined as intentionally damaging or injuring one's body. Usually as a way of coping with or expressing overwhelming emotional distress (NHS, 2016).

Participants/ population

Individuals aged 18 years and over with current or past self-harm behaviour.

Intervention(s), exposure(s)

Exposure to rejection, defined as a type of explicit exclusion which is active and direct and often evokes powerful motivations and emotions (Molden et al., 2009).

Comparator(s)/ control

Not applicable

Outcome(s)

Primary outcome

Do experiences of rejection impact upon the occurrence, frequency and severity of self-harm.

Secondary outcome

Not applicable

Data extraction, (selection and coding)

This will be undertaken as follows: 1. The selected databases will be searched using the search terms indicated. 2. An initial screening of paper titles and abstracts will be completed by the first author (RC), utilising the inclusion and exclusion criteria to determine eligibility. 3. Where eligibility is unclear, the article/paper will be read in full. In the event that eligibility remains unclear, this will be discussed with the wider review team. 4. Papers that do not meet the inclusion criteria at this stage will be excluded from the review. 5. Papers that do meet the inclusion criteria will be read by the first author (RC) and again reviewed for suitability. Those papers deemed unsuitable (not related to the research question or on further review do not meet the inclusion criteria) will be excluded. In the event that eligibility remains unclear, this will be discussed with the wider review team. 6. Papers that are suitable will be screened by reading the full text in parallel with another researcher to ensure quality. 7. Following the quality assessment, authors of the suitable papers will be contacted for any other relevant published or unpublished work. Following this, the trainee will review the reference lists of relevant research papers

and any relevant review articles. Contact will also be made with corresponding authors of relevant papers to review whether they have any further published or unpublished research that is eligible. Conference abstracts and theses/dissertations identified through the searches and from searching databases for dissertations will also be followed up.

Risk of bias (quality) assessment

Quality assessment will be undertaken using the Agency for Research and Healthcare Quality Assessment Tool (Williams et al, 2010; Taylor et al., 2015).

Strategy for data synthesis

A narrative synthesis of the extracted research findings is planned.

Dissemination plans

The systematic review will be submitted for publication in a peer-reviewed academic journal.

Analysis of subgroups or subsets

None planned

Review team

Rosanne Cawley, Dr Peter Taylor, Dr Ellie Pontin.

***Jade Touhey was added to the review team around one year after the proposal was uploaded.**

Appendix C: Email to Authors

Dear insert author's name here,

We are currently undertaking a systematic review on behalf of the University of Liverpool UK, on the research literature concerning the relationships between rejection and self-harm or suicidality.

During the literature search we identified your paper:

'insert name of paper'

This paper appears relevant for the systematic review. Therefore, I am emailing to check whether you have undertaken any further work, either published or unpublished, which meets the following criteria:

1. *Quantitative research measuring the relationship between rejection and self-harm/suicidality,*
2. *Adult population*

If so, I would greatly appreciate it if you could send me any other articles to consider for inclusion in this review.

Many thanks for your time.

Rosanne Cawley

Trainee Clinical Psychologist
Doctorate in Clinical Psychology Program
University of Liverpool
Whelan Building
Quadrangle
Brownlow Hill
Liverpool
L69 3GB

Appendix D: Risk of Bias Tool

Risk of Bias Tool- Based on Agency for Healthcare Research and Quality tool (AHRQ) (Williams et al., 2010)

General instructions: For each paper grade each criterion as “Yes,” “No”, “Partially”, “Cannot tell” or “Not Applicable”.

1. Unbiased selection of the cohort?
Factors that help reduce selection bias: Does it have…

- Inclusion/exclusion criteria -Is it clearly described?
- Recruitment strategy- is it clearly described?
- Is the sample representative of the population of interest?
- Consider potential for self-selection bias in recruitment method (e.g., use of adverts)

2. Selection minimizes baseline differences in prognostic factors (For controlled studies only)

- Was selection of the comparison group appropriate? Consider whether these two sources are likely to differ on factors related to the outcome (other than rejection experiences and self-harm/suicidality). Note that in instances of NSSI versus non-clinical controls, differences in clinical characteristics would be expected, but matching on key demographics (age, gender, ethnicity, education, etc.) would still be required to minimize bias.

3. Sample size calculated

- Did the authors report conducting a power analysis or describe some other basis for determining the adequacy of study group sizes for the primary outcome(s)?
- Did the eventual sample size deviate by < 10% of the sample size suggested by the power calculation?

4. Adequate description of the cohort?

- Consider whether the cohort (participants) is well-characterised in terms of baseline demographics? Are key demographic information such as age, gender and ethnicity reported. Information regarding education and socio-economic characteristics is also important.
- PARTIAL= Age & Gender
- YES= Age, Gender, & other relevant descriptors for the study (namely ethnicity & SES).

5. Validated method for assessing rejection experiences?

- Was the method used to assess rejection experiences clearly described? (Details should be sufficient to permit replication in new studies)
- Do they clearly define what they mean by rejection?
  Was a valid and reliable measure used to assess rejection? (For this question if they have developed their own study tool? Did they use factor analysis to test validity of tool? Has the measure they used been used in other studies? (Note that measures that consist of single items of scales taken from larger measures are likely to lack content validity and reliability).

6. Validated method for assess self-injury and suicidality?

- Were primary outcomes assessed using valid and reliable measures?
  (Note that measures that consist of single items of scales taken from larger measures are likely to lack content validity and reliability).
- Were these measures implemented consistently across all study participants?

7. Outcome assessment blind to exposure?

- Were the study investigators who assessed outcomes blind to the clinical status of participants? (Note that even in single-arm studies so degree of blinding is possible, for example using external interviewers with no knowledge of participants' clinical status).

8. Adequate follow-up period (longitudinal studies only)?

- A justification of the follow-up period length is preferable.
- A follow-up period of at least 6 months is preferable for assessing self-injury (though if thoughts or cognitions relating to NSSI are the outcome, a shorted follow-up may be needed).
- Follow-up period should be the same for all groups

9. Missing data

- Did missing data from any group exceed 20%?
- In longitudinal studies consider attrition over time as a form of missing data. Note that the criteria of<20% missing data may be unrealistic over longer follow-up periods.
- If missing data is present and substantial, were steps taken to minimize bias (e.g., sensitivity analysis or imputation).

10. Analysis controls for confounding?

- Did the study control for likely demographic and clinical confounders? For example, using multiple regression to adjust for demographic or clinical factors likely to be correlated with predictor and outcome?

11. Analytic methods appropriate?

- Was the kind of analysis done appropriate for the kind of outcome data (categorical, continuous, etc.)?
- Was the number of variables used in the analysis appropriate for the sample size? (The statistical techniques used must be appropriate to the data and take into account issues such as controlling for small sample size, clustering, rare outcomes, multiple comparison, and number of covariates for a given sample size).

Appendix E: Empirical Paper Questionnaire Measures

Demographic Questionnaire

1. **Please enter your date of birth**: _ _ / _ _ / _ _ _ _

2. **How would you describe your gender**?
   Female
   Male
   Prefer not to say
   Other (please specify)____

3. **Which of the following best describes your ethnic origin?** Please Tick One Box below:

   A. White

   • English / Welsh / Scottish / Northern Irish / British

   • Irish

   • Any other White background (please specify)_________________________________

   B. Mixed / multiple ethnic groups

   • White and Black Caribbean

   • White and Black African

   • White and Asian

   • Any other Mixed / multiple ethnic background (please specify)______________________

   C. Asian / Asian British

   • Indian

   • Pakistani

   • Bangladeshi

   • Chinese

   • Any other Asian background (please specify)______________________________________

   D. Black / African / Caribbean / Black British

   • African

   • Caribbean

   • Any other Black / African / Caribbean background (please specify)___________________

   E. Other ethnic group

   • Arab

- Any other ethnic group (please specify)____

4. **What is your employment status?**

Student in full-time education

Student in part-time education

Unemployed

Part-time employment (please specify job role)____________________________________

Full-time employment (please specify job role) ____________________________________

In employment but off work on sickness absence (please specify job role) ________________

In employment but off work on maternity leave (please specify job role)_________________

None of the above (please specify) ____

5. **Do you have any physical health difficulties?**
Prefer not to say
No
Yes (Please specify)____

6. **Have you ever been given a psychiatric diagnosis/ mental health diagnosis?**
Prefer not to say
No
Yes (Please specify)____

7. **Have you ever had contact with mental health services? (currently or in the past)**
Prefer not to say
No
Yes

8. **Have you ever had difficulties with alcohol or substance abuse?(currently or in the past)**
Prefer not to say
No
Yes

9. **How did you hear about this research study?**
On social media
Poster/advertisement in an NHS service
Poster/advertisement at a support group/third sector organisation
Other online (Please specify)____
Any other (Please specify)____

Experience of Dating-Apps Questionnaire

1. **How would you describe your sexuality?**

Homosexual/Gay	
Bisexual	
Heterosexual	
Asexual	
Other	
Unsure	

2. **What is your current relationships status?**

Single

Not in a relationship	
Divorced	
Separated	
Dating	

In a relationship

Married	
Co-habiting	
Not cohabiting	

Other (please specify)

3. **Have you used a dating app in the last 2 years?** ***A dating application or app is a smartphone or tablet application that aims to match you with potential partners and dates.***

Example apps are Tinder, Grindr and Happn. We are only focusing this questionnaire on dating apps not dating websites (such as Match or eHarmony).

Yes ☐ No ☐

If your answer to question 3 was 'yes' carry on to question 4, if your answer was 'no' the questionnaire <u>ends here. (Please click next at the bottom of the page).</u>

4. **How often do you use (log in to) dating apps?**
   By 'use' we are referring to if you log in and go on the apps for any reason.

At least once a day	At least once a week	At least once a month	At least once in the last 6 months	At least once in the last year	At least once in the last two years

5. **Why do you use dating apps?** ***(Tick as many as apply to you)***

To find a long-term relationship	To date new people	To have casual sex	To look at other user's profiles	To see if other people find me attractive
To find friendships	Other *(please give details)*			

6. **Whilst using dating apps have you ever felt:**
   (please tick the option that most closely describes your answer).

Rejected by others	Very frequently	Frequently	Occasionally	Rarely	Never
Not liked by others	Very frequently	Frequently	Occasionally	Rarely	Never
Wanted by others	Very frequently	Frequently	Occasionally	Rarely	Never
Liked by others	Very frequently	Frequently	Occasionally	Rarely	Never
Ignored by others	Very frequently	Frequently	Occasionally	Rarely	Never

Self-Injurious Thoughts and Behaviour Interview-Short Form (SITBI)

These questions ask about your thoughts and feelings of suicide and self-injurious behaviors.

Non-Suicidal Self-Injury

62) Have you ever actually engaged in NSSI? *(0) no, (1) yes*

63) How old were you the first time? (*age)*

64) How old were you the last time? (*age)*

65) How many times in your life have you engaged in NSSI?

(1) 1 to 4 times, (2) 5 to 10 times, (3) 10 to 50 times, (4), 50 to 100 times, (5) over 100 times

66) How many times in the past year?

(1) 1 to 4 times, (2) 5 to 10 times, (3) 10 to 50 times, (4), 50 to 100 times, (5) over 100 times

67) How many times in the past month?

(1) 0, (2) 1 to 4 times, (3) 5 to 10 times, (4) 10 to 50 times, (5), 50 to 100 times, (6) over 100 times

68) How many times in the past week? *(open response)*

69) Now I'm going to go through a list of things that people have done to harm themselves. Please let me know which of these you've done:

69a)1) cut or carved skin, 2) hit yourself on purpose, 3) pulled your hair out, 4) gave yourself a tattoo, 5) picked at a wound, 6) burned your skin (i.e., with a cigarette, match or other hot object), 7) inserted objects under your nails or skin, 8) bit yourself (e.g., your mouth or lip), 9) picked areas of your body to the point of drawing blood, 10) scraped your skin, 11) "erased" your skin to the point of drawing blood, 12) other (specify):____________________________88) not applicable, 99) unknown

70) Have you ever received medical treatment for harm caused by NSSI?

(0) no, (1) yes, (99) unknown, (88) not applicable

71) On average, for how long have you thought about NSSI before engaging in it?

0) 0 seconds
1) 1-60 seconds
2) 2-15 minutes
3) 16-60 minutes
4) less than one day
5) 1-2 days
6) more than 2 days
7) wide range (spans > 2 responses)
88) not applicable
99) unknown

72) On the scale of 0 to 4, what do you think the likelihood is that you will engage in NSSI in the future? *(open response)*

Alexian Brothers Urge to Self-Injure Scale (ABUSI)

The questions below apply to the last week. Place an "X" in the box next to the most appropriate statement

1. **How often have you thought about injuring yourself or about how you want to injure yourself?**
   - ☐ **Never**, 0 times in the last week
   - ☐ **Rarely**, 1 -2 times in the last week
   - ☐ **Occasionally**, 3 – 4 times in the last week
   - ☐ **Sometimes**, 5 – 10 times in the last week, or 1 -2 times a day
   - ☐ **Often**, 11 – 20 times in the last week, or 2 – 3 times a day
   - ☐ **Most of the time**, 20 – 40 times in the last week, or 3 – 6 times a day
   - ☐ **Nearly all of the time**, more that 40 times in the last week, or more than 6 times a day
2. **At the most severe point, how strong was your urge to self-injure in the last week?**
   - ☐ **None** at all.
   - ☐ **Slight**, that is, a very mild urge.
   - ☐ **Mild Urge**.
   - ☐ **Moderate Urge**.
   - ☐ **Strong Urge**, but easily controlled.
   - ☐ **Strong Urge**, but **difficult** to control.
   - ☐ **Strong Urge and would have self-injured if able to.**
3. **How much time have you spent thinking about injuring yourself or about how you want to injure yourself?**

☐	☐	☐	☐	☐	☐	☐
None.	Less than 20 min.	21-45 min.	46-90 min.	90 min to 3 hrs.	3-6 hrs.	More than 6 hrs.

4. **How difficult was it to resist injuring yourself in the last week?**

☐	☐	☐	☐	☐	☐	☐
Not difficult at all	Very mildly difficult	Mildly difficult	Moderately difficult	Very difficult	Extremely difficult	Was not able to resist

5. **Keeping in mind your responses to the previous questions, please rate your *overall average* urge or desire to injure yourself in the last week.**
   - ☐ **Never** thought about it and **never** had the urge to self-injure.
   - ☐ **Rarely** thought about it and **rarely** had the urge to self-injure.
   - ☐ **Occasionally** thought about it and **occasionally** had the urge to self-injure.
   - ☐ **Sometimes** thought about it and **sometimes** had the urge to self-injure.
   - ☐ **Often** thought about it and **often** had the urge to self-injure.
   - ☐ Thought about self-injury **most of the time** and had the urge to do it **most of the time**.
   - ☐ Thought about self-injury **nearly all** the time and had the urge to do it **nearly all** the time.

State Shame and Guilt Scale (SSGS)

The following are some statements which may or may not describe how you are feeling right now. Please rate each statement using the 5-point scale below. Remember to rate each statement based on how you are feeling right at this moment.

Not feeling this way at all Feeling this way somewhat Feeling this way very strongly

1---------------------2----------------------------------3--------------------------------4-----------------------------5

1. I feel good about myself. 1 ------- 2 ------- 3 ------- 4 ------- 5

2. I want to sink into the floor and disappear. 1 ------- 2 ------- 3 ------- 4 ------- 5

3.I feel remorse, regret. 1 ------- 2 ------- 3 ------- 4 ------- 5

4. I feel worthwhile, valuable. 1 ------- 2 ------- 3 ------- 4 ------- 5

5. I feel small. 1 ------- 2 ------- 3 ------- 4 ------- 5

6. I feel tension about something I have done. 1 ------- 2 ------- 3 ------- 4 ------- 5

7. I feel capable, useful. 1 ------- 2 ------- 3 ------- 4 ------- 5

8. I feel like I am a bad person. 1 ------- 2 ------- 3 ------- 4 ------- 5

9.I cannot stop thinking about something bad I have done. 1 ------- 2 ------- 3 ------- 4 ------- 5

10. I feel proud. 1 ------- 2 ------- 3 ------- 4 ------- 5

11. I feel humiliated, disgraced. 1 ------- 2 ------- 3 ------- 4 ------- 5

12. I feel like apologizing, confessing. 1 ------- 2 ------- 3 ------- 4 ------- 5

13. I feel pleased about something I have done. 1 ------- 2 ------- 3 ------- 4 ------- 5

14. I feel worthless, powerless. 1 ------- 2 ------- 3 ------- 4 ------- 5

15. I feel bad about something I have done. 1 ------- 2 ------- 3 ------- 4 ------- 5

Rejection Sensitivity Questionnaire-Adult Version

The items below describe situations in which people sometimes ask things of others.
For each item, imagine that you are in the situation, and then answer the questions that follow it.

1. You ask your parents or another family member for a loan to help you through a difficult financial time.

How concerned or anxious would you be over whether or not your family would want to help you?	very unconcerned					very concerned
	1	2	3	4	5	6
I would expect that they would agree to help as much as they can.	very unlikely					very likely
	1	2	3	4	5	6

2. You approach a close friend to talk after doing or saying something that seriously upset him/her.

How concerned or anxious would you be over whether or not your friend would want to talk with you?	very unconcerned					very concerned
	1	2	3	4	5	6
I would expect that he/she would want to talk with me to try to work things out.	very unlikely					very likely
	1	2	3	4	5	6

3. You bring up the issue of sexual protection with your significant other and tell him/her how important you think it is.

How concerned or anxious would you be over his/her reaction?	very unconcerned					very concerned
	1	2	3	4	5	6
I would expect that he/she would be willing to discuss our possible options without getting defensive.	very unlikely					very likely
	1	2	3	4	5	6

4. You ask your supervisor for help with a problem you have been having at work.

How concerned or anxious would you be over whether or not the person would want to help you?	very unconcerned					very concerned
	1	2	3	4	5	6
I would expect that he/she would want to try to help me out.	very unlikely					very likely
	1	2	3	4	5	6

5. After a bitter argument, you call or approach your significant other because you want to make up.

How concerned or anxious would you be over whether or not your significant other would want to make up with you?	very unconcerned					very concerned
	1	2	3	4	5	6
I would expect that he/she would be at least as eager to make up as I would be.	very unlikely					very likely
	1	2	3	4	5	6

6. You ask your parents or other family members to come to an occasion important to you.

How concerned or anxious would you be over whether or not they would want to come?	very unconcerned					very concerned
	1	2	3	4	5	6
I would expect that they would want to come.	very unlikely					very likely
	1	2	3	4	5	6

7. At a party, you notice someone on the other side of the room that you'd like to get to know, and you approach him or her to try to start a conversation.

How concerned or anxious would you be over whether or not the person would want to talk with you?	very unconcerned					very concerned
	1	2	3	4	5	6
I would expect that he/she would want to talk with me.	very unlikely					very likely
	1	2	3	4	5	6

8. Lately you've been noticing some distance between yourself and your significant other, and you ask him/her if there is something wrong.

How concerned or anxious would you be over whether or not he/she still loves you and wants to be with you?	very unconcerned					very concerned
	1	2	3	4	5	6
I would expect that he/she will show sincere love and commitment to our relationship no matter what else may be going on.	very unlikely					very likely
	1	2	3	4	5	6

9. You call a friend when there is something on your mind that you feel you really need to talk about.

How concerned or anxious would you be over whether or not your friend would want to listen?	very unconcerned					very concerned
	1	2	3	4	5	6
I would expect that he/she would listen and support me.	very unlikely					very likely
	1	2	3	4	5	6

Appendix F: Consultation on Experience of Dating-Apps Questionnaire

Original Question Format	Feedback
What is your sexuality? *How did you find this question? Is it set out in a way you think is logical? Any suggestions/amendments?*	*Seems okay and makes sense to me. In terms of phrasing, an alternative might be 'how would you describe your sexuality?' *May be "how would you describe your sexuality" is better? *Useful, follows other research that sets out question this way, and like the option of other to include those who class themselves as pansexual, fluid, or prefer not to identify clearly their orientation etc. You might want to also add the option of unsure of sexuality, as this will capture those who may be confused currently about their sexuality (and they might not fill this in other/might select an option because they feel they have to) *Fine & straight forward. *Makes sense to me, yes. *Yes it seems logical. I wondered about unsure as an option but I'm not sure that is necessary as it could be stated in other. *The question seems appropriate and I feel it covers most 'configurations' * I think this question is OK, however would it be helpful to use more current language such as gay / straight etc. I think some people may find the word homosexual offensive due to its links with the DSM?
What is your current relationship status? *Any feedback on this question or how it is formatted?*	*For 'in a relationship' could you potentially have 'in a relationship - not co-habiting/living together' just to show how it's different from 'co-habiting'. *This question is ok I think. *Useful though I'd probably change the ordering as single seems to be at the bottom of divorced/widowed etc. *Is there a way to add an optional qualitative comment next to other? *Fine I think! *Seems fine as it is. I would say people could tick a few boxes but I'm sure it's pretty clear just to rate the one that is most relevant. Perhaps you could put please tick the one that is most relevant just to be sure. *Feels fine *I wonder whether people may see this question in a hierarchical way i.e. is married the desired status with it being at the top of the list? It may be worth changing the order of these. Is there the option to choose more than one of these? Some people may be many of these at one time (e.g. married and in a relationship with someone else)? Which supersedes which? Interesting that you have put 'single' at the bottom of the list, as it usually comes first.
Have you used a dating app in the last two years? *Please give any feedback or suggestions on this question. Please also indicate if the description of dating-apps makes sense…*	*I would perhaps put the 'if your answer if 'yes'...' etc after the response circles where people answer, just so that they actually answer these before carrying on or ending the questionnaire. So you might have them respond, and then say 'if you responded 'yes' carry on the Q4.... I hope that makes sense. *This question is ok I think. *Useful explanation of what dating app is. Might want to give some current examples of what you mean i.e. Tinder, Grindr etc *All seems fine. *It makes sense to me! *I think the question and description are very clear. *It might be helpful to have some examples of dating-apps (e.g. Tinder etc) and also clarify if this is specific to apps or open to those viewed as more of a dating website, such as match.com / Ashley Madison / craigslist *It maybe worth adding at the end of the description "...to match you with potential partners and dates based on your personality, likes/dislikes, interests/preferences etc..."

	Also, it may be helpful to change 'application' to computer programme or computer system for those who may not be familiar with the aforementioned term.
How frequently do you use dating apps? *Please give any feedback on this question...*	*Could you maybe add a little definition/description of what you mean by 'use dating apps', such as looking at them, actively using them, arranging dates from them, all of the above, etc (again I hope this feedback makes sense) *I think "How often" sounds simpler than "how frequently". *The last two options could easily be confused by someone reading fast....might want to rephrase last option i.e. Less than every three or more months *Great *It's seems okay. I don't know whether you need to give a time frame for frequency, so the question says "within the last two months... how frequently..."? Just thinking that people might have some shorter but more concentrated periods of use? Or even just to say 'currently'? Just a thought... *Seems clear. *As your initial questions asks "have you used a dating app in the last 2 years" it might be worth having options which covers a larger time period; e.g. "Once in the last 6 months". However, the answer options cover this so it's not a big deal. No comments to add
Why do you use dating apps? *Feedback on this question....*	*Looks good to me *This question is ok I think. *Useful to have other option and option to pick many (might want to make tick as many apply bit more clearer) *Great *Great! *Perhaps you could add more boxes for other as respondents may have a few reasons not listed. *You've got the other option but it might be worth having other categories to normalise the use of the apps for other reasons; e.g. "For fun when I'm bored" / "To talk to other people" / "To find a platonic relationship/friendship" etc. *A casual relationship may be interpreted in different ways e.g. as casual sex or a friendship. It may be worth defining or separating out to include the two different points.
Whilst using dating apps have you ever been made to feel.... how did you find this question? *Any feedback/comments..*	*I think these look good. When I read 6b, I wondered whether it might read a bit better something like 'Whilst using dating apps have you ever been made to feel that others did not like you', but then I can see that you are using the same sentence structure as 6d, and therefore trying to keep it consistent is probably a good idea. Also, just thought, an alternative phrasing generally might be 'whilst using dating apps, have you ever felt....' as 'have you ever been made to feel' sounds like another person is the 'cause' of this. I don't know whether this is important for what you're looking at though. *I think these questions are a bit confusing. If a person answers a question on "liked by others", is it necessary for them to rate themselves about being "not liked by others"? Same goes with the "rejected" and "wanted" questions. *maybe rephrase "made to feel", i.e. have you ever felt disliked by others when using a dating app, have you ever felt ignored by others when using a dating app etc. Maybe muddle up the positive questions more i.e. positive question, negative (needs more positive questions),i.e. ever felt more attractive, ever felt more popular etc. *Could it be changed to have you ever felt rather than made to feel? Not sure if that would still fit with what you are trying to explore. *Good!

	*I wondered why you had chose the phrasing 'made to feel' I would prefer 'whilst using dating apps have you ever felt' / 'as a result of using dating apps have you ever felt'. I think *I would prefer the phrasing 'disliked' than 'not liked' *"Made to feel" is slightly questionable wording, as I remember from our Psychodynamic teaching, nobody/nothing can "make you feel" and rather "you feel" so it might be helpful just to word it as: "Whilst using dating apps I have felt wanted/liked/ignored by others" Definitely False ------ Definitely True
How easy was this questionnaire to understand?	*I thought this was measure was easy to understand and would be simple enough to complete. I understood the context of dating apps, and think most 'younger' people would, not sure about those in older age brackets. That said, if people don't use them, they will know that they don't use them, and will not be answering anything after Q3 anyway. I hope this feedback was at least marginally useful! *I think the questionnaire is ok overall. *Understood the context of dating apps which was clearly explained, even for people who don't use them/unfamiliar with them. Good questionnaire overall, very brief too which is good :) *I think this is fine! Looks good to me! *I found the questionnaire very clear and easy to understand. The comments above are only minor suggestions *I assume you'll have a patient information page which will clarify what you consider as dating apps and the rationale for the study so that will put the questions into context. It might also be worth "splitting up" Question 6 instead of 6a,b etc. to just 6/7/8 so that it doesn't feel like one question and hopefully this will reduce the likelihood of people skipping one. I guess you should also offer the opportunity for people to give a "Don't know" response too and you can put in parameters for questionnaires which mean every question has to be answered which will again reduce any missing responses. Well done and good luck :) *Possibly extend the definition of dating apps (see point 3)

Appendix G: HRA Approval

Dr Peter Taylor
Department of Clinical Psychology
Second Floor, Zochonis Building
University of Manchester
M13 9PL

Email: hra.approval@nhs.net

29 March 2017

Dear Dr Taylor,

Letter of HRA Approval

Study title:	**Online Study of Interpersonal Resources In Self-Harm (OSIRIS)**
IRAS project ID:	**219294**
Protocol number:	**UoL001268**
REC reference:	**17/NW/0059**
Sponsor	**University of Liverpool**

I am pleased to confirm that **HRA Approval** has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications noted in this letter.

Participation of NHS Organisations in England

The sponsor should now provide a copy of this letter to all participating NHS organisations in England.

Appendix B provides important information for sponsors and participating NHS organisations in England for arranging and confirming capacity and capability. **Please read *Appendix B* carefully**, in particular the following sections:

- *Participating NHS organisations in England* – this clarifies the types of participating organisations in the study and whether or not all organisations will be undertaking the same activities
- *Confirmation of capacity and capability* - this confirms whether or not each type of participating NHS organisation in England is expected to give formal confirmation of capacity and capability. Where formal confirmation is not expected, the section also provides details on the time limit given to participating organisations to opt out of the study, or request additional time, before their participation is assumed.

Cont…/

Appendix H: REC Approval

North West - Greater Manchester West Research Ethics Committee
Barlow House
3rd Floor
4 Minshull Street
Manchester
M1 3DZ

Telephone: 0207 104 8021

14 March 2017

Dr Peter Taylor
Department of Clinical Psychology
Second Floor, Zochonis Building
University of Manchester
M13 9PL

Dear Dr Taylor

Study title:	**Online Study of Interpersonal Resources In Self-Harm (OSIRIS)**
REC reference:	**17/NW/0059**
Protocol number:	**UoL001268**
IRAS project ID:	**219294**

Thank you for your submission, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

We plan to publish your research summary wording for the above study on the HRA website, together with your contact details. Publication will be no earlier than three months from the date of this opinion letter. Should you wish to provide a substitute contact point, require further information, or wish to make a request to postpone publication, please contact hra.studyregistration@nhs.net outlining the reasons for your request.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Conditions of the favourable opinion

The REC favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements. Each NHS organisation must confirm through the signing of agreements and/or other documents that it has given permission for the research to proceed (except where explicitly specified otherwise).

Guidance on applying for NHS permission for research is available in the Integrated Research

Application System, www.hra.nhs.uk or at http://www.rdforum.nhs.uk.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of management permissions from host organisations

Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database within 6 weeks of recruitment of the first participant (for medical device studies, within the timeline determined by the current registration and publication trees).

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g. when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered but for non-clinical trials this is not currently mandatory.

If a sponsor wishes to request a deferral for study registration within the required timeframe, they should contact hra.studyregistration@nhs.net. The expectation is that all clinical trials will be registered, however, in exceptional circumstances non registration may be permissible with prior agreement from the HRA. Guidance on where to register is provided on the HRA website.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Ethical review of research sites

NHS sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	*Version*	*Date*
Copies of advertisement materials for research participants [Study Advertisement Poster Version 1]	1	14 December 2016
Covering letter on headed paper [Covering Letter - OSIRIS Study]	1	21 December 2016
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [Letter from Sponsor V1]	1	22 November 2016
IRAS Application Form [IRAS_Form_06012017]		06 January 2017
IRAS Checklist XML [Checklist_01032017]		01 March 2017
Non-validated questionnaire [Dating App Questionnaire v1]	1	21 December 2016
Non-validated questionnaire [Demographic Questionnaire]	1	21 December 2016
Other [Risk and Safety Plan Protocol]	1	21 December 2016

Other [Text used on social media advertisements v1]	1	17 February 2017
Other [Signposting support information v1]	1	17 February 2017
Other [Automated Reply Email v1]	1	17 February 2017
Participant consent form [Participant Consent Form Version 1]	1	21 December 2016
Participant information sheet (PIS) [Participant Information Sheet Baseline Version 2]	2	22 February 2017
Participant information sheet (PIS) [Participant Information Sheet Follow-up Version 2]	2	22 February 2017
Referee's report or other scientific critique report [Research Review Committee Approval Letter - Rosanne Cawley v1]		24 October 2016
Referee's report or other scientific critique report [Research Review Committee Approval Letter - Kate Sheehy v1]		15 August 2016
Research protocol or project proposal [Non CTIMP Research Protocol v1]	1	29 October 2016
Summary CV for Chief Investigator (CI) [CI Peter Taylor CV v1]	1	01 December 2016
Summary CV for student [Kate Sheehy CV v1]	1	30 November 2016
Summary CV for student [Rosanne Cawley CV v1]	1	30 November 2016
Summary CV for supervisor (student research) [Eleanor Pontin CV v1]	1	17 December 2016
Validated questionnaire [Self Harm Belief Scale (SHBS)]	1	21 December 2016
Validated questionnaire [Actual Help-Seeking Questionnaire (AHSQ)]	1	21 December 2016
Validated questionnaire [General Help-Seeking Questionnaire (GHSQ)]	1	21 December 2016
Validated questionnaire [Experiences in Close Relationships Scale - Revised (ECR-R)]	1	
Validated questionnaire [Alexian Brothers Urge to Self Injure Scale (ABUSI) v1]	v1	
Validated questionnaire [Rejection Sensitivity Questionnaire v1]	1	
Validated questionnaire [Self Injurious Thoughts and Behaviours Inventory (SITBI) v1]	1	
Validated questionnaire [State Shame and Guilt Scale v1]	1	

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Reporting requirements

The attached document *"After ethical review – guidance for researchers"* gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The HRA website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website: http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/

HRA Training

We are pleased to welcome researchers and R&D staff at our training days – see details at http://www.hra.nhs.uk/hra-training/

17/NW/0059	**Please quote this number on all correspondence**

With the Committee's best wishes for the success of this project.

Yours sincerely

Dr Lorraine Lighton (Chair)
Chair

Email:nrescommittee.northwest-gmwest@nhs.net

Enclosures: "After ethical review – guidance for researchers"

Copy to: *Mr Alex Astor*
Ms Pauline Parker, Mersey Care NHS Foundation Trust

Appendix I: University Sponsorship

Mr Alex Astor
Head of Research Support – Health and Life Sciences

University of Liverpool
Research Support Office
2nd Floor Block D Waterhouse Building
3 Brownlow Street
Liverpool
L69 3GL

Tel: 0151 794 8739
Email: sponsor@liv.ac.uk

Dr Taylor
Institute of Psychology, Health and Society
University of Liverpool
Block B Waterhouse Building
Brownlow Street
Liverpool L69 3GL

21 April 2017

Sponsor Ref: UoL001268

Re: Sponsor Permission to Proceed notification

"Online Study of Interpersonal Resources in Self Harm (OSIRIS)"

Dear Dr Taylor

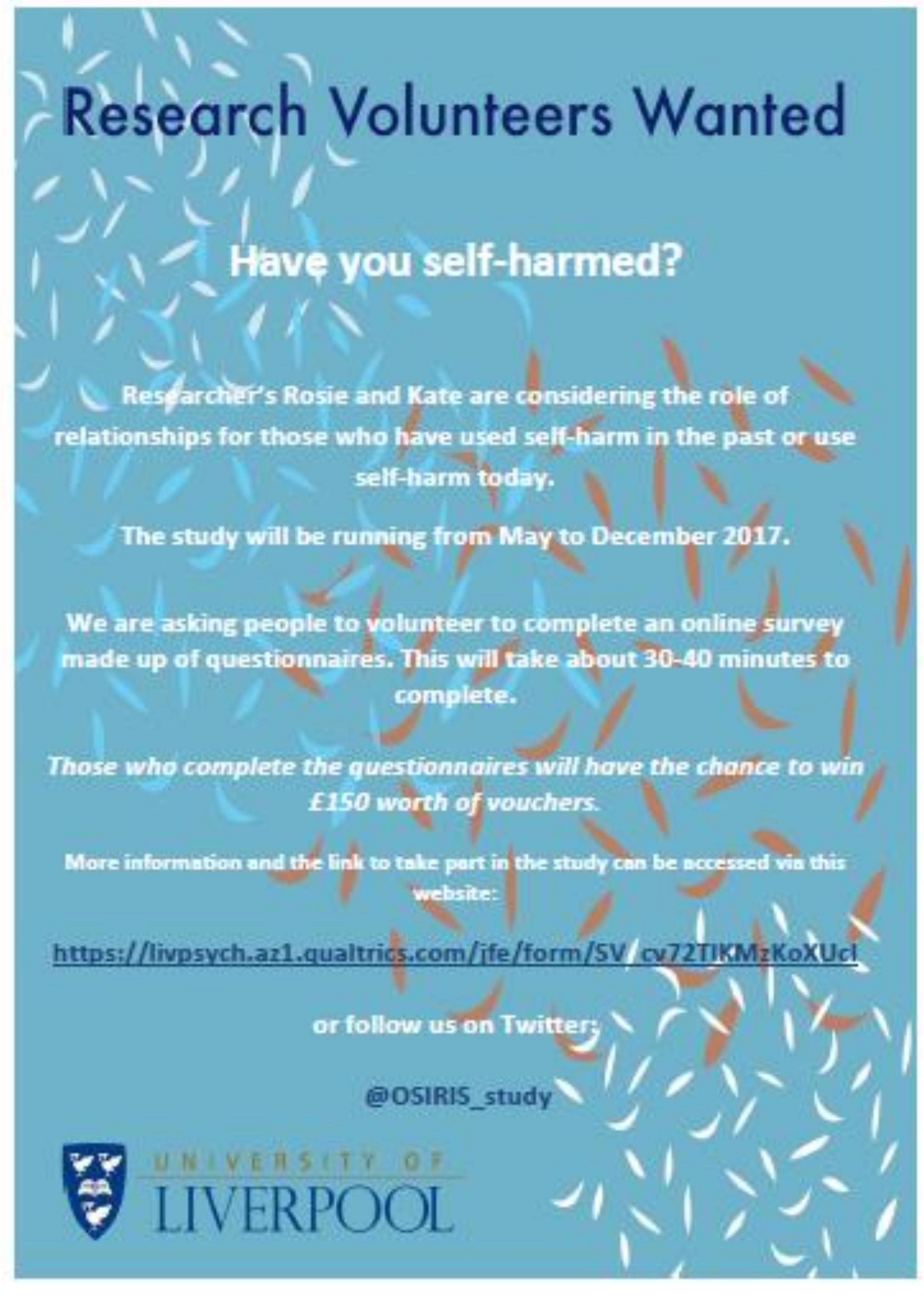
All necessary documentation and regulatory approvals have now been received by the University of Liverpool Research Support Office in its capacity as Sponsor, and we are satisfied that all Clinical Research Governance requirements have been met. You may now proceed with any study specific procedures to open the study.

The following REC Approved documents have been received by the Research Support Office. Only these documents can be used in the recruitment of participants. If any amendments are required please contact the Research Support Office.

Document title	Version	Date
Study Advertisement Poster	1	14 December 2016
Dating App Questionnaire	1	21 December 2016
Demographic Questionnaire	1	21 December 2016
Risk and Safety Plan Protocol	1	21 December 2016
Text used on social media advertisements	1	17 February 2017
Signposting support information	1	17 February 2017
Automated Reply Email	1	17 February 2017
Participant Consent Form	1	21 December 2016
Participant Information Sheet Baseline	2	22 February 2017
Participant Information Sheet Follow-up	2	22 February 2017
Non CTIMP Research Protocol	1	29 October 2016
Self Harm Belief Scale (SHBS)	1	21 December 2016

Cont…/

Appendix J: Study Advertisement



Appendix K: Participant Information Sheet

Participant Information Sheet 1

Date: 22.02.2017; Version 2

Study Title: Online Study of Interpersonal resources in Self-Harm (OSIRIS)

We would like to invite you to take part in our research study. Before you decide we would like you to understand why the research is being done and what it would involve for you.

What is the purpose of the study?

This research concerns the experiences of people who have engaged in self-harm. By "self-harm" we mean when a person intentionally damages or injures their body, such as by cutting, biting, hitting, pinching or burning yourself.

The goal of this study is to better understand how self-harm may affect a person's social relationships and how their social relationships may also affect their self-harm. We are interested in two types of social relationships.

The first is how a person may or may not seek help from others when they are in distress. We know that whilst for some people the experience of trying to seek help from others can be positive and mark the first step towards recovery, for others these experiences can also be negative (e.g., hostile or unhelpful reactions from others) and might stop a person from trying to seek help again.

The second aim of the study is to understand how the new phenomenon of dating apps, (such as tinder, grindr and happn) may affect those who engage in self-harm. Similarly to seeking help, whilst dating app use may be a positive and rewarding experience, it may also have negative consequences particularly when users experience rejection online.

By undertaking this research, we hope it will contribute to gaining more clinical information to help better inform guidelines and advice on how individuals who experience self-harm can be best supported and helped.

Who we are interested in hearing from?

This study is for anyone who has experienced two or more instances of self-harm. One of these instances must have been in the past year (but the other instance could be at any time in your life). Please note it is not essential that you use dating apps or have sought help in the past, we are looking for a range of experiences. We also require that you are fluent in English.

Do I have to take part?

No – it is your decision entirely. If you decide to take part, you will be asked to first complete a consent form. However, you are free to withdraw at any time, without giving a reason, even after you give your consent to take part. If you do decide to withdraw from the study, you can have the data you provide destroyed, up until the time when this data is made anonymous. There are two ways of having your data destroyed: a) whilst completing the survey you will be given the option to withdraw and then a further option to have your data destroyed; b) If you provide an email address on the survey you can then request your data be destroyed even after you have completed the survey, up until the time the data is anonymised, by emailing the research team (osiris.study@gmail.com) within the following timeframes. If you provide us with an email address to take part in the prize draw, or to receive a summary of the research findings, then you can ask for your data to be destroyed up to one month after you take part. If you choose to take part in our follow-up surveys, you can ask for your data to be destroyed up to one month after completion of or withdrawal from the study. After these times, your data will be anonymised. This means it will not be possible to link you to your specific responses, and so your data cannot be destroyed after these points. Please also note, if you decide not to leave your email address on the survey it will not be possible to link you to your specific responses, and so will be impossible to destroy your data after you complete the survey.

What will I have to do if I take part in the study?

As part of the study we will ask participants to fill in a number of questionnaires. This is an online study so you will be able to take part anywhere that you can access the internet. If you choose to continue you will first be asked to complete a consent form. You will then be presented with a series of questionnaires to complete. This will need to be completed in a single sitting, but it will be possible to take short breaks during their completion. We expect the questionnaires to take up to 30-40 minutes to complete. These questionnaires will ask some information about your relationships with others, wellbeing, experiences of shame and rejection and topics related to self-harm. An example question is "How often have you thought about injuring yourself or about how you want to injure yourself?"

Once you have completed the questionnaires, you will be asked if you would like to be included in our prize draw, for a chance to win £150 in vouchers. If you would like to be included, we will ask you to provide an email address to contact you on if successful. The study will also be asking participants if they would like to take part in a follow-up. If you want to take part you will be asked to provide an email address for us to contact you on in the future. You do not have to take part in the prize draw or the follow up if you choose not to.

The follow up study involves us sending you an email link every month for three months. The link will take you to a very short questionnaire that will take no longer than 5 minutes to complete, and will ask about your experiences of self-harm, relationships with others and

help seeking. Each follow-up also includes the chance to take part in separate prize draws, each with a chance to win £50 in vouchers.

Who is conducting the research?

The study is being conducted by Rosanne Cawley & Kate Sheehy, trainee clinical psychologists at the University of Liverpool. It is also being supervised by Dr Peter Taylor, a clinical psychologist and lecturer and the University of Manchester and Dr Ellie Pontin, a clinical psychologist at the University of Liverpool.

What are the possible risks of taking part?

The questionnaires will take time to complete (approximately 30-40 minutes) and may involve upsetting questions. However, you are free to withdraw from the study at any time, and we will provide contact details for additional support, such as self-harm charities, should you wish to contact them. There are no direct benefits from taking part, however the research will help us to further improve the services and support delivered to those who self-harm.

What are the possible benefits of taking part?

Although we cannot promise the study will help you directly, the information we collect will help improve our understanding of self-harm and could shape treatment in the future. We expect that this research will help inform and improve services for those who self-harm. You will also be able to request that you receive a summary of the study findings and implications upon its completion.

What happens when the research study ends?

The findings will be written up as part of Rosanne Cawley and Kate Sheehy's thesis, which will be part of their doctoral training as clinical psychologists. The researchers will also publish the findings in academic journals and present the research at conferences or information events to disseminate the study outcomes with other researchers, academics, clinicians, policy-makers and the general public. No confidential information will be used in these reports.

What if there is a problem?

If you have a concern about any aspect of this study, you should speak to the researchers who will do their best to answer your questions (osiris.study@gmail.com). If you have a complaint, then you can also contact the Research Governance Officer at the University of Liverpool at ethics@liv.ac.uk or on 0151 794 8290. When contacting the Research Governance Officer, please provide details of the name or description of the study (so that it can be identified), the researchers involved, and the details of the complaint you wish to make.

What about confidentiality?

All of your responses will be kept confidential and made anonymous, so no one will have knowledge concerning your identity, or about which responses you gave. Your responses will only be accessed by the research team conducting the study. All information collected will be kept on a University of Liverpool password-protected computer for 10 years in line with University of Liverpool policy for the storage of research data. Dr Ellie Pontin will be the custodian of all study data. After 10 years, all information stored on the password-protected computer will be deleted, and therefore completely destroyed.

Who is organising and funding the study?

The University of Liverpool have provided the funds to carry out this study. The University of Liverpool is also the study sponsor.

Who has reviewed the study?

This study was given a favourable ethical opinion for conduct in the NHS by the Greater Manchester West Research Ethics Committee.

Who can I contact for further information?

If you have any questions at all, at any time please contact:

Miss Rosanne Cawley Rosanne.Cawley@liverpool.ac.uk

Miss Kate Sheehy Kate.Sheehy@liverpool.ac.uk

Appendix L: Study Consent Form

CONSENT FORM

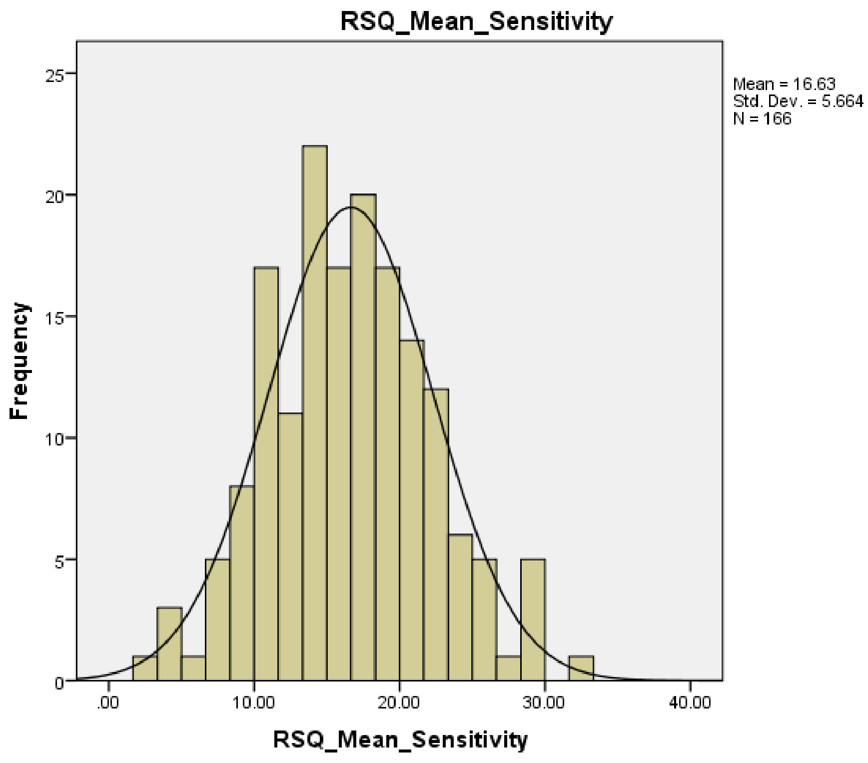
Study Title: Online Study of Interpersonal resources in Self-Harm (OSIRIS)

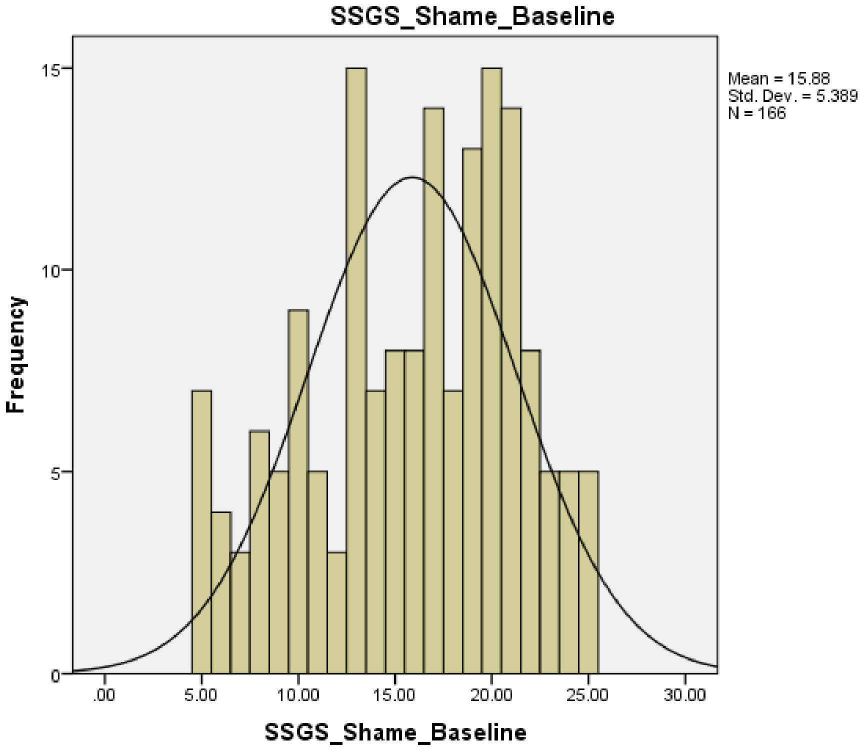
Name of Researchers: Rosanne Cawley & Kate Sheehy

		Please tick the box
1	I confirm that I have read and understand the information sheet dated --/--/-- (version 1) for the above study. I have had the chance to think about the information, ask questions and have my questions answered.	
2	I understand that taking part is voluntary and that I can change my mind at any time without giving any reason, without my medical care or legal rights being affected.	
3	I agree to take part in the above study.	
4	I would like to receive a summary of the findings at the end of study.	

Click to continue with the study

Appendix M: Normality of Data





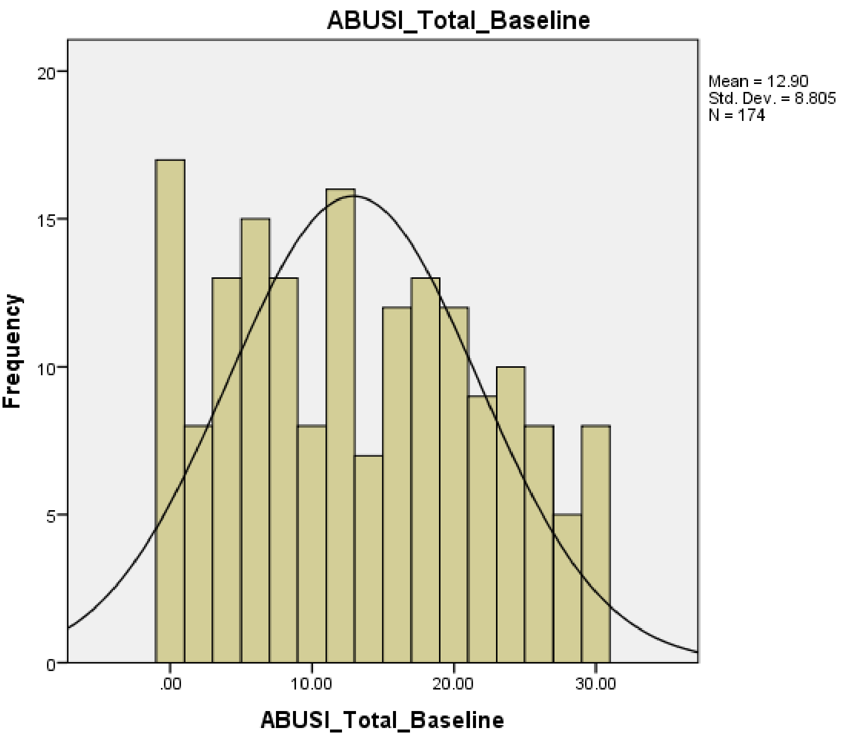


Table 5

Shapiro-Wilk Test of Normality

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	*df*	Sig.	Statistic	*Df*	Sig.
RSQ	.044	166	.200	.994	166	.729
SSGS	.110	166	.000	.959	166	.000
ABUSI	.105	174	.000	.947	174	.000

Table 6

Skewness and Kurtosis Scores

		Statistic	Std. Error
RSQ	Mean	16.63	.44
	Skewness	.20	.19
	Kurtosis	-.04	.38
SSGS	Mean	15.87	.42
	Skewness	-.35	.19
	Kurtosis	-.82	.38
ABUSI	Mean	12.90	.66
	Skewness	.18	.18
	Kurtosis	-1.13	.37

Appendix N: Exploratory Correlational Analysis

Table 7

Correlational Analysis Between Standardised Measures

	1	2	3	4
1. RSQ	1	.39**	.32**	.02
2. SSGS	.39**	1	.54**	-.02
3. ABUSI	.32**	.54**	1	-.05
4. Dating-App Use	.02	-.02	-.05	1

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix O: Experience of Dating-Apps Questionnaire Correlations

Table 8

Baseline correlations of experience of dating-app measure (n=74)

	1	2	3	4	5	6	7	8
1. ABUSI Urges to self-harm	-	.538**	.319**	.177	.260*	-.241*	-.105	.174
2. Shame	.538**	-	.398**	.231	.213	-.258*	-.176	0.74
3. Rejection	.319**	.398**	-	.1	.246*	-.174	-.191	.308**
4. Rejected Dating	.177	.231	.1	-	.719**	-.305**	-.421**	.536**
5. Not liked Dating	.260*	.213	.246*	.719**	-	-.408**	-.571**	.685**
6. Wanted Dating	-.241*	-.258*	-.174	-.305**	-.408**	-	.784**	-.361**
7. Liked Dating	-.105	-.176	-.191	-.421**	-.571**	.784**	-	-.411**
8. Ignored Dating	.174	.074	.308**	.536**	.685**	-.361**	-.411**	-

*p<0.05, **p<0.001

Table 9

Follow-up correlations of experience of dating-app measure (n=17)

	1	2	3	4	5	6	7
1. ABUSI Urges to self-harm	-	.615**	.381	.463	-.527*	-.484*	.510*
2. Shame	.655**	-	.280	.401	-.328	-.255	.467
3. Rejected Dating	.381	.280	-	.910**	-.69**	-.723**	.734**
4. Not liked Dating	.463	.401	.910**	-	-.674**	.747**	.692**
5. Wanted Dating	-.527*	-.328	-.69**	-.674**	-	.952**	-.668**
6. Liked Dating	-.484*	-.255	-.723**	-.747**	.952**	-	-.658**
7. Ignored Dating	.510*	.467	.734**	.692**	-.668**	-.658**	-

*$p<0.05$, **$p<0.001$