Exploring the Role of Experience in Close Relationships and Online Self-disclosure

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Word count: 7,228

Thesis submitted as a requirement for the degree of MSc in Cyberpsychology, Dun Laoghaire Institute of Art, Design and Technology, 2020.

Declaration

This Thesis is entirely my own work and has not been previously submitted to this or any other third level institution.

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Date of submission: 20/04/2020

Acknowledgements

I would first like to thank my supervisor Dr. Nicola Fox Hamilton; your support and guidance over the course of the academic year, and particularly as we approached the submission deadline, was outstanding. I always appreciated your candor and encouragement. To the rest of the lecturers on this programme who I had the privilege of learning from, thank you. You gave me the confidence to keep exploring, and consistently pushed me out of my comfort zone. To my classmates, without whom none of this would have been possible, I learned as much from you as I did from any textbook, thank you all.

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Abstract

As a factor of interpersonal behaviour, self-disclosure is potentially informed by attachment orientation. This research examined the link between attachment and online self-disclosure (SD) in a between groups study design. Sixty-eight participants took part in an online survey, completing attachment (ECR-R) and SD measures. Participants were grouped into either anxious or avoidant cohorts based on results from the ECR-R scale. Linguistic analysis was conducted on the qualitative responses with word count software (LIWC2015), 15 variables associated with SD in previous literature were measured. Independent sample t-tests examining differences in the 15 LIWC variables between the anxious and avoidant groups found no significant differences. The hypothesis that anxiously attached scores would lead to higher levels of SD was not supported as there were similar levels of SD across both attachment types. The implications of which are discussed in the context of previous studies and recommendations made for future research.

Chapter 1: Introduction

Technology is playing an ever-growing role in modern life. Research from earlier this year estimates that the global digital population of over 4.5 billion people ("Global digital population", 2020), meaning nearly 60% of the global population, can be defined as active internet users. The way in which we use the internet is changing. Mobile devices are quickly becoming the channel of choice for consumers to interact with the internet, smartphones accounted for nearly 48% of global web page views ("Mobile internet usage worldwide", 2019). With that comes an increase in time spent online, the average user will spend nearly 7 hours online each day ("We are social", 2019). 96% of individuals have some form of social communication app in our pockets and we likely have more than one, and in 2019 WhatsApp and Facebook messenger alone had a combined 2.9 billion active monthly users ("Most popular messaging apps", 2019). Active internet users are in almost constant communication with one another, both personally and professionally, and these communication tools allow for real time updates and allow us to chronicle our lives for friends, family and followers. Computer Mediated Communication (CMC) can be defined as the digital interaction between sender and receiver(s), which can be synchronous or asynchronous (Fischer & Manstead, 2004). And given the popularity in using these communication channels for social interaction it is interesting to look at how relationships function in an online context, specifically when it comes to self-disclosure and individual differences in personality. Attachment theory is one framework that can be used to explain individual differences (thoughts, behaviours, and emotions) in an online context. Individual attachment can be used to evaluate how we relate to others, and how we feel about the important people in our lives. While self-disclosure refers to the process of revealing information about ourselves.

This research evaluates the literature on both self-disclosure and attachment, presents a justification for the research and explores the relationship between participants' experiences in close relationships and how they talk about themselves online.

Chapter 2: Literature Review

Online Communication

In the last twenty years with the advancement of technology, CMC has come to dominate society and the ways we choose to interact. In its many forms, from email to multi-user dungeons (MUDs), instant messaging to social networking sites (SNS), CMC has emerged as an essential tool, in relational inception, development and maintenance in the 21st century (Walther, 2011). Regardless of the medium or platform, the role emotion plays in CMC is important. So, when we are judging communication platforms based on their effectiveness, traditionally speaking, the more channels that are available, the more effective the platform. For example, face-to-face communication (FtF) is traditionally considered the richest form of communication because you can rely on multiple channels of communication (verbal, non-verbal, vocal inflections, eye contact, etc.) to convey intent and meaning throughout the conversation, known as media richness theory (MRT; Daft & Lengel, 1983).

Self-disclosure

Self-disclosure, defined by Derlega et al. (1993), is the verbal revealing of personal information, thoughts, or feelings about oneself, and has become an important and notable behaviour in on CMC (Jiang et al., 2011). Self-disclosure is a key process for relationship development and maintenance in FtF relationships (Altman & Taylor, 1973). Self-disclosure can both allow for and reinforce closeness among individuals (Derlega et al., 1987). Interpersonal closeness can be measured in terms of strength, diversity and frequency of interactions (Berscheid et al., 1989 as cited in Villanueva, 2017). Interestingly, Aron and Aron (1986) posited that interpersonal closeness occurs cognitively whenever one perceives an overlap between themselves and another person; they are "including others in the self" (p. 90).

The interaction of these two concepts, interpersonal closeness and self-disclosure, was further discussed by Weidler and Clark (2011) the authors found that although both self-disclosure and interpersonal closeness were positively correlated with relational satisfaction, neither was positively correlated with the other. Sprecher et al. (2013) claimed that introducing a condition of reciprocal self-disclosure could positively influence interpersonal closeness FtF. Those who alternated asking and answering questions perceived greater interpersonal closeness than participants who were assigned the role of question asker or answerer.

Nguyen et al. (2012) compared online and offline self-disclosure in a systematic review of the literature. Previous research had found greater self-disclosure in CMC than FtF conversations, specifically Joinson (2003) and Suler (2004). However, of the 15 studies included in the review, disclosure was not found to be consistently higher in online context. In fact, there were equal numbers of papers showing greater disclosure online, FtF and no difference between either online or offline. Study design varied in this review between experimental and survey as did the measure of the self-disclosure (actual SD, degree of SD, likelihood of disclosure, self-report measures) and the dimension of SD measured (frequency, depth, breadth), the disclosure recipient in these studies were either a stranger or a friend, sample size varied considerably between 40-235 participants. Of the experimental studies in particular, four reported greater disclosure online, one offline, and no significant difference. Of the survey studies, only one reported greater disclosure online. Survey based questionnaires asked participants about a previous disclosure and to compare their disclosures online and FtF. Their findings suggest that experimental conditions show higher levels of SD in CMC where frequency and depth are measured and in surveys, only frequency was higher. For those surveys using self-report measures both willingness-to and depth-of SD were greater in the FtF condition, this is potentially because the researchers did not require participants to identify or visualise an individual when completing the survey (Carballo-Diéguez et al., 2006)

According to Nguyen (2012), self-disclosure is nuanced and is often studied along three dimensions, these key indicators of self-disclosure are frequency, breadth, and depth. Frequency of self-disclosure refers to how often information is being revealed, or the amount of times it is being divulged. Disclosure breadth refers to the range of topics being discussed, and depth is the level of intimacy of what is being divulged. These measures are supported by offline communication theories, social penetration theory in particular (SPT; Altman & Taylor, 1973). Self-disclosure is also a critical element of relational maintenance and development in CMC environments (Yum & Hara, 2005) and according to Ruppel (2015) it is also relevant to theories of interpersonal CMC. In particular, social presence theory (Hooi & Cho, 2014; Short et al., 1976), social information processing (SIP) theory (Tidwell & Walther, 2002; Walther, 1992, 2015), and hyperpersonal theory (Jiang et al., 2013; Walther, 1996, 2015). All three of which play a role in online self-disclosure so it is important we understand not only how to define self-disclosure but how technology can facilitate it. These theories will be discussed individually in the next section. What should be clear now is the disparity that exists between the studies looked at in the literature review, from a design and measurement perspective. The design of this study, and the variables measured were heavily informed by similar, more recent studies. Ravichander and Black (2018) and Razavi et al. (2019) analysed participants' interactions with conversation agents (Amazon's Alexa, or computer-based avatars). Houghton and Joinson (2012) and Bak et al. (2014) analysed tweets in search of linguistic markers of self-disclosure, while Lin et al. (2014) and Chen et al. (2019) looked at disclosure on SNS. What these studies have in common is that they used the Linguistic Inquiry and Word Count tool (LIWC) in order to analyse SD. This will be discussed in further detail later in the literature review.

Self-disclosure and CMC Theory

Of the key theories discussed in Nguyen's (2012) review, social presence theory (Short et al., 1976), social information processing theory (Walther, 1992),

and hyperpersonal communication (Walther, 1996) will be discussed in the context of online self-disclosure.

Social Presence Theory

Social presence is viewed as an inherent quality of a communication medium (Short et al. 1976) and its ability to transmit social cues. This theory was expanded on by Lombard and Ditton (1997) and defined as a multi-dimensional and flexible concept that classifies media according to how well they convey intimacy and warmth between users, and by their ability to help form personal relationships. SPT is often associated with a group of CMC theories known as cues filtered out theories and has been the subject of further analysis from researchers such Walther (2011). Typically, FtF communication is the medium considered to present the most social presence, and CMC, primarily text based, for example email, with the lowest social presence (Rice, 1993). Yet research would argue that lower rates of perceived social presence could encourage and even allow for self-disclosure (Bailenson et al., 2006). Unlike FtF interactions, those that take place online can be anonymous or invisible, and lacking in verbal and non-verbal cues associated with FtF, which may lead to a disinhibition effect (Suler, 2004). Low levels of social presence and a feeling of anonymity can encourage self-disclosure online (Brunet & Schmidt, 2008; Hooi & Cho, 2014; Nguyen, 2012).

Social Information Processing Theory

Social information processing theory (SIP) is an interpersonal communication theory developed by Walther (1992, 2015) which illustrates how people get to know one another and develop relationships through CMC. SIP looks to explain relational development and management in a computer mediated environment without the presence of nonverbal cues. Where offline communication relies on verbal and nonverbal cues to express the messages and intentions of their speakers, online and primarily text-based interactions cannot rely on the nuance that is communicated via facial expressions, gestures, and intonation. According to Walther (1992, 2015) it is this lack of non-verbal cues that can lead to a slower rate of exchange of the social and emotional

information that comprises SD. Walther (2015) also argued that given enough time people adapt to this reduced cues environment and may disclose more information than they would in a FtF condition. One study examining SIP discovered that self-disclosure was higher, in the context of the whole conversation, through CMC compared to FtF (Tidwell & Walther, 2002). This may be explained by the participants willingness to decrease any perceived uncertainty felt in a reduced cues CMC environment, they are willing to disclose more and more frequently to further allow for relational development, but other theories such as uncertainty reduction (Berger, 1979) and disinhibition (Suler, 2004) are likely contributing factors.

Hyperpersonal Communication Theory

Hyperpersonal communication (HC; Walther, 1996, 2015) illustrates how people using CMC develop a heightened sense of intimacy over time. HC includes four attributes of CMC, they are the lack of nonverbal clues which allow the sender and receiver to more deliberately and strategically present themselves. Again, resulting in the receiver having less or limited information to develop their impression of the sender. Meaning that any information received could be misinterpreted, the receiver may over attribute the information they receive. Thirdly, because CMC channels give its users a greater sense of control, often allowing for careful construction and editing of messages before they are sent, it facilitates HC. Finally, the feedback loop of CMC can lead to behavioural confirmation, where the messages received reflect the impressions of the sender, and that positive impression reinforces the sender's self-presentation (Nguyen, 2012; Ruppel 2015; Walther, 1996). According to Hancock and Dunham (2001) it is common for those interacting via CMC to form more intense and less detailed impressions of their partners than if they were interacting FtF.

Measuring Self-disclosure

As noted by Nguyen (2012) disclosure measures were closely examined and a unified approach was not found. Beyond the parameters set in previously mentioned research (how often information is being revealed, the range of topics being discussed, and level of intimacy of what is being divulged), some studies

used modified self-disclosure scales relying on participants to self-report or report on their experimental partners' disclosure. Or created a new questionnaire (Aharony, 2016; Shang et al., 2015; Yaakobi & Goldenberg, 2014; Zhang & Ling, 2015) or relied on self-report measures, and content analysis (Antheunis et al., 2007; Joinson, 2001).

Results from Aharony (2016) indicates attachment anxiety is a predictor of SD of Facebook (r = .26, p < .001). Aharony looked at individual personal information shared on Facebook. Participants were surveyed on their use of the SNS, and how important it was to them. Participant disclosure was examined, in particular: demographics, pictures, social capital, as was the relationship between these types of disclosures and participant attachment type. Shang et al.'s (2015) online survey showed attachment affects willingness to self-disclose on Facebook but the difference between groups was not statistically significant. Shang et al measured SD using the 10 item Self-Disclosure Index (SDI; Miller et al., 1983) participants were then surveyed about their posting habits; they asked to report on 5 items: how frequently they shared links, posted text statuses or updates, checked in to locations, and posted photos and videos. These items were measured on a 7-point scale. Yaakobi and Goldenberg (2014) went a step further and showed that avoidant participants, when compared to anxious participants, had a decreased willingness to disclose information they perceived as potentially threatening in a web-based relationship. Participants were told to join a Facebook group and their interactions with other members were observed by a researcher. Items such as the amount of friends they had, and time taken to initiate contact were also noted, in that same study Yaakobi et al. (2014) asked participants to indicate how likely they were to disclose certain kinds of information.

These studies have their limitations; Aharony (2016) looked at only one dimension of attachment and suggested that future research include a qualitative aspect to enrich the findings. Yaakobi et al. (2014) only focused on the disclosure of the information as it related to job security and is not reflective of the self-disclosure in a broader sense on SNS. Chen et al. (2019) acknowledged the

limitations of previous research and looked to expand on it. Chen et al. evaluated SD on SNS using the linguistic inquiry and word count tool (LIWC). After analysing participant's attachment using the ECR-S, the shortened version of the ECR scale, SD was analysed in LIWC, where attachment anxiety negatively predicted the disclosure of personal profile information. This paper and four others that analysed SD using LIWC (Chen et al., 2019; Houghton & Joinson, 2012; Lin et al., 2014; Ravichander & Black, 2018; Razavi et al., 2019) informed which LIWC variables would be used to measure SD based on their association in this study. A list of categories found to be positively associated with SD from these papers is in Table 1. Variables in LIWC are grouped by category; a comprehensive list of the default LIWC dictionary categories, variables and examples is available in Appendix A.

Table 1

Research Papers and the LIWC Variables Found to Be Positively Associated With SD

Paper	LIWC Variables
Chen et al., 2019	Word count, First person singular pronouns, Social processes, Affective processes (positive, negative emotions), Cognitive processes, Perceptual processes, Biological processes
Houghton & Joinson, 2012	Word count, All Punctuation, Articles, Fillers words 2nd Person (you), 3rd Person Singular (she/he), Swear Words, Personal Pronouns, Past tense, Human words, Inhibitions, Social processes (family words), Word count, Work words, Sexual words
Lin et al., 2014	Affective processes (positive emotion, negative emotion)
Ravichander & Black, 2018	Affective processes (positive emotion, negative emotion), Pronouns (first person plural pronouns, second person pronouns, third person plural pronouns, third person singular pronouns), Social processes (family, friends).
Razavi et al., 2019	Word count, Affective processes (positive emotion, negative emotion), Affective processes (Positive emotion, Negative emotion), Drives (affiliation, achievement, power, reward, risk),

Attachment Theory

The feeling of closeness is key for interpersonal and relational success (Mashek & Aron, 2004) and according to Roberts and Dunbar (2011) plays a key

role in social connections. However, the degree of closeness felt by the individual varies from person to person. To examine this idea, one framework that can be applied is attachment theory (Bowlby, 1969). According to Collins (1996), the internal working model is developed during early life. This can be described as the general beliefs about oneself, such as worthiness, that have been extracted from interactive experiences with caregivers. Similarly, intimate relationships experienced in adulthood, according to researchers Hazan and Shaver (1987), are no different and are considered an attachment mechanism, known as adult attachment. Once a pattern emerges and develops it can prove to be stable across an individual's adult life (Fraley, 2002) and can explain individual differences of behaviour of those in close relationships. In an attempt to understand the role of attachment style in the context of social relationships studies have looked at its role in friendship, romantic relationships, marriage and online relationships (Bippus & Rollin, 2003; Moore & Leung, 2002; Senchak & Leonard, 1992; Ye, 2007).

Adult attachment is conceptualised across two dimensions, avoidance and anxiety (Gillath et al., 2016) and classifications of either combination are associated with attitudes towards the self and others. For example, high or low anxiety correspond to a negative or positive view of the self and high or low avoidance correspond to a negative or positive view of others, creating four possible categories of attachment style. The four categories of attachment style are secure (low anxious, low avoidant), preoccupied (high anxious, low avoidant), dismissive (low anxious, high avoidant), fearful (high anxious, high avoidant), (Bartholomew & Horowitz, 1991; Oldmeadow et al., 2013). According to Chen et al. (2019), differences in individual adult attachment informs behaviour in intimate relationships and "shapes thoughts, emotions, and behaviors" (p. 98).

Attachment Theory and Online Self-disclosure

As discussed earlier, an appropriate level of self-disclosure can help to establish and reinforce closeness between individuals; hence, it plays a central role in relational development and maintenance. However, Chen et al. (2019) placed the emphasis on the "difference between the attachment anxiety and

attachment avoidance" as a predictor of self-disclosure on SNS (p. 98). The researchers state that when it comes to disclosing personal information on an SNS profile page, participants with high attachment anxiety disclose less than their high attachment avoidance counterparts. They posit that avoidant individuals dislike disclosure on SNS because others will not be responsive to their disclosures, this could be attributed to a negative view of others (Luke et al., 2004). By reducing their disclosures, they can protect themselves and avoid intimate relationships. Avoidance can also be related to less Facebook use overall and less emphasis on building social capital on the platform (Lee, 2013; Oldmeadow et al., 2013). While Buote et al. (2009) found there was a significant interaction between communication media and attachment style. Specifically, there was a significantly greater extent of disclosure between offline friends for participants reporting secure, dismissing, and preoccupied attachment styles. Much like behaviour in relationships is influenced by attachment and internal working models (be they familial, friendly or romantic), online behaviour is also impacted. As a key factor of interpersonal behaviour, self-disclosure is then potentially informed or impacted by adult attachment styles. Attachment theory is an effective framework in studying behaviour on social networking sites (SNS). Studies have found evidence of anxiously attached participants disclosing more personal information on Facebook (Aharony, 2016) and in personal blogs (Trub, 2016), results revealed positive correlations between anxious attachment and disclosure (disclosure in the form of demographics, personal information, social capital photos, etc.; Aharony, 2016), and have applied the framework to explain the Facebook use of participants who showed signs of being anxiously attached, which lead them towards attention seeking behaviour, while attachment avoidance participants reported a lower and more restrained use of the platform (Hart et al., 2015). Some of these behaviours included: status updates containing swear words or innuendos, tagging other individuals in updates in the hope they would receive more engagement in the form of likes and comments. Morey et al. (2013) found participants that anxiously attached participants were positively associated with SNS use and self-disclose on these platforms compared to their

avoidant counterparts. It could be argued then that the two dimensions of attachment insecurity might be a predictor of self-disclosure online, however, further evidence is needed.

Rationale

As a key factor of interpersonal behaviour, self-disclosure is potentially informed and impacted by adult attachment styles. Existing research sought to compare SD in online and offline contexts, or focused on a specific sample, social network or disclosure type. Little research has looked at attachment theory and SD, and rather than relying on self-report measures or introducing another participant, this paper focused on eliciting qualitative responses from participants and used LIWC to analyse disclosure in order to investigate the relationship between the two.

Research question: Is there a relationship between anxious and avoidant attached (DV) individuals and self-disclosure levels online (IV)?

Hypothesis: Participants with anxious attached scores on the ECR-R Scale will have higher levels of self-disclosure as measured using LIWC when compared with participants with anxious avoidant scores on the ECR-R.

Chapter 3: Methods

Design

In order to address the research question, a cross-sectional, between groups study was designed to examine the difference in self-disclosure between people with different attachment styles. The dependent variables were attachment anxiety and attachment avoidance. The independent variable is self-disclosure as measured using a subset of variables in the Linguistic Inquiry and Word Count tool (LIWC) related to self-disclosure from previous literature. A table of the variables used can be found in the Analysis section.

Participants

Using a convenience sample, participants were recruited using snowball methods. The researcher made the survey available online and published it on Twitter, Reddit, and LinkedIn. It was the intention of the researcher to avoid recruiting any personal connections, (friends, family, colleagues) as familiarity with the researcher and the objective of the study may have impacted results as there is a requirement for self-disclosure as part of the procedure. 68 participants (Male=21, Female=44, Non-binary=3) responded to the online survey. The age of participants ranged from 18-66 (M=34.72, SD=11.685). At the time of analysis, the survey had 342 visits and a total of 68 full completions and 61 partial completions, which were unusable and not included in the analysis, the total attrition rate was 47%. Since the researcher needed participants to complete the scale and self-disclosure portion of the procedure, ideally both in full, only completed surveys were used in the analysis. Most incomplete responses submitted no data, some responses dropped out before completing any of the SD section.

Materials

The survey, created using Zoho Survey, consisted of a participant information sheet, consent form, and short demographic questionnaire. Participants then completed a measure of attachment and answered a series of questions designed to elicit self-disclosure.

Information Sheet and Consent Form

Participants were invited to take part via the survey link, briefed regarding the purpose and background of the research and asked to confirm if they would like to participate by completing a consent form. They were then asked to create a unique ID, to provide their age and list the gender they most identify with.

Attachment Survey: ECR-R

Attachment style was captured by participants completing the ECR-R (Fraley et al., 2000). The inventory consists of thirty-six items and participants were asked to consider how strongly they identify with each statement. Responses were assessed on a 7-point Likert scale from Strongly disagree to Strongly agree. 18 of the items are assessed for anxiety (e.g. "I'm afraid that I will lose my partner's love") and 18 for avoidance (e.g. "I prefer not to show a partner how I feel deep down"). This scale contains two sub-scales, one which measures attachment related anxiety, and one that measures attachment related avoidance. In order to obtain a meaningful and accurate response from participants the 36 items were randomised. The scale has been used in several studies with high reliability. Cronbach's alpha showed high reliability, $\alpha = 0.94$ for the scale overall and for each of the subscales, Anxiety scale (Q1-Q18): $\alpha = 0.94$, Avoidance scale (Q19-Q36): $\alpha = 0.935$.

Self-disclosure: Adapted Closeness Generating Procedure

Participants were then instructed to consider ten prompts and answer accordingly using the free text box provided in order to elicit a qualitative response. Each question required an increasing level of self-disclosure as the participant responded. The questions used were adapted from Aron's 1997 closeness generating procedure, the original protocol contains a series of 36 questions and or prompts, the goal of which was to create an experimental environment for generating closeness between two individuals through mutual self-disclosure. The scoring of this section will be discussed below in Analysis. The order in which these questions appeared was fixed, and the same for each participant. The character limit for each answer was fixed at 5,000. The full procedure was condensed for a number of reasons, one of which was, as a

result of using the full 36 item ECR-R scale, the researcher was concerned about the level of attrition; opting for a shortened version would allow participants to complete the full procedure in less than 10 minutes. Secondly, the full 36 questions are divided into three categories depending on the level of self-disclosure required; as this was developed for use in pairs the questions are conversational in nature each of which increasing in sensitivity, the entire way through the process the participants are building rapport. For the purposes of this procedure, the researcher selected a combination of questions, all of which are available in Appendix A where the full procedure is available, from each of the categories; five from set 1, four from set 2 and one from set 3. The level of SD for each of these questions increases but does not require any particularly sensitive information from participants. Thirdly, it was selected because of its ease of use, the validity of the original application, as well as its simplicity.

Procedure

The researcher used convergent design where quantitative and qualitative data was collected from participants concurrently in the form of an online survey, participants were then instructed to answer ten short questions, each requiring a level of self-disclosure. A full copy of the procedure is available in Appendix B. Then completed the ECR-R scale, and then the self-disclosure portion of the survey. Screenshots of both the mobile and desktop version of the survey can be seen in Appendix E. Once participants reached the end of the survey, they were presented with a debrief sheet and thanked for their time. Finally, participants then confirmed their participation by submitting their responses.

Ethics

This study was reviewed and approved by the Department of Technology and Psychology Ethics Committee of IADT. The study of attachment using the ECR-R scale and self-disclosure using an adapted closeness generating procedure to elicit qualitative responses from participants and the potential risks associated, although low, were mitigated by allowing participants to withdraw from the study at any time, and withdraw after submitting their responses by contacting the researcher up until the date of analysis and provide their unique ID

code that they created, and if any part of the procedure caused distress participants were fully debriefed and supports were made available at the time of submission. The benefits and risks were explained, during which participants were told that if the procedure raised any uncomfortable feelings a selection of helpful resources and organisations will be made available to them in the debrief, and that could skip any question that that they were not happy to answer during the ECR-R or self-disclosure section. As well as who would have access to the information they provide, and the results of the study. All participants confirmed they were at least 18 years old before participating. And assurances made about data retention and deletion in line with GDPR guidelines. A copy of the Ethics submission is available in Appendix B.

Analysis

In order to score participant's attachment related anxiety negatively phrased items were reversed and their responses from items 1-18 were averaged, to calculate an overall score. In order to score participants attachment related avoidance items 19-36 were averaged, where the following items were reversed: 20, 22, 26, 27, 28, 29, 30, 31, 33, 34, 35, and 36. The purpose of scoring the results for the subscales was so the researcher could group participants based on their mean score on each scale. The qualitative responses to the SD prompts were compiled for each participant and analysed using the Linguistic Inquiry and Word Count tool (LIWC). During the literature review process the researcher identified key studies examining online self-disclosure using LIWC as a method of analysis. A full table of the LIWC variables associated with SD was made available in the literature review, see page 11. Rather than including all 80 variables in this analysis the researcher focused on only applying those that were strongly associated with SD from previous literature. The researcher selected a total of 32 LIWC variables for analysis, see Appendix C. Of those 32, four were excluded because they contained combined totals for certain variables, Function, Pronoun, Personal Pronoun, Affect. An overall mean score was calculated for each of the LIWC variables. Each LIWC variable score is a percentage score out of 100%, except Word Count, which is

simply a total of words used in the selected sample. At this point the variables with a mean score of less than 1% were excluded because they had a mean too small for them to have an impact on the overall analysis of text, as per Pennebaker and King's elimination criteria (1999). Thirteen variables were excluded based on their mean score, leaving 15 variables that were analysed. Table 2 shows the variables that were included in the final LIWC analysis, the category they belong to and a brief description and example of each.

Table 2

LIWC Variables Included in the Final Analysis

LIWC Categories	LIWC variables measured	Description
Word count	Word count	Total number of words used.
Functional words	Personal pronouns	1st person singular: I, me, mine
Affect	Positive emotion	PE: Love, happy, enjoy
	Negative emotion	NE: Anxiety, Anger, Sadness
Social processes	Family	Family, friend related words:
	Friend	daughter, dad, buddy
Drives	Affiliation	Affiliation: ally, friend, social
	Achievement	Achievement: win, success, better
	Power	Power: superior, bully
	Reward	Reward: take, prize, benefit
	Risk	Risk: danger, doubt
Personal concerns	Work	Work: job, office,
	Leisure	Leisure: cook, chat, movie
	Home	Home: kitchen, landlord
	Money	Money: audit, cash, owe

Chapter 4: Results

Descriptive Statistics

The data was analysed in SPSS to produce descriptive and inferential statistics. Independent t-tests were performed to explore the differences between anxiously and avoidant attached participants and online self-disclosure. Participant scores on the ECR-R scale were grouped according to the two sub-scales, anxiety and avoidance.

Regarding the self-disclosure portion of the survey, participant responses for each question were combined and analysed in LIWC. On average, participant word count was 85.71 per overall response, which is the combined word count for each of the ten questions. The range, mean, and standard deviation for participants' ECR-R scores are available in Table 3 and in Table 4 for LIWC results. Results indicate that participants expressed considerably more positive rather than negative emotions in their overall responses. The average score for positive emotions expressed was 8.97, while the average score of negative emotions was only 1.71. Affiliation, Power and Family appeared next most frequently after positive emotion (6.61, 3.68 and 3.36). The variables that were mentioned least often were: Money, Risk and Friendship (0.97, 0.97, 1.22).

Table 3

Descriptive Statistics: ECR-R

	N	Minimum	Maximum	Mean	Std. D.
Anxiety score	68	1.06	6.06	2.99	1.27
Avoidance score	68	1.00	5.78	2.73	1.03

Table 4

Descriptive Statistics: LIWC Variables

	N	Minimum	Maximum	Mean	Std. D.
Word count	68	8.00	313.00	85.71	57.20
Personal pronoun (I)	68	0.00	22.50	10.67	4.45
Positive Emotion	68	0.00	21.05	8.97	4.27
Negative Emotion	68	0.00	8.33	1.71	1.88

Family	68	0.00	16.00	3.36	3.24
Friend	68	0.00	8.57	1.22	1.76
Affiliation	68	0.00	17.50	6.61	3.68
Achieve	68	0.00	12.50	2.57	2.12
Power	68	0.00	12.50	3.68	2.99
Reward	68	0.00	12.50	1.70	2.06
Risk	68	0.00	8.00	0.97	1.65
Work	68	0.00	12.50	2.89	2.60
Leisure	68	0.00	11.76	2.62	2.77
Home	68	0.00	11.76	1.62	2.28
Money	68	0.00	12.50	0.97	1.93

Self-disclosure: Anxious and Avoidant Attachment Styles

In line with the two sub-scales, two groups were created: "Anxious" and "Avoidant". Participants who scored higher on the anxiety scale were classified as "Anxious" type (n=42, M=3.60), and individuals who scored higher on the avoidance scale were classified as "Avoidant" (n=26*, M=3.22*). As described in the Analysis section, mean scores were calculated for each sub-scale in order to group participants for comparative purposes. Two scales, independent of each other, both calculated as the average of 18 items (anxious: average of Q1-Q18, avoidant: average of Q19-Q36). Both scales were calculated for each respondent, and the two average scores were then compared. If the respondent scored higher on the anxious scale, they were classified as anxious, and if they scored higher on the avoidant scale, then they were classified as avoidant. There was no absolute cut-off. Each respondent was classified into one and only one group, to which they were relatively closer. Participant's scores on the ECR-R made it easy to assign them to either category with a mean score that clearly leaned in either direction. This might not have been the case with a greater sample size, which would have introduced more variance in responses. The researcher is aware that these two groups are naturally not exclusive, and participants could show tendencies for both attachment types, but the aim of the research was to examine the relationship between attachment type (in relative terms) and self-disclosure. Descriptive statistics on LIWC category use for each group (M and SD) are available in Table 5.

Table 5

Descriptive Statistics: Mean, SD for Anxious and Avoidant Attachment Styles

	Anxious and Avoidant type	N	Mean	Std. Deviation	Std. Error Mean
Word count	Anxious type	42	86.60	56.55	8.73
	Avoidant type	26	84.27	59.32	11.63
Personal pronoun (I)	Anxious type	42	10.89	4.35	.67
	Avoidant type	26	10.33	4.68	.92
Positive Emotion	Anxious type	42	8.71	4.05	.62
	Avoidant type	26	9.40	4.66	.91
Negative Emotion	Anxious type	42	1.78	1.99	.31
	Avoidant type	26	1.62	1.72	.34
Family	Anxious type	42	3.51	3.40	.52
	Avoidant type	26	3.11	3.00	.59
Friend	Anxious type	42	1.37	2.02	.31
	Avoidant type	26	.98	1.23	.24
Affiliation	Anxious type	42	6.97	3.24	.50
	Avoidant type	26	6.04	4.31	.84
Achieve	Anxious type	42	2.71	1.86	.29
	Avoidant type	26	2.35	2.50	.49
Power	Anxious type	42	3.40	2.65	.41
	Avoidant type	26	4.14	3.47	.68
Reward	Anxious type	42	1.45	1.30	.20
	Avoidant type	26	2.10	2.89	.57

Risk	Anxious type	42	.94	1.63	.25
	Avoidant type	26	1.02	1.71	.34
Work	Anxious type	42	2.91	2.27	.35
	Avoidant type	26	2.87	3.12	.61
Leisure	Anxious type	42	2.90	2.73	.42
	Avoidant type	26	2.16	2.83	.55
Home	Anxious type	42	1.88	2.38	.37
	Avoidant type	26	1.19	2.11	.41
Money	Anxious type	42	.78	1.29	.20
	Avoidant type	26	1.27	2.67	.52

Inferential Statistics

Independent T-tests

In order to test whether there was a significant difference in the use of the LIWC variables between the Anxious and the Avoidant groups, independent sample t-tests were carried out. Based on Levene's Test (1961), the two groups (Anxious vs Avoidant) have equal variances on all attributes except for Reward. Therefore, on each attribute the "Equal variances assumed" statistics were used, and on Reward the "Equal variances not assumed" statistics were used. The independent sample t-tests showed no significant difference between the Anxious and Avoidant groups on any of the tested LIWC variables, the p value for all t-tests was not significant, nor was it trending towards significance for any independent test. Therefore, the hypothesis that there would be a difference in self-disclosure as measured by LIWC variables between the Anxious and Avoidant groups was not supported. Full outputs are available in Appendix E.

Chapter 5: Discussion

General Discussion

As discussed in the literature review, much as behaviour in relationships is influenced by attachment, online behaviour can also be impacted. As a key factor of interpersonal behaviour, self-disclosure is then potentially informed and impacted by attachment type. Given the rise in popularity and use of digital communication channels it was established in the literature review that SD is a key factor of interpersonal behaviour. This study hypothesised that SD was informed by attachment type, however, there was no evidence to support the hypothesis that anxiously attached scores on the ECR-R scale were linked to higher levels of self-disclosure. The results of this study contradict the findings cited in the literature review which supported the hypothesis that anxiously attached scores would lead to an increase in self-disclosure (Aharony, 2016; Buote et al., 2009; Lee, 2013; Morey et al., 2013; Oldmeadow et al., 2013; Stroebe et al., 2006; Trub, 2016; Yaakobi & Goldenberg, 2014). Rather, the results point in the direction that the level of self-disclosure is similar (i.e., individuals disclose a similar amount of information about themselves in both attachment styles) when measured using LIWC. It could be argued then, that attachment is not a dominant factor in online SD, just one contributing factor.

One point that cannot be overlooked is the potential that LIWC might not be a valid measure of SD, or more specifically, a valid measure of SD when it comes to survey research, which is not conversational in nature. In addition, the conversational nature of the CMC theories discussed in the literature review refer to the impact that of question asking and reciprocal SD had on experimental conditions (Nguyen, 2012; Sprecher et al., 2013). Despite evidence from key papers in this study that used LIWC to measure SD, two of which analysed non-traditional CMC channels (conversation agents such as Amazon's Alexa, or avatars), while others analysed one-way communication (Facebook and Twitter posts). This calls the effectiveness of survey-based research into question, which does not have an audience like the studies mentioned above (conversational partner or a digital audience). This is a critical difference as the researcher was

the clear audience for the participant. However, given the anonymity of the channel, more disinhibition was expected compared to a public channel such as a social network. Participant responses were potentially impacted by the low media richness of the survey channel, indicating low levels of social presence, which can encourage self-disclosure online (Bailenson et al., 2006). Further compounded by the adapted closeness generating procedure (Aron et al., 1997), of which only a sample of questions were used, to measure SD. The full procedure, traditionally conducted between pairs, is more meaningful despite support from previous studies that have used an adapted version (Baccon, et al., 2019) due to its conversational nature, an element that is lacking from the present study. Survey research is limited in terms of the feedback loop found in CMC conversations, which allow for behavioural confirmation on all sides, another key component of hyperpersonal communication. Which is why previous studies have found evidence of higher SD in the context of a whole conversation rather than one exchange or a one-way exchange (Tidwell & Walther, 2002). Willingness to self-disclose is led by a willingness to decrease uncertainty (Berger, 1979), a factor not at play during this study.

Theoretical and practical implications

Research into attachment, online communication and specifically online SD is contentious, when it comes to design, data collection, and measuring of both attachment and SD. This paper attempts to provide an alternative method of measuring adult attachment using the ECR-R and to add another perspective on eliciting SD from individuals participants by using an online survey in an atypical method for this research area; by including open-ended questions and attempts to reinforce research analysing online SD by using LIWC. However, while the results of this study challenge existing research by showing near equal results for SD across attachment anxiety and attachment avoidance when measured using LIWC, and no conclusion can be drawn as to whether or not attachment theory is a dominant / prominent / factor in online behaviour in the context of self-disclosure, given that the results contradict previous studies LIWC may not be reliable in this context and further research is needed to see if it is a reliable tool

used in isolation. Further analysis of larger disclosure samples could help legitimize use of LIWC for individual SD in an online context. This can be supported by additional content analysis so that the subtleties of SD language are not lost.

Strengths and Limitations

Strengths

Practically speaking, survey research proved to be a cost-effective and efficient method of data collection. Survey research also allowed participants to self-select their conditions meaning they may have been more comfortable in their environment and with the device being used at the time of submission. By contrast, if participants were in an experimental setting, they could have potentially been impacted by these two controls. This was a conscious decision on the part of the researcher in order to simplify the procedure. The procedure is replicable should it be expanded upon. The researcher used objective methods of analysis for both attachment and SD. The ECR-R scale is highly reliable and the open-ended questions, combined with LIWC analysis removed the need for self-report measures from the participant. In previously mentioned studies, researchers acknowledged the limitations of focusing on typical measurements of frequency, depth and breadth, thus limiting the generalizability of results. The variables used in LIWC were heavily informed by the literature review. And, to enrich previous findings by quantitative only studies, disclosure was recorded when participants answered open ended questions. And, unlike previous studies the researcher did not attempt to localize the sample to one specific area or group such as university students, and did not pair participants based on their attachment orientation in order to examine conversational exchanges between opposing or similar types rather the researcher eliminated these other variables in order to capture a qualitative response from each participant to simplify the analysis in a field where methodologies are highly varied and lacking a consistent approach. However, the procedure described in this study may not be the most effective method, it is simply one approach.

Limitations

Results of this study could have been impacted by several factors. This study was informed by the research cited throughout, and that literature was critiqued for the lack of consistency in design, measurement and sample. As a result, this paper is not without its limitations. Firstly, the CMC theories referred to in the literature review relate to conversational exchanges, and while relevant to online SD, may not necessarily lend themselves to survey research. By focusing only one communication medium, the results are then limited to that one medium and may not be applicable across CMC channels. Furthermore, this study attempted to assess the differences in SD across two groups of the attachment framework and proposed using LIWC to measure SD, although this was an efficient method of analysis it may not have been the most effective and certainly could have been supported using additional methods, see Future Research for more on this. Additionally, sample size at the time of analysis was relatively low overall, reducing the generalisability of the findings. Attachment, more specifically, experiences in close relationships can be a difficult subject for some and combined with the questions evoking SD could have had an impact on participation. Although survey visits were, high (340+) completions were low, with only 68 fully completed surveys fit for analysis. There were an additional 61 partial completions, which were excluded. Future research could simplify this by performing a quantitative analysis only or could further support the LIWC result with content analysis. The content of the disclosure itself is likely a rich source of information, but this was outside the scope of the project.

Future Research

While this study attempted to evaluate SD based on qualitative responses, disclosure by its nature is multidimensional and subjective. It is the subjective dimensions that have proved to be difficult to measure, certainly from a social network perspective and the observable information available on those platforms. Future research could attempt to compare or combine both qualitative and observable measures of SD to form a broader picture of online behaviour. Although survey research was effective and allowed the participants to take part

at a time and place and through a device that is convenient for them, it is only one method of data collection. In order to improve on this study, it would be worthwhile for researchers to examine SD variables using multiple methods of analysis. For example, by supporting LIWC outputs with self-report measures, and further exploring qualitative research by using content analysis to examine participant responses.

Another alternative could be to examine the public social media profiles of participants and analyse qualitative disclosures made freely outside the confines of a survey or experiment, and to include personal profile information such as the use of a photograph or avatar, number of photos shared by participants, and even the language used to describe the self in the bios or profile information sections. The addition of these variables could give researchers a more rounded view of online disclosure and remove the need for participants to disclose during the experiment. Researchers could also look to mimic the environment these exchanges are likely to happen in, e.g. a social messaging app, researchers could assign participants to pairs for the self-disclosure procedure. Participants would take turns asking and answering questions. Qualitative answers could be transcribed and analysed in LIWC, following up with a self-report measure for SD. Attachment score would be captured prior to the experimental procedure. Participant interaction could be strictly online, either by phone or computer, or for comparison, an FtF condition could also be used.

Conclusion

In this study, the author presents a novel approach to analysing the role that experiences in close relationships have on online self-disclosure. The overall hypothesis was that participants with anxious attached scores on the ECR-R Scale would have higher levels of self-disclosure when compared to those with avoidant scores on the ECR-R. There was no evidence to support the hypothesis, as test results were not significant. Instead, the results of this study show that anxious and avoidant types disclosed a similar amount of information about themselves as measured by LIWC. The results enrich the study of attachment theory as it relates to online communication behaviour and provide

another perspective for future research into online SD. Future research should build on this study and its cited sources by analysing other communication mediums and by combining quantitative and qualitative measures. It would be particularly useful to use another measurement of SD alongside LIWC to determine the validity of LIWC in measuring SD. Technology clearly has a huge role to play in how we interact and behave online. That behaviour, in part, is shaped by attachment orientation and the question of how deeply it is impacted, in what way, and what kind of individual is best suited for that environment is an important question as more and more of our daily interactions, both personally and professionally, are moving online. This study adds to the literature in this area.

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Appendix A: Information Sheet

Title: Attachment and online self-disclosure

Introduction

Brief

Thank you for your interest in taking this survey.

This research is being undertaken by Gary Kane as part of the Masters in Cyberpsychology program at the Institute of Art, Design, and Technology, Dun Laoghaire, Dublin, Ireland. (www.iadt.ie)

Before you decide whether or not you want to participate, it is important for you to understand why this research is being undertaken and what it will involve. Please take the time to read this information carefully. If anything is unclear, if you have any questions, or if you would like more information, please contact Gary Kane at N00174079@student.iadt.ie

Purpose of the research

This study intends to examine the relationship between attachment style and the way we communicate online. Using a personality assessment and a short survey the researcher intends to explore the role of our experience in close relationships and how we talk about ourselves.

Invitation

You are invited to participate in this research project, which will be submitted to IADT Dun Laoghaire as part of a dissertation on the MSc Cyberpsychology. Before you decide whether or not you wish to take part, it is important for you to understand why this research is being done and what it will involve.

Please take time to read this information carefully and discuss it with friends and relatives if you wish. If you have any questions or need further information about this study, you can contact the researcher, Gary Kane

(N00174079@student.iadt.ie) or the project supervisor, Nicola Fox Hamilton (Nicola.Fox-Hamilton@iadt.ie)

Do I have to take part?

You are free to decide whether you wish to take part or not. If you do decide to take part you will be asked to confirm your participation by completing the consent form at the end of this section. You are free to withdraw from this study up until the date of analysis, 15th of March, 2020, even after completion, and without reason. Just contact the researcher using the unique code that you will be asked to create, and you will be removed from the research project.

If I do take part, what do I have to do?

If you agree, you will be asked to complete a short demographic questionnaire and then a personality quiz to determine your attachment style. This should take no longer than 5 minutes. After which you will be asked to write ten short descriptive answers about yourself in response to ten questions.

Benefits and risks

There are no risks to being involved in this study. You will be completing a questionnaire on how you relate to other people and answering some questions, each of which require a level of self-disclosure. This should not cause any harm, but if it raises any uncomfortable feelings a selection of helpful resources and organisations will be made available to you in the Debriefing Information sheet. You can also skip any question that that you are not happy to answer. If you do agree to take part in this study you will help improve academic understanding of how attachment style shapes our online communication.

Who will have access to information about me?

The information is completely anonymous, and will be stored in a password protected cloud database and stored confidentially, in a password-protected computer accessed only by the researcher. This information will be retained for a period of 1 year, as required by Dun Laoghaire Institute of Art, Design & Technology, and five years if the research is to be published in an academic journal.

What will happen to the results of the study?

The data you provide will be compared to all other participants in the study and statistically analysed as part of a master's dissertation for the MSc Cyberpsychology course of IADT Dun Laoghaire. All the data will be collected and stored under the conditions outlined in the General Data Protection Regulation.

Who has reviewed the study?

This study has been reviewed and approved by the Department of Technology and Psychology Ethics Committee of IADT Dun Laoghaire.

Contact details

If you have any questions or require assistance, you can contact the researcher, Gary Kane (N00174079@student.iadt.ie) or the project supervisor, Nicola Fox Hamilton (Nicola.Fox-Hamilton@iadt.ie). Thank you for taking the time to read this information.

Consent form

*Please read carefully and select the boxes if you would like to participate in the study.

I confirm that I have read and understand the information sheet for the above study.

I understand that my participation is voluntary and that I am free to withdraw at any time.

I can confirm that I am over 18.

I agree to take part in this study.

Demographic information

*Create a unique identifier using your initials and three to four digits of your phone number e.g. AA1100

How old are you?

What gender do you identify as? (Male, Female, Non-binary, I prefer to self-describe)

Attachment Survey

This is a scale that examines experiences in close relationships.

#	Question	1=Strongly Disagree… 7=Strongly Agree						
1	I'm afraid that I will lose my partner's love.	1	2	3	4	5	6	7
2	I often worry that my partner will not want to stay with me.	1	2	3	4	5	6	7
3	I often worry that my partner doesn't really love me.	1	2	3	4	5	6	7
4	I worry that romantic partners won't care about me as much as I care about them.	1	2	3	4	5	6	7
5	I often wish that my partner's feelings for me were as strong as my feelings for him or her.	1	2	3	4	5	6	7
6	I worry a lot about my relationships.	1	2	3	4	5	6	7
7	When my partner is out of sight, I worry that he or she might become interested in someone else.	1	2	3	4	5	6	7
8	When I show my feelings for romantic partners, I'm afraid they will not feel the same about me.	1	2	3	4	5	6	7
9	I rarely worry about my partner leaving me.	1	2	3	4	5	6	7
10	My romantic partner makes me doubt myself.	1	2	3	4	5	6	7
11	I do not often worry about being abandoned.	1	2	3	4	5	6	7
12	I find that my partner(s) don't want to get as close as I would like.	1	2	3	4	5	6	7
13	Sometimes romantic partners change their feelings about me for no apparent reason.	1	2	3	4	5	6	7
14	My desire to be very close sometimes scares people away.	1	2	3	4	5	6	7
15	I'm afraid that once a romantic partner gets to know me, he or she won't like who I really am.	1	2	3	4	5	6	7
16	It makes me mad that I don't get the affection and support I need from my partner.	1	2	3	4	5	6	7
17	I worry that I won't measure up to other people.	1	2	3	4	5	6	7
18	My partner only seems to notice me when I'm angry.	1	2	3	4	5	6	7
19	I prefer not to show a partner how I feel deep down.	1	2	3	4	5	6	7
20	I feel comfortable sharing my private thoughts and feelings with my partner.	1	2	3	4	5	6	7
21	I find it difficult to allow myself to depend on romantic partners.	1	2	3	4	5	6	7
22	I am very comfortable being close to romantic partners.	1	2	3	4	5	6	7
23	I don't feel comfortable opening up to romantic partners.	1	2	3	4	5	6	7
24	I prefer not to be too close to romantic partners.	1	2	3	4	5	6	7

25	I get uncomfortable when a romantic partner wants to be very close.	1	2	3	4	5	6	7
26	I find it relatively easy to get close to my partner.	1	2	3	4	5	6	7
27	It's not difficult for me to get close to my partner.	1	2	3	4	5	6	7
28	I usually discuss my problems and concerns with my partner.	1	2	3	4	5	6	7
29	It helps to turn to my romantic partner in times of need.	1	2	3	4	5	6	7
30	I tell my partner just about everything.	1	2	3	4	5	6	7
31	I talk things over with my partner.	1	2	3	4	5	6	7
32	I am nervous when partners get too close to me.	1	2	3	4	5	6	7
33	I feel comfortable depending on romantic partners.	1	2	3	4	5	6	7
34	I find it easy to depend on romantic partners.	1	2	3	4	5	6	7
35	It's easy for me to be affectionate with my partner.	1	2	3	4	5	6	7
36	My partner really understands me and my needs.	1	2	3	4	5	6	7

Scoring Information: The first 18 items above comprise the attachment-related anxiety scale. Items 19 – 36 comprise the attachment-related avoidance scale. In real research, the order in which these items are presented should be randomized. To obtain a score for attachment-related anxiety, please average a person's responses to items 1 – 18. However, because items 9 and 11 are "reverse keyed" (i.e., high numbers represent low anxiety rather than high anxiety), you'll need to reverse the answers to those questions before averaging the responses. (If someone answers with a "6" to item 9, you'll need to re-key it as a 2 before averaging.) To obtain a score for attachment-related avoidance, please average a person's responses to items 19 – 36. Items 20, 22, 26, 27, 28, 29, 30, 31, 33, 34, 35, and 36 will need to be reverse keyed before you compute this average.

Self-disclosure

Read the following prompts and answer accordingly.

1. Given the choice of anyone in the world, whom would you want as a dinner guest?

2. Would you like to be famous? In what way?

3. Before making a telephone call, do you ever rehearse what you are going to say? Why?

4. What would constitute a "perfect" day for you?

5. If you could wake up tomorrow having gained any one quality or ability, what would it be?

6. What is the greatest accomplishment of your life?

7. What do you value most in a friendship?

8. What is your most treasured memory?

9. What does friendship mean to you?

10. Your house, containing everything you own, catches fire. After saving your loved ones and pets, you have time to safely make a final dash to save any one item. What would it be? Why?

Debrief

Thank you very much for taking part in this research study. Please submit your responses below.

Attachment theory is a framework we can use to evaluate how we relate to others and how we feel about the important people in our lives. While self-disclosure refers to the process of revealing information about ourselves. This study was designed to look at both attachment style and self-disclosure online, and to see if there is a relationship between the two.

If any part of this study so far has made you feel uncomfortable, distressed, or upset, we encourage you to contact the following resource:

- Aware:
  - Freephone 1800 80 48 48
  - Available Monday - Sunday - 10am to 10pm
  - supportmail@aware.ie

If you have questions about this study or you wish to have your data removed from the study you should contact the researcher Gary Kane

(n00174079@student.iadt.ie) or their supervisor, Nicola Fox Hamilton (Nicola.Fox-Hamilton@iadt.ie) by 7th of March, 2020.

Thank you sincerely for contributing. The researcher wants to assure you that your data is confidential and anonymous, and if published the data will not be in any way identifiable as yours. The information you have provided will be retained for a period of 1 year, as required by Dun Laoghaire Institute of Art, Design & Technology, and five years if the research is to be published in an academic journal, after which it will be deleted.

Appendix B: DPTEC Form B Application

DEPARTMENT OF TECHNOLOGY AND PSYCHOLOGY

ETHICAL APPROVAL FORM B*

Five printed copies of this form should be submitted to the chair of the ethics committee

Title of project: Attachment Theory and Online Social Communication: An analysis of the relationship between adult attachment and self-disclosure on WhatsApp using an adapted closeness-generating procedure: An analysis of the relationship between adult attachment and self-disclosure on WhatsApp using an adapted closeness-generating procedure**.**

Name of researcher: Gary Kane

Email contact: N00174079@student.iadt.ie

Name of supervisor Tbc.

			Yes	No	N/A
1	Will you describe the main research procedures to participants in advance, so that they are informed about what to expect?		X		
2	Will you tell participants that their participation is voluntary?		X		
3	Will you obtain written consent for participation (through a signed or 'ticked' consent form)?		X		
4	If the research is observational, will you ask participants for their consent to being observed?		X		

5	Will you tell participants that they may withdraw from the research at any time and for any reason?	X		
6	With questionnaires, will you give participants the option of omitting questions they do not want to answer?	X		
7	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?	X		
8	Will you debrief participants at the end of their participation (i.e., give them a brief explanation of the study)?	X		
9	If your study involves people between 16 and 18 years, will you ensure that <u>passive</u> consent is obtained from parents/guardians, with active consent obtained from both the child and their school/organisation?			X
10	If your study involves people under 16 years, will you ensure that <u>active</u> consent is obtained from parents/guardians <u>and</u> that a parent/guardian or their nominee (such as a teacher) will be present throughout the data collection period?			X
11	Will your project involve deliberately misleading participants in any way?	X		
12	Is there any realistic risk of any participants experiencing either physical or psychological distress or discomfort?	X		
13	Does your project involve work with animals?		X	
14	Do you plan to give individual feedback to participants		X	

	regarding their scores on any task or scale?				
15	Does your study examine any sensitive topics (such as, but not limited to, religion, sexuality, alcohol, crime, drugs, mental health, physical health)		X		
16	Is your study designed to change the mental state of participants in any negative way (such as inducing aggression, frustration, etc.)			X	
17	Does your study involve an external agency (e.g. for recruitment)			X	
18	Do participants fall into any of the following special groups?	People with learning or communication difficulties		X	
		Patients (either inpatient or outpatient)		X	
		People in custody		X	

If you have ticked **No** to any of questions 1 to 10, or **Yes** to any of questions 11 to 18 you should refer to the PSI Code of Professional Ethics and BPS Guidelines. There is an obligation on the lead researcher to bring to the attention of the Department of Technology and Psychology Ethics Committee (DTPEC) any issues with ethical implications not clearly covered by the above checklist.

* This Ethics B form should be completed by researchers whose studies involve any ethically questionable practices.

I consider that this project **may** have ethical implications that should be brought before the DTPEC. The rationale for using an online quasi-experimental design is to remove the need for a control group and random selection or assignment. All participants who consent to taking part in this experiment will be exposed to the	⊠

same conditions and to control to variance the researcher will be posing as their conversation partner on WhatsApp.

Please provide all the further information listed below, adhering closely to the suggested word counts.

1. Purpose of project with very clear and specific justification for the study [its potential benefits], given the acknowledged sensitivity of the topic of study or the methods used (approximately 100 words)

The purpose of this project is to examine the relationship between attachment style and willingness to disclose in an online asynchronous environment and determine if attachment style has an impact on participant self-disclosure. An evaluation of the literature has informed the design. An essential element of social communication and key concept of CMC is self-disclosure. Patterns of behaviour both existing and learned have trained users in how to interact and use these channels. An interesting question presents itself: what type of person benefits from online social interaction? And does their personality inform their interactions? Attachment theory is one way to analyse these social interactions and provides a powerful framework for exploring individual human behaviour and differences in offline and online environments.

2. Proposed methodology (approximately 300 words). This must include:
    a. Participants: recruitment methods, number, age, gender, exclusion/inclusion criteria.
    b. Brief description of methods and measurements.

a). Participants: Recruited using convenience sampling: IADT students, varying in age, recruited from undergraduate and postgraduate psychology courses will be recruited, ideally 25-50 participants (both male and female) for a meaningful sample. All participants must be 18 years or older and users of WhatsApp.

b). Procedure: If participants consent to take part, they will be asked:

- To provide demographic information: Unique identifier, Gender, Age, Mobile phone number, and to select when they will be available to take part
- To complete the ECR-S short form (a google form will be built to host the quiz) to determine their attachment score. This should take no longer than 5-10 minutes. Participant submits form and has consented to be contacted via WhatsApp
- Should any of the items on the attachment quiz cause distress for the

participants, supports will be made available to them upon successful submission of the scale

- Researcher will collect the completed forms and anonymize data
- Participants have been informed they will be randomly assigned to groups of two and contacted by their partner shortly. This was a deception. Once they have completed the google form, the researcher will be notified and will contact each participant via WhatsApp, the designated channel, at the time they have chosen
- Once contacted the main task will begin. Participants have been instructed to allow no more than 25 minutes for the exercise.
- The researcher will ask the first of ten questions adapted from the Aron's (1997) closeness-generating procedure. The researcher will ask each question of the participant, they have been instructed to respond to each question, and the researcher will then respond with a scripted answer (scripted answers have yet to be written).
- After the ten questions have been asked and answered the experiment is complete. Or if the experiment goes beyond the allocated 25 minutes the procedure will stop.
- Once completed, participants have been instructed to then delete the conversation with their partner afterwards.
- The researcher will export each individual chat and match to the unique identifier using their phone number
- Once the chats have been exported and all data anonymised the conversation histories will be erased from the researcher's phone.
- Finally, the participants will receive the debrief from the researcher, thanking them for their participation and acknowledging the

As mentioned, the ECR-S short scale (Wei, M. 2007) will be administered and tracked via a google form:

Instruction: The following statements concern how you feel in romantic relationships. We are interested in how you generally experience relationships, not just in what is happening in a current relationship. Respond to each statement by indicating how much you agree or disagree with it. Mark your answer using the following rating scale:

1	2	3	4	5	6	7
Strongly	Disagr	Slightly	Neutral	Slightly	Agree	Strongly

Disagree	ee	Disagree		Agree		Agree	

1. It helps to turn to my romantic partner in times of need.

2. I need a lot of reassurance that I am loved by my partner.

3. I want to get close to my partner, but I keep pulling back.

4. I find that my partner(s) don't want to get as close as I would like.

5. I turn to my partner for many things, including comfort and reassurance.

6. My desire to be very close sometimes scares people away.

7. I try to avoid getting too close to my partner.

8. I do not often worry about being abandoned.

9. I usually discuss my problems and concerns with my partner.

10. I get frustrated if romantic partners are not available when I need them.

11. I am nervous when partners get too close to me.

12. I worry that romantic partners won't care about me as much as I care about them.

Scoring Information: Anxiety = 2, 4, 6, 8 (reverse), 10, 12. Avoidance = 1 (reverse), 3, 5 (reverse), 7, 9 (reverse), 11

An abbreviated version of the closeness-generating (CG) procedure (Aron et al., 1997) will be used.

1. Given the choice of anyone in the world, whom would you want as a dinner guest?
2. Would you like to be famous? In what way?
3. Before making a telephone call, do you ever rehearse what you are going to say? Why?
4. What would constitute a "perfect" day for you?
5. If you could wake up tomorrow having gained any one quality or ability, what would it be?
6. What is the greatest accomplishment of your life?
7. What do you value most in a friendship?
8. What is your most treasured memory?
9. What does friendship mean to you?
10. Your house, containing everything you own, catches fire. After saving your loved ones and pets, you have time to safely make a final dash to save any

one item. What would it be? Why?	
3. A clear but concise statement of the ethical considerations raised by the project and how you intend to deal with them (approximately 100 words). Potential ethical considerations: Use of deception, and study of attachment style using the ECR-S short scale. To offset any adverse effects of these two experiences participants will be debriefed after submitting their ECR-S form (see ECR-S submission brief) and support services made available should they need it. They also can withdraw from the study at that stage by contacting the researcher. If they follow through and complete the procedure, unknowingly interacting with the researcher, they will be fully debriefed again once they have completed the exercise. The same support services will be made available to them and they will again have the option to withdraw from the study (see Debrief). These are the only ethical considerations and they will be mitigated as outlined above. The rationale for deception is such that the task itself to elicit responses only when participants are asked a question, they formulate and type their answers, then the researcher responds to the same question with a scripted answer, in a conversational manner. Then the next question is asked of the participants. This is done until all 10 questions have been asked or 25 minutes have elapsed since the conversation has started. The instructions, the researcher asking the questions, and the use of scripted answers across all conversations is to control for small-talk, introductions, and digressions. Given this is an online experiment the proposed design will eliminate the need to assign two participants per group, to rely upon participants to revert with extracts of the conversation, it will control for any task deviation in that conversation, it will allow the time constraint to be observed by the researcher and will allow for easy data collection by way of export directly from the researchers chat history.	
4. Copies of all materials to be used in your study should be attached to this form. This must include consent and participant information arrangements and debrief forms. It should also include copies of all standardized and/or non-standardized questionnaires and instruments, as well as any interventions and/or audio-visual materials which will be used. Please note that these materials will not be returned to you, so you should ensure that you retain a copy for your own records. All loose materials (such as DVDs, handouts etc.) should be clearly labelled with your name. There is no word count limit on appendices, but no appendices should be included that will not	

be used as materials in your study. Five copies of this form, along with all materials to be used in your study, should be submitted to the DTPEC for consideration. ***If any of the above information is missing, your application will not be considered at the DTPEC meeting, and your research may be significantly delayed.***	

I am familiar with the PSI Code of Professional Ethics and BPS Guidelines (and have discussed them with the other researchers involved in the project). I have read and understood the specific guidelines for completion of Ethics Application Forms.

Signed:	Print Name: GARY KANE	Date: 08/05/2019
Applicant		
Signed	Print Name	Date
Supervisor		

Appendix C: Mean Scores of LIWC Variables

Table 6

Mean scores of LIWC variables

LIWC variable	Mean score
WC	85.71
function	47.80
pronoun	16.62
personal pron	12.33
i	10.67
we	0.25
you	0.45
she / he	0.12
they	0.84
article	4.54
affect	10.76
positive emotion	8.97
neg emotion	1.71
anxiety	0.55
anger	0.20
sad	0.19
social	13.08
family	3.36
friend	1.22
drives	14.25
affiliation	6.61
achieve	2.57
power	3.68
reward	1.70
risk	0.97
work	2.89
leisure	2.62
home	1.62
money	0.97
religion	0.06
death	0.15
exclamation	0.50

Appendix D: Screenshots of Survey (ECR-R)

Figure 1

Screenshots of survey (ECR-R)

ECR-R mobile view	ECR-R desktop view
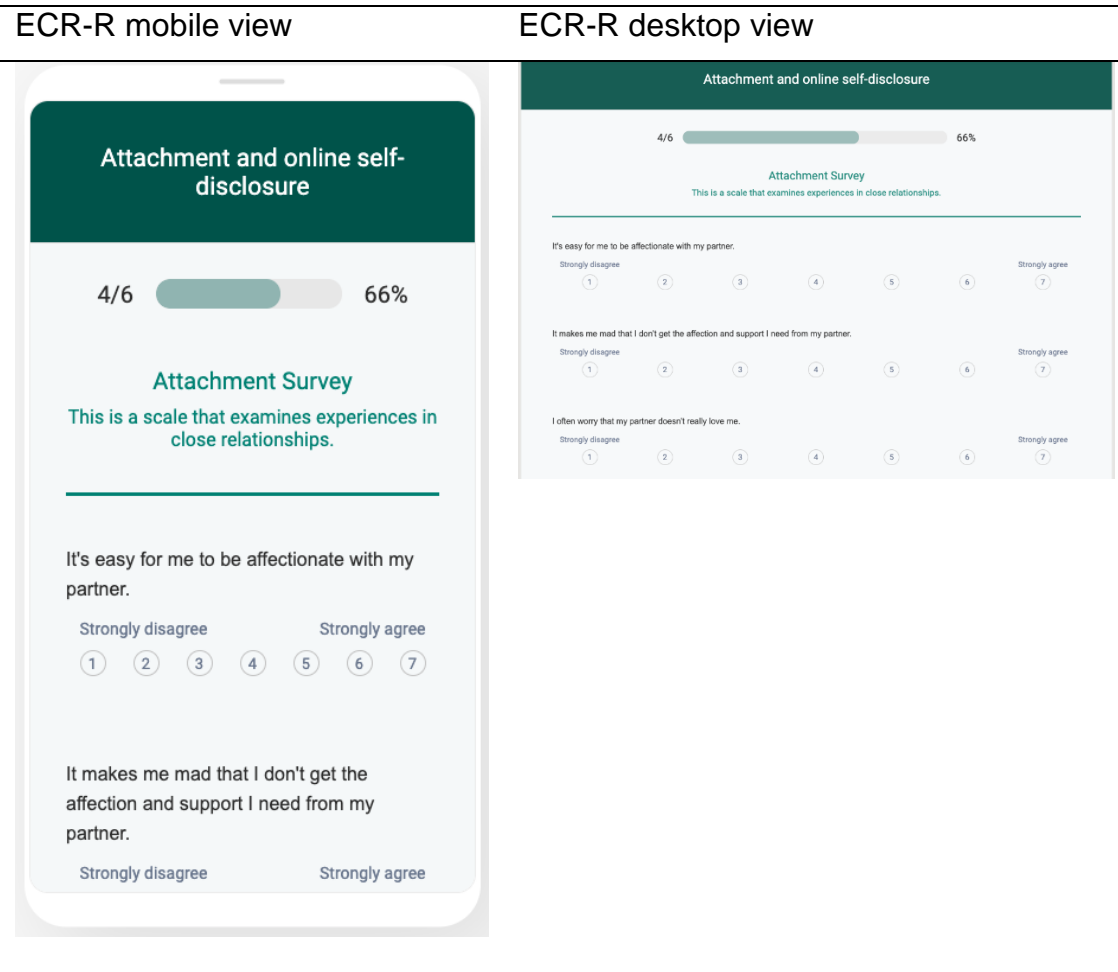
Figure 2

Screenshots of survey (Self-disclosure)

Self-disclosure mobile view	Self-disclosure desktop view

Appendix E: SPSS Outputs

Table 7

Descriptive statistics: SPSS Outputs

	N	Minimum	Maximum	Mean	Std. Deviation
Anxiety score average	68	1,06	6,06	2,9931	1,26535
Avoidance score average	68	1,00	5,78	2,7334	1,03109
WordCount	68	8,00	313,00	85,7059	57,19776
I	68	,00	22,50	10,6716	4,45127
PosEmo	68	,00	21,05	8,9744	4,26981
NegEmo	68	,00	8,33	1,7143	1,88160
Family	68	,00	16,00	3,3563	3,23546
Friend	68	,00	8,57	1,2247	1,76127
Affiliation	68	,00	17,50	6,6124	3,68311
Achieve	68	,00	12,50	2,5722	2,11541
Power	68	,00	12,50	3,6826	2,98763
Reward	68	,00	12,50	1,6971	2,06087
Risk	68	,00	8,00	,9699	1,64639
Work	68	,00	12,50	2,8940	2,60251
Leisure	68	,00	11,76	2,6181	2,77292
Home	68	,00	11,76	1,6157	2,28490
Money	68	,00	12,50	,9697	1,93070
function	68	15,79	64,29	47,8049	10,06369
pronoun	68	,00	27,50	16,6228	6,01313
ppron	68	,00	22,50	12,3301	4,86174
we	68	,00	2,86	,2535	,63712
you	68	,00	5,26	,4490	,95178
shehe	68	,00	2,33	,1178	,41863
they	68	,00	5,26	,8379	1,29103
article	68	,00	12,50	4,5387	2,95712
affect	68	,00	28,00	10,7625	5,04488
anx	68	,00	8,33	,5521	1,26807
anger	68	,00	2,78	,1959	,52937
sad	68	,00	2,94	,1924	,53657
social	68	3,51	35,29	13,0803	6,09954
drives	68	5,88	29,41	14,2465	5,56796
relig	68	,00	1,28	,0601	,22945
death	68	,00	3,23	,1453	,57652
Exclam	68	,00	13,89	,4951	1,94819
Valid N (listwise)	68				

Table 8

Group Statistics

	Anxious vs avoidant type	N	Mean	Std. Deviation	Std. Error Mean
WordCount	Anxious type	42	86,5952	56,55218	8,72619
	Avoidant type	26	84,2692	59,32457	11,63451
I	Anxious type	42	10,8852	4,35019	,67125
	Avoidant type	26	10,3265	4,67599	,91704
PosEmo	Anxious type	42	8,7095	4,04630	,62436
	Avoidant type	26	9,4023	4,65839	,91359
NegEmo	Anxious type	42	1,7755	1,99119	,30725
	Avoidant type	26	1,6154	1,72322	,33795
Family	Anxious type	42	3,5064	3,40222	,52497
	Avoidant type	26	3,1138	2,99543	,58745
Friend	Anxious type	42	1,3736	2,02152	,31193
	Avoidant type	26	,9842	1,23056	,24133
Affiliation	Anxious type	42	6,9690	3,24286	,50038
	Avoidant type	26	6,0362	4,30691	,84466
Achieve	Anxious type	42	2,7069	1,85716	,28657
	Avoidant type	26	2,3546	2,50135	,49055
Power	Anxious type	42	3,3971	2,65040	,40897
	Avoidant type	26	4,1438	3,47030	,68058
Reward	Anxious type	42	1,4462	1,30050	,20067
	Avoidant type	26	2,1023	2,88656	,56610
Risk	Anxious type	42	,9393	1,62502	,25075
	Avoidant type	26	1,0192	1,71160	,33567
Work	Anxious type	42	2,9076	2,26895	,35011
	Avoidant type	26	2,8719	3,11577	,61105
Leisure	Anxious type	42	2,9033	2,73460	,42196
	Avoidant type	26	2,1573	2,82583	,55419
Home	Anxious type	42	1,8795	2,37514	,36649
	Avoidant type	26	1,1896	2,10575	,41297
Money	Anxious type	42	,7843	1,28988	,19903
	Avoidant type	26	1,2692	2,66651	,52295

Table 9

Inferential statistics: Independent Samples Test

	Levene's Test for Equality of Variances	t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
WordCount	Equal variances assumed	,245	,622	,162	66	,872	2,32601	14,37810	-26,38080	31,03281
	Equal variances not assumed			,160	51,165	,874	2,32601	14,54332	-26,86863	31,52065
I	Equal variances assumed	1,026	,315	,500	66	,619	,55870	1,11705	-1,67155	2,78895
	Equal variances not assumed			,492	50,182	,625	,55870	1,13646	-1,72373	2,84113
PosEmo	Equal variances assumed	,321	,573	-,647	66	,520	-,69278	1,07015	-2,82940	1,44383
	Equal variances not assumed			-,626	47,490	,534	-,69278	1,10655	-2,91828	1,53271
NegEmo	Equal variances assumed	1,141	,289	,339	66	,736	,16009	,47267	-,78362	1,10381
	Equal variances not assumed			,351	58,879	,727	,16009	,45674	-,75388	1,07407
Family	Equal variances assumed	,038	,846	,483	66	,630	,39258	,81204	-1,22870	2,01387
	Equal variances not assumed			,498	58,230	,620	,39258	,78784	-1,18432	1,96949
Friend	Equal variances assumed	2,690	,106	,884	66	,380	,38934	,44023	-,48960	1,26828
	Equal variances not assumed			,987	65,995	,327	,38934	,39439	-,39808	1,17676

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Affiliation	Equal variances assumed	,678	,413	1,015	66	,314	,93289	,91888	-,90171	2,76749
	Equal variances not assumed			,950	42,439	,347	,93289	,98175	-1,04774	2,91353
Achieve	Equal variances assumed	,073	,788	,665	66	,509	,35229	,53010	-,70608	1,41066
	Equal variances not assumed			,620	41,992	,539	,35229	,56812	-,79424	1,49881
Power	Equal variances assumed	2,902	,093	-1,002	66	,320	-,74670	,74552	-2,23518	,74178
	Equal variances not assumed			-,940	42,903	,352	-,74670	,79401	-2,34807	,85467
Reward	Equal variances assumed	5,386	,023	-1,282	66	,204	-,65612	,51182	-1,67800	,36577
	Equal variances not assumed			-1,092	31,375	,283	-,65612	,60062	-1,88049	,56825
Risk	Equal variances assumed	,004	,948	-,193	66	,847	-,07995	,41383	-,90618	,74629
	Equal variances not assumed			-,191	51,001	,849	-,07995	,41899	-,92109	,76120
Work	Equal variances assumed	1,216	,274	,055	66	,957	,03570	,65432	-1,27070	1,34209
	Equal variances not assumed			,051	41,388	,960	,03570	,70424	-1,38615	1,45754
Leisure	Equal variance	,076	,783	1,079	66	,284	,74603	,69111	-,63382	2,12587

	s assumed									
	Equal variances not assumed			1,071	51,777	,289	,74603	,69655	-,65184	2,14389
Home	Equal variances assumed	,451	,504	1,214	66	,229	,68991	,56817	-,44448	1,82429
	Equal variances not assumed			1,250	57,963	,217	,68991	,55214	-,41534	1,79516
Money	Equal variances assumed	3,669	,060	-1,007	66	,318	-,48495	,48174	-1,44677	,47688
	Equal variances not assumed			-,867	32,353	,392	-,48495	,55954	-1,62421	,65432

Table 10

Cronbach's alpha for ECR-R full scale

Case Processing Summary		N	%
Cases	Valid	65	95,6
	Excluded[a]	3	4,4
	Total	68	100,0

a. Listwise deletion based on all variables in the procedure.

Table 11

Reliability Statistics

Cronbach's alpha	N of items
,942	36

Table 12

Item Statistics

	Mean	Std. Deviation	N
I'm afraid that I will lose my partner's love.	3,12	2,004	65
I often worry that my partner will not want to stay with me	3,00	1,785	65
I often worry that my partner doesn't really love me.	2,88	1,924	65
I worry that romantic partners won't care about me as much as I care about them.	3,09	1,950	65
I often wish that my partner's feelings for me were as strong as my feelings for him or her.	2,95	1,956	65
I worry a lot about my relationships.	3,65	1,807	65
When my partner is out of sight, I worry that he or she might become interested in someone else.	2,65	1,727	65
When I show my feelings for romantic partners, I'm afraid they will not feel the same about me.	3,60	1,792	65
I rarely worry about my partner leaving me.	2,94	1,819	65
My romantic partner makes me doubt myself.	2,25	1,335	65
I do not often worry about being abandoned.	3,22	1,972	65
I find that my partner(s) don't want to get as close as I would like.	2,86	1,676	65
Sometimes romantic partners change their feelings about me for no apparent reason.	2,91	1,774	65
My desire to be very close sometimes scares people away.	2,58	1,713	65
I'm afraid that once a romantic partner gets to know me, he or she won't like who I really am.	3,12	1,965	65

It makes me mad that I don't get the affection and support I need from my partner.	3,20	1,946	65
I worry that I won't measure up to other people	4,11	2,047	65
My partner only seems to notice me when I'm angry	1,95	1,255	65
I prefer not to show a partner how I feel deep down.	3,00	1,292	65
I feel comfortable sharing my private thoughts and feelings with my partner	2,58	1,704	65
I find it difficult to allow myself to depend on romantic partners	2,32	1,251	65
I am very comfortable being close to romantic partners	3,75	1,552	65
I don't feel comfortable opening up to romantic partners	2,38	1,234	65
I prefer not to be too close to romantic partners.	2,51	1,382	65
I get uncomfortable when a romantic partner wants to be very close	2,32	1,448	65
I find it relatively easy to get close to my partner	2,32	1,359	65
It's not difficult for me to get close to my partner	2,57	1,346	65
I usually discuss my problems and concerns with my partner	2,75	1,640	65
It helps to turn to my romantic partner in times of need	2,28	1,179	65
I tell my partner just about everything	2,15	1,149	65
I talk things over with my partner	2,77	1,487	65
I am nervous when partners get too close to me	2,29	1,155	65
I feel comfortable depending on romantic partners	2,48	1,522	65
I find it easy to depend on romantic partners	3,75	1,458	65
It's easy for me to be affectionate with my partner	3,66	1,439	65

My partner really understands me and my needs	2,15	1,349	65

Table 13

Scale statistics

Mean	Variance	Std. Deviation	N of items
102,14	1119,950	33,466	36

Table 14

Cronbach's alpha for ECR-R anxiety subscale

Case Processing Summary		N	%
Cases	Valid	66	97,1
	Excluded[a]	2	2,9
	Total	68	100,0

a. Listwise deletion based on all variables in the procedure.

Table 15

Reliability Statistics

Cronbach's alpha	N of items
,941	18

Table 16

Item Statistics

	Mean	Std. Deviation	N
I'm afraid that I will lose my partner's love.	3,09	2,006	66
I often worry that my partner will not want to stay with me	2,97	1,789	66
I often worry that my partner doesn't really love me.	2,85	1,923	66
I worry that romantic partners won't care about me as much as I care about them.	3,06	1,952	66
I often wish that my partner's feelings for me were as strong as my feelings for him or her.	2,97	1,945	66
I worry a lot about my relationships.	3,61	1,822	66
When my partner is out of sight, I worry that he or she might become interested in someone else.	2,62	1,726	66

When I show my feelings for romantic partners, I'm afraid they will not feel the same about me.	3,58	1,789	66
I rarely worry about my partner leaving me.	2,91	1,821	66
My romantic partner makes me doubt myself.	2,23	1,334	66
I do not often worry about being abandoned.	3,18	1,976	66
I find that my partner(s) don't want to get as close as I would like.	2,91	1,707	66
Sometimes romantic partners change their feelings about me for no apparent reason.	2,92	1,766	66
My desire to be very close sometimes scares people away.	2,61	1,709	66
I'm afraid that once a romantic partner gets to know me, he or she won't like who I really am.	3,14	1,952	66
It makes me mad that I don't get the affection and support I need from my partner.	3,23	1,944	66
I worry that I won't measure up to other people	4,14	2,045	66
My partner only seems to notice me when I'm angry	2,00	1,301	66

Table 17

Cronbach's alpha for ECR-R avoidance subscale

Case Processing Summary		N	%	
Cases	Valid		67	98,5
	Excluded[a]		1	1,5
	Total		68	100,0

a. Listwise deletion based on all variables in the procedure.

Table 18

Reliability Statistics

Cronbach's alpha	N of items
,935	18

Table 19

Item Statistics

	Mean	Std. Deviation	N
I prefer not to show a partner how I feel deep down.	3,00	1,275	67
I feel comfortable sharing my private thoughts and feelings with my partner	2,69	1,777	67
I find it difficult to allow myself to depend on romantic partners	2,42	1,350	67
I am very comfortable being close to romantic partners	3,79	1,552	67
I don't feel comfortable opening up to romantic partners	2,45	1,294	67
I prefer not to be too close to romantic partners.	2,63	1,526	67
I get uncomfortable when a romantic partner wants to be very close	2,39	1,497	67
I find it relatively easy to get close to my partner	2,36	1,422	67
It's not difficult for me to get close to my partner	2,61	1,392	67
I usually discuss my problems and concerns with my partner	2,81	1,663	67
It helps to turn to my romantic partner in times of need	2,33	1,248	67
I tell my partner just about everything	2,19	1,234	67
I talk things over with my partner	2,82	1,517	67
I am nervous when partners get too close to me	2,34	1,225	67
I feel comfortable depending on romantic partners	2,52	1,560	67
I find it easy to depend on romantic partners	3,78	1,465	67
It's easy for me to be affectionate with my	3,69	1,448	67

64

partner

My partner really understands me and my needs	2,18	1,381	67

Appendix F: LIWC2015 Outputs

ID	Age	Gender	WC	function	pronoun	ppron	i	we	you	shehe	they	article	affect	posemo	negemo	anx	anger	sad	social	family	friend	drives	affiliation	achieve	power	reward	risk	work	leisure	home	money	relig	death	Exclam
AN572	57	Female	116	43.97	18.1	14.66	12.07	0.86	0	0.86	0.86	2.59	17.24	11.21	6.03	0.86	0.86	0.86	17.24	2.59	0.86	14.66	5.17	1.72	5.17	1.72	1.72	0.86	2.59	1.72	0	0	0	0
JMC1719	29	Male	49	48.98	14.29	10.2	10.2	0	0	0	0	10.2	20.41	18.37	2.04	2.04	0	0	14.29	2.04	0	18.37	6.12	4.08	2.04	4.08	6.12	0	2.04	2.04	0	0	0	0
FON7190	41	Female	92	53.26	13.04	8.7	7.61	0	0	0	1.09	4.35	10.87	10.87	0	0	0	0	10.87	3.26	0	15.22	5.43	6.52	4.35	3.26	0	1.09	5.43	3.26	0	0	0	3.26
AR2781	38	Female	94	46.81	9.57	8.51	8.51	0	0	0	0	3.19	9.57	6.38	3.19	1.06	0	1.06	12.77	3.19	1.06	15.96	5.32	5.32	5.32	1.06	1.06	2.13	2.13	3.19	0	0	0	0
BM1234	34	Male	35	34.29	14.29	11.43	8.57	2.86	0	0	0	0	14.29	14.29	0	0	0	0	14.29	2.86	8.57	0	17.14	2.86	2.86	2.86	0	5.71	0	0	0	0	0	5.71
ANG320	59	Male	57	52.63	17.54	12.28	12.28	0	0	0	0	3.51	12.28	10.53	1.75	0	0	0	3.51	1.75	0	8.77	1.75	1.75	0	7.02	0	0	0	0	0	0	0	0
L4M390	27	Male	160	54.38	20	15.62	11.25	1.25	0.62	0.62	1.88	6.88	10	8.12	1.88	0	0.62	0	16.88	1.88	3.75	16.25	8.12	3.12	4.38	1.25	1.25	3.75	1.25	0.62	0	0	0	0
TN3475	19	Female	26	26.92	23.08	19.23	19.23	0	0	0	0	0	7.69	3.85	3.85	0	0	0	19.23	0	7.69	11.54	7.69	0	3.85	0	0	3.85	3.85	0	0	0	0	0
PA205	14	Female	117	57.26	27.35	17.09	15.38	0.85	0.85	0	0	1.71	14.53	14.53	0	0	0	0	13.68	0	3.42	17.09	11.11	4.27	1.71	2.56	0	2.56	0	0	0.85	0	0	0
BC6666	50	Female	8	37.5	12.5	12.5	12.5	0	0	0	0	12.5	0	0	0	0	0	0	12.5	12.5	0	12.5	0	12.5	12.5	12.5	0	12.5	0	0	12.5	0	0	0
Ft6167	48	Female	49	44.9	22.45	18.37	14.29	0	0	0	4.08	0	10.2	10.2	0	0	0	0	10.2	2.04	0	14.29	8.16	0	4.08	2.04	0	6.12	4.08	2.04	6.12	0	0	0
JG2222	34	Female	25	36	20	12	12	0	0	0	0	0	28	20	8	0	0	0	8	0	0	24	0	0	12	4	8	8	0	0	0	0	0	0
ss0459	24	Male	105	44.76	11.43	8.57	8.57	0	0	0	0	6.67	9.52	9.52	0	0	0	0	7.62	0.95	2.86	10.48	3.81	3.81	1.9	1.9	0	5.71	1.9	0.95	0.95	0	0	0
OP2801	14	Male	86	56.98	9.3	6.98	5.81	1.16	0	0	0	8.14	10.47	9.3	1.16	1.16	0	0	5.81	2.33	0	9.3	5.81	0	1.16	1.16	1.16	2.33	2.33	0	1.16	0	0	0
jr0365	26	Female	110	57.27	21.82	15.45	14.55	0	0	0	0.91	4.55	10.91	10	0.91	0	0	0	10	0	1.82	7.27	4.55	2.73	0	0.91	0	3.64	0	0	0	0.91	0	0
Dh1111	31	Male	60	38.33	10	10	10	0	0	0	0	5	5	5	0	0	0	0	6.67	1.67	1.67	11.67	6.67	3.33	0	1.67	0	3.33	5	1.67	1.67	0	0	0
ZZ9999	55	Male	82	42.68	14.63	9.76	9.76	0	0	0	0	6.1	15.85	12.2	3.66	2.44	0	1.22	20.73	4.88	3.66	20.73	13.41	2.44	6.1	1.22	1.22	3.66	3.66	2.44	0	0	0	0
HES090189	31	Male	143	55.94	17.48	13.29	9.79	0	2.8	0	0.7	6.99	9.79	8.39	0.7	0.7	0	0	12.59	1.4	0	7.69	4.2	2.1	0.7	1.4	0	1.4	0.7	0	0	0.7	0	0
EW9184	30	Female	47	42.55	12.77	8.51	6.38	0	2.13	0	0	4.26	8.51	8.51	0	0	0	0	17.02	2.13	2.13	12.77	6.38	4.26	2.13	0	0	4.26	2.13	2.13	2.13	0	0	0
Cp1555	49	Male	25	40	16	12	12	0	0	0	0	4	8	4	4	4	4	0	16	16	0	20	8	8	4	4	4	0	0	8	4	4	0	0
SC3427	55	Male	38	52.63	23.68	15.79	13.16	0	0	0	2.63	2.63	15.79	15.79	0	0	0	0	18.42	2.63	0	18.42	5.26	2.63	10.53	0	0	0	0	0	0	0	0	0
KD2725	22	Male	107	56.07	22.43	16.82	14.95	0	0.93	0	0.93	0.93	8.41	7.48	0.93	0	0	0	12.15	0.93	0.93	6.54	2.8	0.93	2.8	0	0	0.93	0.93	0	0	0	0	0
NB263	26	Female	111	52.25	18.92	11.71	11.71	0	0	0	0	1.8	5.41	4.5	0.9	0	0	0.9	9.91	1.8	2.7	10.81	7.21	2.7	2.7	0	0	1.8	0.9	0.9	1.8	0	0	0
wwwwww	23	Female	76	48.68	21.05	21.05	18.42	2.63	0	0	0	3.95	3.95	3.95	0	0	0	0	11.84	5.26	1.32	9.21	6.58	1.32	0	1.32	0	3.95	6.58	1.32	1.32	0	0	0
RT3788	25	Female	159	56.6	21.38	16.35	13.21	0	0	0	3.14	5.03	11.32	9.43	1.89	0	0	0	13.21	3.14	0.63	12.58	6.29	0	5.03	1.26	0.63	1.26	0.63	0.63	0	0	0	0
AC9087	26	Female	40	50	27.5	22.5	22.5	0	0	0	0	2.5	10	5	5	2.5	0	0	22.5	10	2.5	7.5	0	2.5	5	5	5	5	0	0	0	0	0	2.5
JC743	26	Male	231	58.44	18.18	12.99	10.39	0	1.3	0	1.3	7.79	5.63	4.76	0.87	0.87	0	0	10.82	2.16	0.87	11.69	4.76	3.46	1.73	2.16	0.87	2.16	0.87	0.87	0	0	0	0
JN7451	33	Male	52	30.77	3.85	1.92	1.92	0	0	0	0	1.92	9.62	9.62	0	0	0	0	17.31	1.92	0	26.92	15.38	3.85	5.77	1.92	1.92	7.69	1.92	0	0	0	0	0
ES2009	19	Female	112	64.29	21.43	15.18	11.61	0.89	0.89	0	1.79	4.46	8.04	6.25	1.79	0.89	0	0	10.71	0.89	0.89	8.93	4.46	0.89	2.68	0.89	0.89	2.68	0.89	0	0	0	0	0
AE5436	21	Female	62	41.94	12.9	11.29	11.29	0	0	0	0	3.23	11.29	8.06	3.23	1.61	1.61	0	16.13	4.84	0	12.9	8.06	1.61	3.23	0	0	1.61	0	0	1.61	0	3.23
LC7513	45	Male	83	50.6	15.66	9.64	6.02	0	2.41	0	1.2	9.64	6.02	6.02	0	0	0	0	12.05	1.2	2.41	7.23	1.2	2.41	2.41	2.41	0	1.2	0	0	1.2	0	0	0
AD3958	21	Female	96	54.17	21.88	18.75	16.67	0	0	1.04	1.04	6.25	9.38	7.29	2.08	1.04	1.04	0	17.71	5.21	1.04	12.5	8.33	2.08	2.08	0	0	2.08	3.12	1.04	1.04	0	0	0
AT477	21	Female	261	52.11	14.94	10.73	9.2	0.77	0	0	0.77	5.75	9.96	8.05	1.15	0.38	0.38	0	6.9	0.38	0.77	7.66	3.45	1.53	1.15	1.53	0.77	1.92	1.15	0	0	0.38	0.77	0
ka7640	28	Female	24	33.33	12.5	8.33	8.33	0	0	0	0	4.17	16.67	8.33	8.33	8.33	0	0	16.67	8.33	4.17	16.67	12.5	4.17	0	0	0	8.33	4.17	4.17	0	0	0	0
Sc2172	34	Female	122	54.92	19.67	11.48	11.48	0	0	0	0	4.92	7.38	4.1	3.28	0	0	1.64	6.56	0.82	0	9.02	2.46	3.28	1.64	1.64	0.82	1.64	4.1	0	0.82	0.82	0	0
AH2413	28	Female	112	59.82	18.75	13.49	9.82	0.89	1.79	0	0.89	5.36	8.04	8.04	0	0	0	0	13.39	5.36	0	13.39	9.82	0.89	0.89	1.79	0	2.68	0	0	0	0	0	0
Sd4298	39	Male	68	38.24	1.47	1.47	1.47	0	0	0	0	7.35	5.88	5.88	0	0	0	0	11.76	4.41	1.47	14.71	7.35	1.47	4.41	1.47	0	0	2.94	0	0	0	0	0
523	26	Female	48	47.92	8.33	6.25	4.17	0	2.08	0	0	6.25	8.33	6.25	2.08	2.08	0	0	12.5	6.25	0	22.92	8.33	4.17	8.33	0	2.08	0	10.42	6.25	0	0	0	0
AA9453	24	Female	86	56.98	19.77	12.79	12.79	0	0	0	1.16	3.49	9.3	9.3	0	0	0	0	10.47	1.16	3.49	9.3	4.65	3.49	2.33	0	0	2.33	3.49	1.16	1.16	0	0	0
MKA67	43	Male	17	17.65	5.88	5.88	5.88	0	0	0	0	0	5.88	5.88	0	0	0	0	35.29	11.76	0	29.41	11.76	0	11.76	0	5.88	0	11.76	11.76	0	0	0	0
MK369	35	Female	131	54.2	19.85	13.74	13.74	0	0	0	0	3.82	11.45	9.92	1.53	0.76	0.76	0	9.92	5.34	0.76	11.45	6.87	1.53	0.76	1.53	0.76	1.53	0	0.76	0.76	0	0	0
SF087	66	Female	115	56.52	19.13	13.91	11.3	2.61	0	0	0	3.48	8.7	6.96	1.74	0	0.87	0	8.7	1.74	1.74	13.04	6.09	1.74	3.48	0.87	0.87	0.87	1.74	1.74	0	0	0	0
MT939	30	Female	180	54.44	17.22	13.89	10.56	0	0.56	0	2.78	6.67	8.89	7.22	1.67	0	0.56	0.56	9.44	0.56	0	6.67	1.67	3.33	2.22	1.67	0.56	1.67	1.67	2.78	1.11	0	0	0
AP9641	48	Female	69	59.42	17.39	10.14	7.25	0	2.9	0	0	10.14	2.9	2.9	0	0	0	0	14.49	4.35	0	13.04	1.45	5.8	4.35	4.35	0	4.35	0	0	0	0	0	0
5016	27	Female	34	47.06	23.53	20.59	17.65	0	0	0	2.94	0	17.65	14.71	2.94	0	0	2.94	5.88	2.94	0	5.88	5.88	0	0	0	0	0	2.94	5.88	2.94	0	0	0
MPS8365	41	Female	57	50.88	22.81	21.05	14.04	0	0	1.75	5.26	1.75	5.26	5.26	0	0	0	0	26.32	7.02	0	15.79	8.77	1.75	5.26	0	0	1.75	1.75	0	0	0	0	0
Jpt915	46	Male	48	39.58	0	0	0	0	0	0	0	12.5	12.5	12.5	0	0	0	0	10.42	2.08	2.08	12.5	4.17	2.08	4.17	2.08	0	0	4.17	0	4.17	0	0	0
TC1911	49	Female	33	57.58	27.27	21.21	18.18	0	0	0	3.03	6.06	12.12	9.09	3.03	0	0	0	18.18	3.03	0	18.18	6.06	0	9.09	0	3.03	0	3.03	3.03	0	0	0	0
AS123456	46	Female	191	55.5	17.28	12.04	12.04	0	0	0	0	5.76	6.81	5.76	1.05	0.52	0	0	7.85	2.09	0	10.47	4.71	1.57	3.14	1.05	1.05	5.76	4.71	3.14	0	0	0	0.52
RK2818	27	Male	87	54.02	18.39	14.94	12.64	0	0	0	2.3	4.6	8.05	8.05	0	0	0	0	9.2	1.15	0	11.49	4.6	3.45	3.45	1.15	0	6.9	1.15	1.15	0	0	0	0
GC28287	50	Male	55	40	12.73	7.27	7.27	0	0	0	0	5.45	5.45	5.45	0	0	0	0	3.64	1.82	0	7.27	1.82	3.64	0	1.82	1.82	1.82	1.82	5.45	0	0	0	1.82
Jb9181	43	Female	19	15.79	5.26	5.26	0	0	5.26	0	0	0	26.32	21.05	5.26	0	0	0	31.58	5.26	0	26.32	5.26	5.26	10.53	0	5.26	0	10.53	5.26	0	0	0	0
SH2205	26	Female	78	42.31	12.82	8.97	8.97	0	0	0	0	5.13	6.41	6.41	0	0	0	0	8.97	3.85	0	11.54	5.13	3.85	2.56	0	0	5.13	2.56	1.28	0	1.28	1.28	0
TI1331	22	Female	95	52.63	22.11	17.89	13.68	0	0	0	4.21	1.05	12.63	10.53	1.05	1.05	0	0	13.68	0	4.21	13.68	6.32	2.11	3.16	0	2.11	0	0	0	1.05	0	0	0
CM321	47	Female	86	53.49	19.77	13.95	9.3	0	1.16	2.33	1.16	3.49	13.95	11.63	2.33	0	0	1.16	16.28	4.65	1.16	10.47	4.65	3.49	1.16	3.49	0	2.33	1.16	0	0	0	0	4.65
EG5092	19	Female	64	56.25	17.19	12.5	10.94	0	1.56	0	0	7.81	10.94	9.38	1.56	0	0	0	10.94	1.56	0	17.19	9.38	3.12	1.56	3.12	1.56	1.56	0	0	1.56	0	0	0
HW5501	26	please spe	313	55.59	20.77	14.38	11.5	0	0.64	0	2.24	4.79	10.54	7.03	2.56	1.6	0.32	0	12.46	0.96	1.28	11.18	5.11	0.64	3.19	0.96	1.28	0.96	0.64	0	0	0	0	0.64
Mgc4773	37	Female	42	40.48	16.67	11.9	11.9	0	0	0	0	2.38	11.9	7.14	4.76	0	2.38	0	7.14	4.76	0	11.9	7.14	0	4.76	0	0	4.76	2.38	2.38	2.38	0	0	0
BB1234	43	Female	36	55.56	19.44	13.89	11.11	0	0	0	2.78	2.78	11.11	8.33	2.78	0	2.78	0	8.33	5.56	0	2.78	0	0	2.78	0	0	0	2.78	0	0	2.78	13.89
JM3199	31	Female	49	48.98	20.41	18.37	18.37	0	0	0	0	4.08	16.33	14.29	2.04	0	0	2.04	26.53	8.16	4.08	16.33	12.24	2.04	4.08	2.04	0	2.04	6.12	4.08	2.04	0	0	0
Lh078	28	Female	94	57.45	14.89	10.64	8.51	1.06	1.06	0	0	9.57	6.38	5.32	1.06	0	0	0	8.51	1.06	1.06	8.51	2.13	2.13	4.26	3.19	0	2.13	2.13	0	0	0	0	0
Mh2139	52	Female	126	55.56	20.63	13.49	11.9	0	1.59	0	0	3.17	9.52	7.14	2.38	0.79	0	0	16.67	4.76	2.38	12.7	6.35	1.59	2.38	2.38	2.38	1.59	0.79	3.17	0	0	0	0
CS3698	34	Female	88	55.68	26.14	18.18	14.77	0	0	0	3.41	0	14.77	13.64	1.14	0	1.14	0	13.64	5.68	2.27	17.05	10.23	1.14	4.55	1.14	0	1.14	1.14	1.14	0	0	0	0
Rmcf8158	35	Female	35	34.29	11.43	8.57	8.57	0	0	0	0	2.86	11.43	8.57	2.86	2.86	0	0	14.29	11.43	2.86	17.14	11.43	0	2.86	0	2.86	5.71	5.71	5.71	0	0	0	0
ABM1694	38	Female	64	39.06	10.94	7.81	7.81	0	0	0	0	6.25	18.75	17.19	0	0	0	0	6.25	1.56	0	15.62	4.69	3.12	7.81	0	0	6.25	1.56	0	4.69	0	0	0
AM2323	40	describe (	66	36.36	6.06	3.03	3.03	0	0	0	0	4.55	12.12	10.61	1.52	0	0	0	9.09	0	1.52	18.18	9.09	1.52	3.03	3.03	1.52	7.58	4.55	0	0	0	0	0
GB1939	25	Non-binary	142	54.23	16.2	9.86	7.04	1.41	0	1.41	0	4.93	7.04	4.93	2.11	0	0	0.7	9.86	0	2.11	9.15	3.52	2.82	2.11	0.7	0	1.41	0.7	0	0.7	0	0	0
Dac0428	47	Male	40	35	12.5	7.5	5	0	0	0	2.5	7.5	22.5	20	2.5	0	0	0	27.5	7.5	0	27.5	17.5	5	2.5	7.5	0	7.5	10	7.5	2.5	0	0	2.5