Linking Instant Messaging Habits in Romantic Relationships
with Attachment Dimensions and Love Styles

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Submitted in partial fulfilment of the requirements of the BA Hons in Psychology at
Dublin Business School.

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March 2014
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Acknowledgements

I would like to thank my supervisor Dr. Patricia Orr for all her help and pieces of advice throughout the preparation of my final year project. I want to thank Margaret Walsh and Dr. Patricia Frazer for their brilliant lectures and guidance. I want to express my gratitude to the DBS faculty and staff, and to all the people who participated in my study, without whom I would not have been able to conduct my final year project. Special thanks to Megan Burgdorf for her friendship and academic support.
ABSTRACT

The aim of this study was to investigate the link between Instant Messaging (IM) habits in emerging romantic relationships with Attachment Dimensions (Adult Attachment Scale) and Love Styles (Love Attitudes Scale – Short Form). A between-subjects quantitative, comparative and cross-sectional design was utilised. A total of 316 individuals under 34 years of age participated (65.5% female and 34.5% male) and were recruited through opportunity sampling. Females scored higher on Pragmatic while males scored higher on Agape. Expected gender differences on the Ludus style were not found. The Anxiety dimension positively correlates with the Mania style and high scores on these variables are linked with the likelihood of repeated checking, rereading messages, considering message length and hiding online status. Results of the study contribute to an understanding of the dynamics of digital communication in romantic relationships. Development of sliding scale regarding IM habits is recommended.
INTRODUCTION

Romantic relationships and interpersonal communication are at the very core of the evolution of human species. Before humans developed any basic verbal language, groans, signs and sighs were used to engage in communication with a potential partner. Displays of physical power and survival skills in men and the projection of beauty in women are well acknowledged primordial techniques of intersex communication.

Over time human species have further developed language and variety of writing methods. These advancements have increased repertoire and depth of human behaviours and interactions, the foundations of the development of intelligence. Eventually, with the industrial revolution and the invention of the telegram and telephone, the spectrum of tools allowing human interaction has enlarged. An individual could now, not only send a letter, but also could be connected through verbal dialogue over long distances via telephone. This immediate connectedness between individuals was brought to its peak with the invention of the mobile telephone by Motorola in 1970s (Dunnewijk & Hultén, 2006).

Short Message Service (SMS) was introduced in 1990s as a feature on mobile telephones and its use became very popular way of communicating (MacKenzie & Soukoreff, 2002). It allowed individuals to stay connected at a press of a button. Texting became popular at the end 20th century and it increased by 450% between 2006 and 2008. Those born after 1980 are defined as the ‘Net Generation’ (Pomerantz, 2013). The Net Generation fully assimilated texting as a main form of communicating with a significant other in less than 3 years.
The latest developments to enhance patterns of communication are mobile internet and popular Smartphone technology. These devices opened the door to a whole new range of Instant Messaging (IM) applications (apps) such as; WhatsApp, WeChat, iMessage, Viber, Skype, Facebook Messenger, and KaKao Talk (O’Hara, Massimi, Harper, Rubens & Morris, n.d.). These apps mimic the concepts of SMS, but contain a set of interesting additional features such as online presence status or delivery status of a message. These specific IM features add another layer to communication dynamics. IM apps are convenient tools that are commonly used in romantic relationships.

Exploring dynamics of IM use within relationships is of great significance in understanding the concepts of love in the 21st century. Psychologists have developed a variety of methods and terms to evaluate personal differences in attitudes, behaviours and feelings about romantic relationships. Generally, it is acknowledged that attachment styles and love styles are the results of genetic make-up and previous experiences with parental figures during childhood. At the same time these styles are not constant or set in stone variables, but rather continually change. These features of human psyche are further influenced by experiences with other significant people. Investigating associations between attachment and love styles, and preferences in utilizing IM apps will be central to this research.

Harnessing Technology and Advancing Communication

Not only is it common that use of new technology is high among younger individuals, but it has spread to the older generations as well. A nationally representative study conducted in 2011 found that 96% of U.S. residents aged 18 to 29 owned a cell phone. The estimate for all U.S. adults was somewhat lower at 82%
Interestingly, a Pew survey found that more than 40% of online Americans use IM often and that 89% of U.S. college students and 97% of Canadian college students reported using IM regularly (Mesch, Talmud & Quan-Haase, 2012).

Net generation preference for texting over other forms of communication has been rubbing off on other generations. Texting gives a sense of control over a conversation to a user, allows maintaining of “status quo” much easier and avoid having to reply immediately. Now telephone calls are frequently considered as an intrusion and attempting to control the volume of a conversation is much harder (Jayson, 2013).

However, telephone calls and text messaging makes absent people present, questioning the idea of importance of proximity in human relationships (Khunou, 2012).

**Instant Messaging and Romantic Relationships**

Vocabulary has a huge impact on the quality of social relationships where SMS and IM communication is concerned (Slatcher, Vazire & Pennebaker, 2008). However, IM communication redesigns rules of intimacy and truth in its own unique way. IM apps allow simultaneous conversations to take place where information and ideas can easily transfer from one conversation to another (Shwarz, 2011). It also allows a user to choose who can interact with them. When a user is no longer happy with an IM contact they can simply delete or block a contact which can end communication in a quick manner (Dwyer, 2007).

Does communication with a romantic partner happen more frequently than with a close friend? Relationships are the second most frequent topic of IM conversation
A new survey of 1,500 daters (between 21 and 50 years of age) provided to USA TODAY reveals how deeply mobile technology has rocked the dating world (Mesch et al., 2012). This study found that more men (44%) than women (37%) say mobile devices make it easier to flirt and get acquainted. An AT&T survey found that three out of four 18- to 35-year-olds flirt and send love notes by text (Men’s Health, 2010). The easiness of use, the casual and non-threatening form of messaging all contribute to the fact that in today’s dating culture messaging is the centre and preferred method of communication.

Texting has created novel ways of flirting and mobile use etiquette. Two people transmit information about experiences in their lives constantly throughout the day. Young adults are used to being overscheduled, multitasking and prefer to not invest too much time or effort in pursuing a romantic partner in case they are not a good match. Texting is reported to allows individuals to keep relationships casual and has preferable use (Sharon, 2013)

IM impacts romantic relationships in many ways. Using IM has been shown to be positively associated with most aspects of romantic relationships and best friendship qualities (Blais, Craig, Debra & Connolly, 2008). It is a channel used to engage and disengage in communication with another person. Texting helps in initiating and terminating relationships as well as exchanging information individuals would not in a face to face interaction (Khunou, 2012). It allows for gaps in conversation, the ability to conceal the truth and to immediately clarify misunderstandings (Coyne, Stockdale, Busby, Iverson & Grant, 2011).
The ability to be open and the pace of texting speeds up the process of getting to know someone. However, without the ability to read body language and facial expressions, the information can often be misinterpreted and overanalysed (Yasinski, 2013). The odds of crossed wires are increased, especially when the messages grow long and impassioned (Men’s Health, 2010). It is suggested that misinterpreting messages continue to destroy romantic relationships (Yasinski, 2013). On the other hand, IM technology may serve as a promising tool in examining real-time, on-line interactions in naturalistic settings. The potential that people may enhance their romantic relationships by simply writing down their thoughts and feelings about those relationships has clear implications for clinicians (Slatcher & Pennebaker, 2006). Although there are no official established etiquettes for acceptable message length, response time, or frequency of interaction, these variables have an impact on IM romantic relationships. Further research outlines these variables and tendencies.

Message Pacing

With advances in IM app technology it is now possible to see what time a message was sent and viewed. According to a recent study, 10% of participants responded that the longest acceptable response time to return text someone you are dating or interested in dating is few minutes, 25% participants answered that within one hour and another 25% answered one to three hours (Sharon, 2013). These results are also mimicked in another study where one in four said an hour is the longest acceptable response time to text to someone you are dating or interested in (Mesch et al., 2012). This same study also found that one in ten expected a response instantly or within a few minutes.
Pacing in messaging is considered to have an important meaning. Fast exchanges might be a way of expressing a need for proximity with a partner, where slow responses may suggest the contrary (Suler, 2010). A recent study investigated ‘love projects’ or developing teenage relationships and messaging pacing were closely observed. A significant finding of the love-project was that a couple of minutes are the most common, expected and accepted text message-transfer time (Prøitz, 2005). Interestingly, adult research indicates a similar trend. According to a Women's Health survey of 1,061 women, the biggest problem reported was respondents “taking forever to respond” (Men’s Health, 2010).

Simple delay in response to a message can elicit anxiety, lower self-esteem and lower sense of belonging (Mith & Williams, 2003). This anxiety may be increases by function delivery status for messages and online status used in IM app. Such methods of ostracising can very have a negative impact on psychological well-being of the unrequited individual.

**Response Expectations**

Trends in response time also impact tendencies to text again. The process of messaging is considered to be a unique extension for each individuals ‘intrapsychic’ space. (Suler, 2010). The vulnerability one experiences while anticipating a new text is common across generations (Prøitz, 2005). One could imply that if time is exceeded after a message is sent, a reasonable explanation is already being considered in order to reduce the rising anxiety from not receiving an immediate response. This anxiety is also demonstrated in face to face interactions as experienced in moments of silence. Some individuals may be more patient in waiting for a desired response, whereas others may
be more anxious. These users of IM apps may have a tendency to remind about a reply by texting again.

**Message Size**

In older more traditional forms of communication it was common to have given a gift of appreciation to a person you are in communication with. Now with the IM app technology these gifts of appreciation are often displayed in reciprocating message length, polite wishes and use of emoticons. A study of teenage mobile phone users found that text messages are a ritual of gift giving relating to age old practises (Taylor & Harper, 2002). A Women's Health survey found that a short response given to a long story or text is the second most frustrating communication pattern experienced among women and that an appropriate sized message in return is expected (Men’s Health, 2010). Mentioned previously research also found that girls tend to write longer and more detailed text messages than boys (Prøitz, 2005). Practises of positive reciprocation are the main building blocks of any social relationship (Taylor & Harper, 2002).

**Access to Records of Communication**

One of the practical features of IM apps is the storage of old messages. Any conversation thread can be tracked and followed right back to a start of any conversation. These messages are reported to be of a great value for IM users, especially in the case of budding romantic relationships. One mobile phone user created a calendar that tracked the chronology of his relationship with his girlfriend, using only their text messages (Friedman, 2011). Could such chronology be more than a mere souvenir?
Proximity seeking, which according to Bowlby (as cited in Bretherton, 1992), is the principal strategy of the attachment system and involves both verbal and non-verbal communication (Schachner, Shaver, & Mikulincer, 2005). It is hypothesized that the cognitive representation of an attachment figure could be produced by seeing a text message (Pomerantz, 2013). In the case that there is no reply from an attachment figure, rapid and easy access to records of communication offered by IM apps could at least partially satisfy the objective of proximity seeking.

Message Delivery Status and Recipient’s Online Status

IM apps have a number of notifications and awareness mechanisms. For example in a case of WhatsApp, it automatically updates “last seen online at [date/time]” status attached to each contact, and a tick mark is attached to each message. One tick appears to indicate a message has been sent and a second tick when the message has been delivered (O’Hara et al., n.d.). These features can offer practical functions but also raise concerns relating to accountability and meanings in what can be perceived, interpreted and revealed through these mechanisms.

Even though the “last seen online” or “online” status provides information about a contacts current state, access to this information creates a variety of interpretations, especially in ongoing IM conversations. Contacts’ changing status from “online” to “last seen online” may mean unwillingness to continue conversation which in turn has implication on the psychological response on the person on the end of the conversation (O’Hara et al., n.d.). An ostracized individual may involuntarily repeatedly check conversation window to check a partner’s status. Such behaviour could be viewed as a
form of non-verbal behaviour that aims at the objective of proximity seeking (Schachner et al., 2005).

Similar hypothesis can be derived when investigating participants’ orientations to the message notification ticks. Participants regarded these as useful indications that a message has been read. A more interesting picture emerged in relation to accountabilities and moral implicative bound up in these notifications and the ways these played out in the context of particular relationships. IM users indicated that the ticks are both good and bad, suggesting that it is an advantage to know if someone has read a message (O’Hara et al., n.d.). However, the recipient may not be in a position to respond, for example in the case of driving. The sender, without knowing the attachment figure’s situation can interpret the delay in response in a multitude of ways.

**Linking IM with Theoretical Approaches Conceptualizing the Nature of Love**

There are four mistaken goals of misbehaviour that children often use to reinforce their perception of their place in the world: getting attention, seeking power, revenge, and displaying inadequacy (McCurdy, 2007). Often these misbehaviours are carried over into adulthood. The evolving world of digital communication provides a novel playground for these behaviours to be played out. A specific set of insecurities and vulnerabilities are at play in such newly formed romantic relationships. The minutiae of these encounters are subject to detailed scrutiny, interpretation and reflection. In this respect, the temporal properties of response (or lack thereof) in relation to a notification that a message has been read acquire particular significance (O’Hara et al., n.d.).
IM mechanisms can be thought of as ‘digital body language’ where each move and signal has an impact on a recipient’s emotional response. People learn to use IM specific tools in particular ways that are revealing of the tensions that can be at play in these mechanisms (O’Hara et al., n.d.). This is most applicable to romantic relationships in the initial stages where partners are getting to know each other and often make inaccurate anxieties and elicit interpretations of a partner’s IM behaviour.

Other times individuals maintain their integrity and independence by utilizing IM features in desired ways (going offline or hiding their online presence). Emotions associated both with IM experience and development of romantic relationship can influence behaviours beyond those consciously and voluntarily chosen (rereading messages, communicating again) (Pomerantz, 2013). This possibility was found by Pomerantz (2013), which supported a higher attachment anxiety evidenced in members of the Net Generation. These IM behaviours and tendencies may be similar to those predicted by scores on relevant psychological scales that underline approaches in conceptualizing the nature of love. This leads to a review of attachment and love styles.

**Attachment Theory**

Bowlby's theory (as cited in Bretherton, 1992) was the first formal statement of attachment theory. It is based on the foundations of the bond that develops between a child and caretaker and the consequences this has for the child's emerging concept of social interactions and emotional responses associated with those interactions. Infant attachment behaviours are organised by a behavioural system, which has a "set goal" of maintaining proximity to a nurturing adult that promotes the child's security and survival. Physical proximity is essential, but emotional proximity and security is of
equal importance. Children develop a system of beliefs and expectations about the
caregiver (Bretherton, 1992).

Observations of infants and caretakers led to determination of individual
differences in attachment within relationships. Ainsworth (as cited in Bretherton, 1992)
determined three distinct patterns or styles of attachment: secure, anxious/avoidant, and
anxious/ambivalent. These three styles seem closely associated with differences in
caretaker warmth and responsiveness, which is consistent with Bowlby's theory
(Bretherton, 1992).

Early relationships have an impact on adult love relationships but that romantic
love itself is a process of becoming attached that shares important similarities with
child-caretaker attachment. Hazan and Shaver (1987) linked early relationships with
adult love relationships. Patterns of attachment developed by Ainsworth (as citied in
Hazan & Shaver, 1987) were converted into terms suitable for adult relationships. It
resulted in three attachment descriptions that differently predicted the way adults
experienced love: secure, avoidant, or anxious (Hazan & Shaver, 1987).

Relationships characterized by happiness, trust, and friendship are experienced
by secure individuals. Emotional highs and lows, jealousy, and obsessive preoccupation
with their partner are common among those with anxious attachment patterns. There is
substantial empirical evidence linking adult attachment patterns with early caretaker-
child relationships. Anxious adults were found to have more self-doubts and feelings of
being misunderstood by others, whereas secure adults felt well liked and believed others
to be generally well intentioned (Hazan & Shaver, 1987). Secure adults also tended to
describe their parents as more caring and respectful than individuals characterized by more anxious or avoidant patterns.

A study by Collins and Read (1990) measured dimensions underlying adult attachment styles. These dimensions measured by Close, Depend, an Anxiety were statistically linked as capturing fundamental aspects of adult attachment. The Depend scale measures the degree to which a person feels they can depend on others to be accessible when desired. The Anxiety scale measures the extent to which a person is anxious about being abandoned or unloved. Both the Depend and Anxiety scales are concerned with aspects of availability and emotional responsiveness. The Close scale measures the desire for close contact with the attachment figure, the response to this contact and the extent to which a person is comfortable with intimacy. The three dimensions capture all main components of attachment organization.

Attachment anxiety is likely to increase the uncertainty in receiving a response. Proximity seeking, the principal strategy of the attachment system, involves a variety of behaviours, such as verbal and non-verbal communication. Checking a phone or replying to a message could be a sufficient response to activation of the attachment system and could satisfy the objective of proximity seeking (Pomerantz, 2013). IM apps offer an additional range of mechanisms that can activate the attachment system. Delivery status of a message and online status of a partner both offer a description of a partner’s responsiveness and availability. Checking the history of relationship’s text exchanges could represent a non-verbal behaviour activating attachment system. (Schachner et al., 2005).
Love Style

Lee (as cited in Hendrick & Hendrick, 1986) determined a classification of several different approaches to love. He identified three primary types of love styles: Eros (romantic, passionate love), Ludus (game-playing love), Storge (friendship love), and three main secondary styles: Mania (possessive, dependent love), Pragma (logical, "shopping list" love), and Agape (all-giving, selfless love). Strong physical and emotional attraction is characterized by the Eros style, which is concerned with passionate love. Storge love style is associated with long term friendship, deep in affection and devotion. It does not involve strong physical or emotional intensity. Lack of commitment and jealousy refers to the Ludus style. It is a game playing love, governed by rules that are expected to be understood and be played by the love object. Ludus lovers are anxiety free and often have multiple partners simultaneously or change partners within short periods of time (Hendrick & Hendrick, 1986).

A combination of Eros and Ludus styles is depicted by the Mania love style. It is an intensive and possessive kind of love involving high levels of anxiety. An individual is occupied with thoughts about the love object and has a desperate urge to be loved. Pragma is a mix of some of the characteristics of Ludus and Storge. It is the need for a successful relationship based on personality and practical compatibility factors between individuals. Placing loved ones’ needs before their own is characterized by Agape love style. This style is very altruistic and lover intense (Hendrick & Hendrick, 1986).

The love styles are all equally valid ways of loving and their measures should cross. There is no one type of love, but rather many different types. It has been evidenced that men tend to be significantly more Ludic, whereas females were more Erotic, Storgic, Pragmatic, and Manic than were males (Hendrick & Hendrick, 1986).
These findings were replicated with mixed results by Jonason & Kavanagh (2010). Men scored higher than women did on the Ludus and Agape love styles. Agape difference in favour of males is somehow unexpected as females had been found to be more altruistic than males. (Rushton, Fulker, Neale, Nias, & Eysenck, 1986).

**Attachment and Love**

Attachment dimensions and styles were shown to be significantly correlated with love styles. Most notably the empirical overlap between the anxious/resistant or ‘clingy’ attachment style and the Mania love style has been established (Collins and Read, 1990). This overlap is further supported by the correlation between Mania and Agape. Fear of abandonment intensifies constant nurturance of relationship which is inseparable part of these love styles. Ludus, Storge and Pragma have been shown to be negatively correlated with the Close dimension (Collins and Read, 1990). Agape was determined to be positively correlated with the Close dimension.

Those individuals who described themselves as mainly avoidant in style scored high on Ludus. Lee describes Ludic lovers as ‘carefree’, recovering quickly from broken involvements and with little expectation of longevity in relationships. They tend to be relatively uncommitted in relationships. They are similar to the avoidantly attached and differ from the committed Eros types. In contrast to avoidant lovers, Ludic lovers do not have a negative view of themselves (Collins and Read, 1990).

Research findings verify the notion that adult attachment styles and love styles are somehow overlapping, but the weak correlations suggest that each of these models presents something relatively independent in their conceptualizations of ways of loving.
Based on associations between these scales, investigating a link with IM habits could be established. For example those scoring high on Mania love style measurement could be expected to be rereading affectionate text messages from their loved ones. They may use message history as mechanism allowing them to satisfy their need to be reassured about their partner’s feelings towards them.

**Current Study**

According to Anne Krogstad (1999), there is a range of possible interpretations in all kinds of communication. To mention just a few of these interpretations, communication may be misleading, betraying, clarifying, confusing or seductive (Prøitz, 2005). IM is one of the most popular digital platforms for communications where romantic relationship and love dynamics are at play. Theoretical and statistical approaches conceptualizing the nature of love will be analysed in conjunction to IM habits.

The present study will try to establish a link between the above mentioned psychological scales and instant messaging habits reported by individuals. It aims to explore differences in which individuals use IM and their relations to scores on the attachment and love scales. This could have potential practical implications for research and clinical practice.

H1 It is hypothesized that there will be significant correlations between scores on particular love styles and scores on attachment dimensions as per previous research’s results.

H2 It is hypothesized that there will be gender differences on scores on particular love...
styles.

H3 It is hypothesized that there will significant differences between scores on Love Scales between groups created by IM questions.

H4 It is hypothesized that there will significant differences between scores on Attachment Dimensions between groups created by IM questions.
METHODOLOGY

Participants

The participants used in this study are from a convenience, snowball and self-selecting sample gathered via Facebook. A link to complete this study’s online questionnaire was placed on the researcher’s Facebook wall. A personal message was also sent to all 365 Facebook contacts. This message included a request to share the link.

Participants were informed about the purpose of the study by the introductory information contained on the cover page of the questionnaire. Participants were offered the option to seek further information about the study upon request. The researcher’s and supervisor’s e-mail addresses were provided for contact. Information about outcomes and conclusions of the study were offered to be available upon request in May 2014.

In total there were 378 participants (125 males and 243 females), 1 researcher, 1 supervisor and 6 individuals with whom the questionnaire was piloted with involved in the study. Of the total responses from participants, 20 participants claimed that they did not use instant messaging and 41 participants were over 34 years of age. This study reviews the responses from participants under the age of 35 years that use instant messaging (n = 316, Mean = 28.00, SD = 3.86, Range = 16). Full demographic details regarding the final sample are provided in Table 1. Participants were also split into groups by each of the Instant Messaging habits questions. These statistics will be explored in the result section of the study.
Table 1: Demographic Information of Participants

<table>
<thead>
<tr>
<th></th>
<th>Responses</th>
<th>Frequency (n)</th>
<th>Percentage of Population</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>109</td>
<td></td>
<td>34.5%</td>
</tr>
<tr>
<td>Female</td>
<td>207</td>
<td></td>
<td>65.5%</td>
</tr>
<tr>
<td><strong>Do you currently have romantic partner?</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>220</td>
<td></td>
<td>69.6%</td>
</tr>
<tr>
<td>No</td>
<td>96</td>
<td></td>
<td>30.4%</td>
</tr>
<tr>
<td><strong>Device used to fill out questionnaire:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desktop</td>
<td>149</td>
<td></td>
<td>47.2%</td>
</tr>
<tr>
<td>Laptop</td>
<td>18</td>
<td></td>
<td>5.7%</td>
</tr>
<tr>
<td>Tablet</td>
<td>16</td>
<td></td>
<td>5.1%</td>
</tr>
<tr>
<td>Mobile Phone</td>
<td>128</td>
<td></td>
<td>40.5%</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td></td>
<td>1.6%</td>
</tr>
</tbody>
</table>

**Design**

This research was designed as a quantitative, comparative and cross-sectional study. A number of independent variables were selected for further comparison, such as gender, relationship status and instant messaging habits. Two scales were selected to examine dependant variables. These scales were Adult Attachment Scale (AAS) (Collins, 1996) and Love Attitudes Scale – Short Form (LAS-SF) (Hendrick, Hendrick & Dicke, 1998).

This study uses an online survey generated by Google. It includes consent information, demographic questions, two scales and also questions regarding instant messaging habits. Demographic variables such as gender and instant messaging habits will be evaluated and compared to each scale. Results will be measured by variety of statistical methods such as independent samples t-test or Mann-Whitney test. Additional investigative questions, such as type of device used, were also chosen to describe the results.
Materials

Participants were provided with a link to the online questionnaire developed through the Google platform. All online questionnaires were self-administered. Full details regarding the psychometric properties of the two instruments are presented here.

*Adult Attachment Scale - Revised (Collins, 1996)*

This is an 18-item self-report measure of adult attachment dimensions, originally developed in 1990 by Collins and Reid and subsequently revised and updated by Collins (1996). Item responses use a 5-point Likert scale ranging from 1 (not at all characteristics of me) to 5 (very characteristic of me). The scale contains three subscales, each composed of six items.

The CLOSE scale measures the extent to which a person is comfortable with closeness and intimacy. The DEPEND scale measures the extent to which a person feels they can depend on others to be available when needed. The ANXIETY scale measures the extent to which a person is worried about being rejected or unloved. Cronbach’s alpha coefficients were previously determined as follows; CLOSE scale at around .80, DEPEND scale at .79 and ANXIETY at around .84 (Collins, 1996).

*Love Attitudes Scale – Short Form (Hendrick, Hendrick & Dicke, 1998)*

The Love Attitudes Scale – Short Form (LAS-SF) is unique from the other measures in that it attempts to measure attitudes about love rather than the experience of love. Lee’s (as cited in Hendrick & Hendrick, 1986) typology of love divides romantic love into six distinct types, each with its own characteristics and correlates. These love
types include EROS (passionate love), LUDUS (game-playing love), STORGE (friendship love), PRAGMA (logical, shopping list love), MANIA (possessive dependent love), and AGAPE (selfless love). Item responses use a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Agreement with an item indicates a higher level of the given construct.

Hendrick and Hendrick (1986) initially developed and normed the LAS using a sample of 807 college students, with a confirmatory sample of an additional 567 college students. Internal reliability was shown for each scale, and the scales had low inter-correlations with each other. Significant relationships were found between love attitudes and several background variables, including gender, ethnicity, previous love experiences, current love status, and self-esteem. This shortened version was developed at later stage (Hendrick et al., 1998).

Meta-analysis of reliability of this scales showed that the average reliabilities of the EROS and PRAGMA subscales fell between .7 and .8. The average reliabilities of the STORGE and AGAPE subscales were greater than .8. The average score reliabilities of the LUDUS and MANIA subscales fell below .7. LAS–SF scores are generally in the marginally acceptable range for research purposes. This measure, however does not tend to produce scores of sufficient reliability for use in applied settings (Graham & Christianses, 2009). Test-retest reliabilities ranged from .60 and .78 (Hendrick & Hendrick, 1986) and alpha coefficient range from .62 and .88 (Hendrick et al., 1998).
**Instant Messaging Habits and Tendencies**

This study also contains questions regarding IM habits and tendencies in emerging romantic relationships. Based on recent research, organised interviews, reports from various articles and feedback of those piloting the study, six additional exploratory questions were developed and included. Each question explores how features of IM apps are being utilised in initial stages of a romantic relationship. Each question only has two options as an answer. Each question stands on its own, dividing participants into two groups. These questions do not reflect actual behaviours, but they rather indicate what an individual would tend to choose when faced with particular situation regarding the use of IM in a romantic relationship. These questions are listed in Table 2 below.

**Table 2: Instant Messaging Exploratory Questions (abbreviations in brackets)**

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer One</th>
<th>Answer Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you generally immediately respond to your romantic partner or do you generally delay the response? (IM_delay)</td>
<td>Immediately</td>
<td>Delay</td>
</tr>
<tr>
<td>If no response from your romantic partner, would you keep checking the conversation window to see the last time your romantic partner was online or to see whether your message was read/seen? (IM_check)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Your romantic partner receives and reads your message, but doesn't reply to you for longer than expected period of time. What do you generally do in this situation? (IM_again)</td>
<td>Communicate again</td>
<td>Wait for response</td>
</tr>
<tr>
<td>If no reply from your romantic partner, would you reread previous parts of the conversation? (IM_reread)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Do you consider the length of the message from your romantic partner and adjust your response accordingly? (IM_length)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Do you ever hide your online presence from your romantic partner? (IM_hide)</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>
Procedure

The complete questionnaire combined the previously mentioned scales and questions. A pilot study was conducted on six participants in order to determine the length it would take to complete and whether it was easy to understand. Concerns raised were addressed and the online survey was finalised and the link was posted on Facebook and sent to contacts.

To participate in this study, the participants were required to be over 18 years of age. This was noted in the consent information for the study before they could begin to fill in the questionnaire. The consent information briefly informed participants about the purpose of the study, their right to withdraw at any time and full anonymity of participation. Links to counselling services were provided as well as researcher’s and supervisor’s email addresses should participants want to request more information about the study or its results.

The participants engaged with a link to a web page containing the online questionnaire. They were presented with a battery of questionnaires, including the R-AAS and LAS-SF questionnaires, which took approximately 15 minutes to complete. Demographic questions were included and contained variables such as age, relationship status, and device used to fill out the questionnaire and instant messaging usage. The participants were thanked for their participation and were not offered incentives to participate.
Data Analysis

The responses gathered in the study were downloaded from the website to an Excel file. The data was then transferred into IBM SPSS statistical software, where all analysis was carried out.
RESULTS

Every participant completed all 9 measures (6 love style dimensions and 3 attachment dimensions) producing a full complement of data of 316 participants. Eros love style measurement has the highest reported score among love styles (mean = 12.11, SD = 2.40) and the Pragma love style measurement has the lowest reported score (mean = 7.70, SD = 3.05). Among the attachment dimensions, both the Close dimension measurement (mean = 18.41, SD = 5.96) and the Depend dimension (mean = 18.30, SD = 2.61) are on average higher than the Anxiety dimension (mean = 16.37, SD = 2.42). Table 3 presents the compiled statistics of all measurements.

Table 3: Descriptive Statistics of Psychological Measurements

<table>
<thead>
<tr>
<th>Scale</th>
<th>Mean</th>
<th>SD</th>
<th>Median</th>
<th>Variance</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ludus</td>
<td>7.89</td>
<td>2.91</td>
<td>8.00</td>
<td>8.472</td>
<td>.321</td>
<td>-.480</td>
</tr>
<tr>
<td>Eros</td>
<td>12.11</td>
<td>2.40</td>
<td>13.00</td>
<td>5.756</td>
<td>-.744</td>
<td>-.076</td>
</tr>
<tr>
<td>Storge</td>
<td>8.21</td>
<td>3.80</td>
<td>8.00</td>
<td>14.441</td>
<td>.097</td>
<td>-1.183</td>
</tr>
<tr>
<td>Pragma</td>
<td>7.70</td>
<td>3.05</td>
<td>8.00</td>
<td>9.289</td>
<td>.146</td>
<td>-.795</td>
</tr>
<tr>
<td>Mania</td>
<td>8.58</td>
<td>3.23</td>
<td>9.00</td>
<td>10.442</td>
<td>-.021</td>
<td>-.858</td>
</tr>
<tr>
<td>Agape</td>
<td>9.88</td>
<td>2.63</td>
<td>10.00</td>
<td>6.898</td>
<td>-.243</td>
<td>-.345</td>
</tr>
<tr>
<td>Close</td>
<td>18.41</td>
<td>5.96</td>
<td>19.00</td>
<td>5.862</td>
<td>-.371</td>
<td>.793</td>
</tr>
<tr>
<td>Depend</td>
<td>18.30</td>
<td>2.61</td>
<td>18.00</td>
<td>6.817</td>
<td>-.060</td>
<td>-.280</td>
</tr>
<tr>
<td>Anxiety</td>
<td>16.37</td>
<td>2.42</td>
<td>16.00</td>
<td>35.497</td>
<td>.227</td>
<td>-.859</td>
</tr>
</tbody>
</table>

Descriptive Statistics of Instant Messaging Habits and Tendencies

Exploratory questions about IM_habits divided participants into two distinct categories on each of the six IM questions. A notable difference was found in the size of formed groups. The question that produced the biggest division between participants
was the first question: Do you generally immediately respond to your romantic partner or do you generally delay the response? Of the total responses, 250 participants responded immediately and 66 participants responded that they delay the response. The smallest group difference was produced by the fifth question: Do you consider the message from your romantic partner and adjust your response accordingly? Of the total responses, 121 participants answered yes and 195 participants answered no. Figure 1 presents a percentage breakdown of the groups created by each IM question.

Figure 1: *Percentage Breakdown of IM Groups*

**Descriptive Statistics – Clustering IM Groups**

A Chi-square test for association was carried out among all of the IM_habits questions. Significant relationships were established among the following questions: IM_check, IM_reread, IM_length and IM_hide. The strongest association was found between the variables IM_reread and IM_check ($X^2 (1, N=316) = 49.598, p = .000$). The IM_delay and IM_again questions were only associated with each other. A Chi-
square test found that there is a weak positive significant relationship between these variables (X² (1, N=316) = 4.920, p = .023). Table 4 shows measures of Cramer’s V acquired after running a Chi-square test among all IM_habits questions.

Table 4: Cramer's V Measures

<table>
<thead>
<tr>
<th></th>
<th>IM_delay</th>
<th>IM_check</th>
<th>IM_again</th>
<th>IM_reread</th>
<th>IM_length</th>
<th>IM_hide</th>
</tr>
</thead>
<tbody>
<tr>
<td>IM_delay</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM_check</td>
<td>0.088</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM_again</td>
<td>0.125*</td>
<td>0.046</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM_reread</td>
<td>0.023</td>
<td>0.396**</td>
<td>0.094</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM_length</td>
<td>0.060</td>
<td>0.218**</td>
<td>0.036</td>
<td>0.174**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM_hide</td>
<td>0.092</td>
<td>0.146*</td>
<td>0.073</td>
<td>0.160**</td>
<td>0.208**</td>
<td></td>
</tr>
</tbody>
</table>

Based on the results of the Chi-square test further analysis was carried out among questions that were found to be associated with one another: IM_check, IM_reread, IM_length and IM_hide. These questions produced results that were clustered together to establish IM_tendencies as regards to answering those four questions. There were three categories respondents could be included into. These were IM_nonactive, IM_neutral and IM_active. The IM_nonactive group (n=93) includes participants that answered no to at least three of the four questions. The IM_neutral group (n=97) consists of participants that answered yes to at least two of the four questions. The IM_active group (n=112) consists of participants that answered yes to at least three of the four questions. Figure 2 shows the percentage of participants that qualified for each tendency.
A Chi-square test found that there was a weak positive significant relationship between IM_delay and IM_again ($X^2 (1, N = 316) = 4.920, p = .023$). Participants’ responses to these two questions were extracted and clustered into groups for investigation. Based on the reported results there are four combinations that are possible. Groups are labeled as the following texting styles below. The breakdown of these results is also shown in Figure 3.

Figure 1: Distribution of IM_tendency Groups

**Descriptive Statistics – Texting Style**
1. Active (n = 89) - Participants answered immediately to IM_delay and communicate again to IM_again.

2. Passive (n = 59) - Participants answered delay to IM_delay and wait for response to IM_again.

3. Dissonant (n = 14) - Participants answered delay to IM_delay and communicate again to IM_again (‘Dissonant’ group was dropped from further analysis due to low number of subjects (n=14).

4. Accepting (n = 161) - Participants answered immediately to IM_delay and wait for response to IM_again.

Figure 2: Distribution of Texting Styles Groups
Hypothesis One

A non-directional (2-tailed) test was ran to accept or reject hypothesis one. This test was selected to establish if there is a correlation between scores for particular love and attachment styles. Preliminary parametric checks to run Pearson’s correlation coefficient of all measurements were carried out. Scatter plots determined linear relationships among variables. Data has been established to be distributed approximately normally. However, none of the scales passed Shapiro-Wilk test of normality. Additionally, a strong and negatively skewed distribution was found on the Eros scale histogram (skeweness = -.744, kurtosis = .076). Following the violation of some assumptions for Pearson’s correlation coefficient test, an alternative test was conducted, Spearman’s rho linear correlation.

The strongest significant correlation is between Mania and Anxiety. A Spearman’s rho correlation found a positive significant association between these two scales (rs (316) = -.50, p = .000). A substantial correlation is seen between Ludus and Close. A Spearman’s rho correlation found that there was a significant negative correlation between these two scales (rs (316) = -.33, p = .000). Eros and Anxiety are also correlated and a Spearman’s rho correlation found that there was a negative significant association between them (rs (316) = -.27, p = .546). The weakest association is between Mania and Close (rs (316) = -.03, p = .634) as well as between Agape and Close (rs (316) = .03, p = .578). All relationships between Love and Attachment Styles scores can be seen in Table 5 which presents results from Spearman’s rho correlations tests.
Table 5: Spearman’s Rho Correlation Coefficients between Love and Attachment Styles

<table>
<thead>
<tr>
<th></th>
<th>Close</th>
<th>Depend</th>
<th>Anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ludus</td>
<td>-.33**</td>
<td>-.17**</td>
<td>.11*</td>
</tr>
<tr>
<td>Eros</td>
<td>.10</td>
<td>.24**</td>
<td>-.27**</td>
</tr>
<tr>
<td>Storge</td>
<td>-.05</td>
<td>-.04</td>
<td>-.04</td>
</tr>
<tr>
<td>Pragma</td>
<td>-.19**</td>
<td>-.06</td>
<td>.07</td>
</tr>
<tr>
<td>Mania</td>
<td>-.03</td>
<td>-.15</td>
<td>.50**</td>
</tr>
<tr>
<td>Agape</td>
<td>.03</td>
<td>.04</td>
<td>.19**</td>
</tr>
</tbody>
</table>

*Correlation is significant at .05 level (2-tailed)
**Correlation is significant at .01 level (2-tailed)

Hypothesis Two

A normal distribution was not found in relation to testing hypothesis two; therefore, a non-parametric test was conducted. A Mann-Whitney U test was used to test hypothesis two to accept or reject that there will be a significant difference between Love Scales scores given by males and females. In case of the Pragma style, males had a mean rank of 140.24, compared to the mean rank of 168.11 reported by females. The Mann-Whitney U test revealed that females differ significantly from males on the Pragma scale (U = 10.00, p = .219).

In case of the Agape style, males had a much higher mean rank of 189.00, compared to the mean rank of 142.44 reported by females. The Mann-Whitney U test revealed that females differ significantly from males on Agape scale (U = 10.00, p = .219). There are no significant differences found on the other four Love Styles between females and males. Table 6 presents a summary of the data acquired from The Mann-Whitney U test.
Table 6: Love Styles and Gender Differences (Mann-Whitney U 2-tailed Test)

<table>
<thead>
<tr>
<th></th>
<th>Ludus</th>
<th>Eros</th>
<th>Storge</th>
<th>Pragma</th>
<th>Mania</th>
<th>Agape</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male (n=109)</td>
<td>167.10</td>
<td>156.45</td>
<td>168.99</td>
<td>140.24</td>
<td>150.43</td>
<td>189.00</td>
</tr>
<tr>
<td>Female (n=207)</td>
<td>153.97</td>
<td>159.58</td>
<td>152.98</td>
<td>168.11</td>
<td>162.75</td>
<td>142.44</td>
</tr>
<tr>
<td>Z</td>
<td>-1.220</td>
<td>-.292</td>
<td>-1.489</td>
<td>-2.590</td>
<td>-1.144</td>
<td>-4.336</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>.222</td>
<td>.770</td>
<td>.136</td>
<td>.010</td>
<td>.253</td>
<td>.000</td>
</tr>
</tbody>
</table>

Figure 4 shows the distribution of mean scores of Pragma as reported for males (mean = 7.15, SD = 3.10) and females (mean = 7.95, SD = 3.00). It also shows Agape as reported for males (mean = 10.80, SD = 2.32) and for females (mean = 9.42, SD = 2.60).

Figure 3: Distribution of Means of Agape and Pragma across Genders
Hypothesis Three

Hypothesis three seeks to establish if there are significant differences between scores on Love Scales between groups created by IM questions. A non-directional (2-tailed) test was carried out. Based on exploratory IM_habits, questions and groups created by each of the questions were measured for differences based on Love Styles. Similarly to previous calculations Love Style data is not normally distributed, therefore Mann-Whitney U test was carried out to determine differences between groups. Table 7 presents a summary of the significant results of the Mann-Whitney U test.

Table 7 - Significant Results of Mann-Whitney U Test (2-tailed) between Groups

Created by Each IM Question

<table>
<thead>
<tr>
<th>IM_habit</th>
<th>Love Style</th>
<th>Response</th>
<th>n</th>
<th>Mean Rank</th>
<th>Z</th>
<th>p*</th>
<th>p**</th>
</tr>
</thead>
<tbody>
<tr>
<td>IM_delay</td>
<td>Eros</td>
<td>Immediately</td>
<td>250</td>
<td>163.90</td>
<td>-2.07</td>
<td>.038</td>
<td>.030</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Delay</td>
<td>66</td>
<td>138.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Delay</td>
<td>66</td>
<td>138.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM_check</td>
<td>Eros</td>
<td>Yes</td>
<td>230</td>
<td>149.25</td>
<td>-2.98</td>
<td>.003</td>
<td>.006</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>86</td>
<td>183.23</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>86</td>
<td>183.23</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mania</td>
<td>Yes</td>
<td>230</td>
<td>178.15</td>
<td>-6.28</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>86</td>
<td>105.94</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mania</td>
<td>Communicate again</td>
<td>103</td>
<td>186.10</td>
<td>-3.75</td>
<td>.000</td>
<td>.011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wait for response</td>
<td>213</td>
<td>145.15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM_again</td>
<td>Mania</td>
<td>Yes</td>
<td>236</td>
<td>169.67</td>
<td>-3.75</td>
<td>.000</td>
<td>.013</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>80</td>
<td>125.56</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td>Yes</td>
<td>121</td>
<td>142.98</td>
<td>-2.41</td>
<td>.016</td>
<td>.015</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>195</td>
<td>168.13</td>
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<td></td>
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<td>183.58</td>
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<td>.000</td>
<td>.000</td>
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<td></td>
<td>No</td>
<td>195</td>
<td>142.94</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM_reread</td>
<td>Mania</td>
<td>Yes</td>
<td>236</td>
<td>169.67</td>
<td>-3.75</td>
<td>.000</td>
<td>.013</td>
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<td>80</td>
<td>125.56</td>
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<tr>
<td></td>
<td>Mania</td>
<td>Yes</td>
<td>121</td>
<td>142.98</td>
<td>-2.41</td>
<td>.016</td>
<td>.015</td>
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<tr>
<td></td>
<td></td>
<td>No</td>
<td>195</td>
<td>168.13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mania</td>
<td>Yes</td>
<td>121</td>
<td>183.58</td>
<td>-3.86</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>195</td>
<td>142.94</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM_length</td>
<td>Eros</td>
<td>Yes</td>
<td>72</td>
<td>190.91</td>
<td>-3.44</td>
<td>.001</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>244</td>
<td>148.94</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Mania</td>
<td>Yes</td>
<td>72</td>
<td>128.00</td>
<td>-3.26</td>
<td>.001</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>244</td>
<td>167.50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ludus</td>
<td>Yes</td>
<td>72</td>
<td>185.49</td>
<td>-2.86</td>
<td>.004</td>
<td>.001</td>
</tr>
<tr>
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<td>No</td>
<td>244</td>
<td>150.54</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p* - Sig. (2-tailed), p**-Sig. (2-tailed) after equalizing group sizes. In each IM question a random sample from larger group was selected so both groups are equal in size.
A number of significant differences in mean ranks were found on each IM question. The most significant variations across the questions were reported on the Mania and the Eros scales. Abnormal differences in group sizes were dealt with by equalizing groups. For each of the questions, the larger group was reduced in size by randomly extracting a number of participants from these groups equal to number of participants in smaller group. These equal groups were then tested to see whether a significant difference in group sizes had an influence on the overall results. No significant differences in p-values were noticed (p**) as seen in Table 3.6. Scores on the Pragma and the Agape subscales were not found to be significantly different between groups created by the IM questions.

*Testing IM_tendency Groups*

A Kruskal-Wallis one-way ANOVA was used to test differences in scores on Love Styles between IM_tendency groups. This showed that IM_positive, IM_negative and IM_neutral groups differed significantly on the Eros style scores ($\chi^2(2) = 10.00, p = .004$) and the Mania Love Styles scores ($\chi^2(2) = 40.55, p = .000$). A Kruskal-Wallis one-way ANOVA test did not find significant differences among IM_tendencies groups on any other Love Styles scores; Ludus ($\chi^2(2) = 2.57, p = .276$), Storge ($\chi^2(2) = 3.55, p = .170$), Pragma ($\chi^2(2) = 2.02, p = .365$) or Agape ($\chi^2(2) = 3.04, p = .218$).

A Mann-Whitney U test was used to test the hypothesis that there will be significant differences between scores on the Eros and Mania scales between groups IM_positive, IM_negative and IM_neutral. A number of statistically significant differences were found. In the case of the Eros style, the IM_negative group had a mean rank of 105.46, compared to the mean rank of 91.06 reported in the IM_neutral group.
The Mann-Whitney U test revealed that IM_negative did not differ significantly from IM_neutral on the Eros scale ($Z = -1.806$, $p = .071$). The null can be rejected. The IM_neutral groups mean rank is 118.74 and is compared to mean rank of IM_positive group at 105.45. The Mann-Whitney U test revealed that the IM_positive group did not differ significantly from the IM_neutral group on the Eros scale ($Z = -1.551$, $p = .121$). The IM_negative group had a higher mean rank of 123.58 when compared to the mean rank of the IM_positive group which was 95.90. The Mann-Whitney U test also revealed that the IM_negative group differed significantly from the IM_positive group on the Eros scale ($Z = -3.272$, $p = .001$). Table 8 shows a summary of findings of the Mann-Whitney U test.

Table 8: Results of Mann-Whitney U Test (2-tailed) between IM_tendency Groups

<table>
<thead>
<tr>
<th>Love Style</th>
<th>Test Between</th>
<th>n</th>
<th>Mean Rank</th>
<th>Z</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eros</td>
<td>IM_nonactive</td>
<td>94</td>
<td>105.46</td>
<td>-1.806</td>
<td>.071</td>
</tr>
<tr>
<td></td>
<td>IM_neutral</td>
<td>101</td>
<td>91.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IM_active</td>
<td>121</td>
<td>118.74</td>
<td>-1.551</td>
<td>.121</td>
</tr>
<tr>
<td></td>
<td>IM_nonactive</td>
<td>94</td>
<td>123.58</td>
<td>-3.272</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>IM_active</td>
<td>121</td>
<td>95.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mania</td>
<td>IM_nonactive</td>
<td>94</td>
<td>79.20</td>
<td>-4.509</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>IM_neutral</td>
<td>101</td>
<td>115.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IM_active</td>
<td>121</td>
<td>99.39</td>
<td>-2.580</td>
<td>.010</td>
</tr>
<tr>
<td>Mania</td>
<td>IM_nonactive</td>
<td>94</td>
<td>79.73</td>
<td>-5.897</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>IM_active</td>
<td>121</td>
<td>129.96</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Sig (2-tailed)

Figure 4 shows the distribution of the mean score for the Eros scores of each group; IM_negative (mean = 12.72, SD = 2.12), IM_neutral (mean = 12.15, SD = 2.33) and IM_positive (mean = 11.06, SD = 2.55). It also shows the distribution of the mean
score for the Mania scores of each group; IM_nonactive (mean = 6.90, SD = 3.01), IM_neutral (mean = 8.81, SD = 2.82) and IM_active (mean = 9.68, SD = 3.20).

Figure 4: Distribution of Means of Mania and Eros across IM_tendency Groups

Testing Texting Style

A Kruskal-Wallis one-way ANOVA was used to test the hypothesis that there will be significant differences between scores on Love Styles between Texting Style groups. Table 9 shows results of this test as carried out on all six Love Styles’ scales.
Further analysis was carried out on the Mania scale and Texting Style groups. The Active group had a mean rank of 76.98 as compared to the mean rank of 60.77 by Passive group. A Mann-Whitney U test revealed those two groups differs significantly between each other on the Mania subscale (Z = -2.283, p = .022). The Passive group had a slightly higher mean rank of 109.39 as compared to the mean rank of 106.25 by the Accepting group. The Mann-Whitney U test revealed that there was no significant difference between those groups (Z = -.312, p = .755).

The Active group had a much higher mean rank of 146.34 than the mean rank of 113.98 of Accepting group. The Mann-Whitney U test showed that there was a statistically significant difference between these two groups on the Mania scale (Z = -3.403, p = .001). Figure 5 shows the distribution of the mean scores of the Mania scale of each Texting Style group: Active (mean = 9.57, SD = 3.17), Passive (mean = 8.21, SD = 3.26) and Accepting (mean = 8.03, SD = 3.17).

<table>
<thead>
<tr>
<th></th>
<th>Ludus</th>
<th>Eros</th>
<th>Storge</th>
<th>Pragma</th>
<th>Mania</th>
<th>Agape</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>3.26</td>
<td>3.17</td>
<td>.281</td>
<td>1.26</td>
<td>12.10</td>
<td>3.87</td>
</tr>
<tr>
<td>Df</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Sig(2-tailed)</td>
<td>.196</td>
<td>.205</td>
<td>.869</td>
<td>.532</td>
<td>.002</td>
<td>.145</td>
</tr>
</tbody>
</table>

Table 9: *Kruskal-Wallis Test of Love Styles, Grouping Variable and Texting Style*
Hypothesis Four

To evaluate hypothesis four a non-directional (2-tailed) tests were conducted to see if there will be a statistically significant differences on the scores for Attachment dimensions between groups created by IM questions. The distribution of data for the Close, Depend and Anxiety dimensions was normally distributed. Independent sample t-tests were carried out to see whether there were significant differences on the Attachment Styles dimensions between groups formed by each of the IM_habit questions. Table 10 represents a summary of the significant findings.
Table 10: Significant Results of Independent Samples t-test (2-tailed) on Anxiety Dimensions between Groups Created by Each IM Question

<table>
<thead>
<tr>
<th>IM_habit</th>
<th>Attachment Dimension</th>
<th>Response</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>P</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>IM_delay**</td>
<td>Depend</td>
<td>Immediately</td>
<td>250</td>
<td>18.49</td>
<td>2.69</td>
<td>2.79</td>
<td>.006</td>
<td>.26</td>
<td>1.51</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Delay</td>
<td>66</td>
<td>17.60</td>
<td>2.18</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM_check**</td>
<td>Anxiety</td>
<td>Yes</td>
<td>230</td>
<td>17.49</td>
<td>6.08</td>
<td>6.63</td>
<td>.000</td>
<td>2.89</td>
<td>5.34</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>86</td>
<td>13.37</td>
<td>4.40</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM_reread*</td>
<td>Anxiety</td>
<td>Yes</td>
<td>236</td>
<td>17.05</td>
<td>5.96</td>
<td>3.69</td>
<td>.000</td>
<td>1.25</td>
<td>4.13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>80</td>
<td>14.36</td>
<td>5.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM_length*</td>
<td>Anxiety</td>
<td>Yes</td>
<td>121</td>
<td>17.97</td>
<td>6.26</td>
<td>3.83</td>
<td>.000</td>
<td>1.26</td>
<td>3.92</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>195</td>
<td>15.38</td>
<td>5.55</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM_hide*</td>
<td>Anxiety</td>
<td>Yes</td>
<td>72</td>
<td>18.40</td>
<td>5.64</td>
<td>3.35</td>
<td>.001</td>
<td>1.08</td>
<td>4.18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>244</td>
<td>15.77</td>
<td>5.93</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*equal variances assumed (sig-2 tailed), **equal variances not assumed (sig-2 tailed)

There are no significant differences reported on any of Attachment dimensions between groups created by the IM_again question. There were significant differences found on the Anxiety dimension between groups created by the IM questions such as: IM_check, IM_reread, IM_length and IM_hide. The biggest difference on Anxiety was found between groups created by the IM_check question. Those who answered yes to the IM_check question (mean = 17.49, SD = 6.08) were found to score higher on the Anxiety dimension than subjects who answered no (mean = 13.37, SD = 4.40). The 95% confidence limits show that the populations mean difference of the variables lies somewhere between 2.89 and 5.34. An independent samples t-test found that there was a statistically significant difference between those two groups (t (210.04) = 6.63, p = .000). The Depend dimension was found to be significantly different between groups created by the IM_delay question.
An independent samples t-test found that there was a statistically significant difference between those who answered Immediately (M = 18.49, SD = 2.69) and those who answered Delay (M = 17.60, SD = 2.18, t (122.70) = 2.79, p = .006, CI (95%) = 2.26 – 1.51). However, after extracting 66 random participants, from the Immediate group in order to equalize group ratio, an independent samples t-test found that there was no statistically significant difference between these two groups (t (130) = 1.12, p = .264, CI (95%) = -.37 – 1.34).

The process of equalizing the group sizes produced similar significant results apart from the result produced for the IM_delay question. This was not significant after extracting sample of 66 participants from the Immediate group. Table 11 shows the results of the independent t-test after equalizing group sizes.

Table 11: Results of Independent Samples t-test (2-tailed) on Anxiety Dimensions between Groups Created by Each IM Question after Equalizing Group Sizes

<table>
<thead>
<tr>
<th>IM_habit</th>
<th>Attachment Dimension</th>
<th>Response</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>p</th>
<th>95% CI Low.</th>
<th>95% CI Up.</th>
</tr>
</thead>
<tbody>
<tr>
<td>IM_delay*</td>
<td>Depend</td>
<td>Immediately</td>
<td>66</td>
<td>18.09</td>
<td>2.76</td>
<td>1.12</td>
<td>.264</td>
<td>-0.37</td>
<td>1.34</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Delay</td>
<td>66</td>
<td>17.60</td>
<td>2.18</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM_check**</td>
<td>Anxiety</td>
<td>Yes</td>
<td>86</td>
<td>17.59</td>
<td>6.02</td>
<td>5.24</td>
<td>.000</td>
<td>2.63</td>
<td>5.80</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>86</td>
<td>13.37</td>
<td>4.40</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM_reread*</td>
<td>Anxiety</td>
<td>Yes</td>
<td>80</td>
<td>16.71</td>
<td>5.94</td>
<td>2.59</td>
<td>.010</td>
<td>0.56</td>
<td>4.13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>80</td>
<td>14.36</td>
<td>5.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM_length**</td>
<td>Anxiety</td>
<td>Yes</td>
<td>121</td>
<td>17.97</td>
<td>6.26</td>
<td>3.66</td>
<td>.000</td>
<td>1.25</td>
<td>4.17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>121</td>
<td>15.25</td>
<td>5.20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM_hide*</td>
<td>Anxiety</td>
<td>Yes</td>
<td>72</td>
<td>18.40</td>
<td>5.64</td>
<td>4.18</td>
<td>.000</td>
<td>2.08</td>
<td>5.64</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>72</td>
<td>14.57</td>
<td>5.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Testing IM_tendency

A one-way analysis of variance was used to test differences between the IM_tendency groups. It showed that there was a significant difference between the three groups of IM_tendency in terms of scores on the Anxiety dimension \((F(2, 313) = 21.27, p = .000)\). Post hoc analysis confirmed that the differences were significant in nature between the IM_nonactive group with the IM_neutral group (Mean difference = 2.69, \(p = .003\), CI (95%) -4.58 – - .79) and with the IM_active group (Mean difference = -5.02, \(p = .000\), CI (95%) -6.84 – - 3.21). Also the IM_neutral group differed significantly from the IM_active group (Mean difference = -2.33, \(p = .006\), CI (95%) - 4.11 - - .55). A one-way analysis of variance showed that there was a significant difference between the three groups of IM_tendency in terms of scores on the Depend dimension \((F(2, 313) = 5.12, p = .007)\).

Post hoc analysis confirmed that differences were significant in nature between the IM_active group with the IM_neutral group (Mean difference = .98, \(p = .014\), CI (95%) -1.80 – - .17) and with the IM_nonactive group (Mean difference = -.92, \(p = .027\), CI (95%) -1.75 – - .09). The IM_neutral group did not differ significantly from the IM_nonactive group (Mean difference = .065, \(p = .983\), CI (95%) -.93 - .80). A one-way analysis of variance showed that there was no significant difference between the three groups of IM_tendency in terms of scores on the Close dimension \((F(2, 313) = .165, p = .823)\).

Figure 7 shows the distribution of mean scores of the Close dimension scores across groups; IM_negative (mean = 18.63, SD = 2.65), IM_neutral (mean = 18.32, SD = 2.42) and IM_positive (mean = 18.40, SD = 2.23). It also shows the distribution of mean scores of the Depend dimension scores; IM_nonactive (mean = 18.64, SD = 2.44),
IM_neutral (mean = 18.70, SD = 2.67), IM_active (mean = 17.72, SD = 2.60) and the distribution of mean scores of the Anxiety dimension scores; IM_nonactive (mean = 13.59, SD = 4.53), IM_neutral (mean = 16.28, SD = 6.19), IM_active (mean = 18.61, SD = 5.86).

Figure 7: Distribution of Means of Attachment Styles across IM_tendency Groups

Testing Texting Styles

A one-way analysis of variance was used to compare scores for the Attachment Styles between groups created by Texting Styles. There are no significant differences
between the three groups of Texting Styles in terms of scores on the Close dimension \( (F (2, 299) = 4.493, p = .084) \), the Depend dimension \( (F (2, 299) = 2.080, p = .127) \) or the Anxiety dimension \( (F (2, 299) = .459, p = .633) \). These results will be further analysed and discussed in the next section.
DISCUSSION

Exploring differences in which individuals use IM and their relations to scores on Attachment Scale and Love Scale brought up a range of statistically significant results. Love and Attachment dimensions were found to be associated with each other and gender differences were found in scores on particular Love Style scales. The trends in reporting of IM habits formed groups which statistically differed on psychological dimensions explored in the study. Each of the four hypotheses was at least partially supported by the results of statistical tests carried out. Theses will be further discussed in the following sections.

Hypothesis One

Hypothesis one investigated if there was a significant relationship between scores on Love Style subscales and scores on Attachment dimensions. A strong positive correlation found between the Mania scale and the Anxiety scale supported findings of previous research by Collins and Read (1990). Both scales are concerned with the level of anxiety associated with an attachment figure in a relationship.

This study by Collins and Read in 1990 found that there were statistically significant negative correlations between the Close dimension and the Ludus, Pragma and Storge styles. The present study partially replicated these results by establishing significant moderate negative correlation between the Close dimension and the Pragma style. Pragmatic lovers are concerned with factors such as the suitability of their partner as a parent and their reflection on their career. Negative correlations were found between the Pragma style and the Close dimension suggesting that these factors are not
necessarily associated with increased levels of intimacy as reflected in higher scores on the Close dimension. A weak negative correlation of the Ludus style with the Close dimension indicates that a game playing type of love is also likely not to be associated with increased levels of intimacy. There was no significant association found between the Storge and the Close scales. The Ludus scale was found to have a weak negative correlation with the Depend dimension and a weak positive relationship with the Anxiety dimension.

Negative relationship between the Storge and the Close dimension was expected as per previous research (Collins and Read, 1990), but it was not found in the current study. The Storge style is concerned with a good friendship as a base for a romantic relationship, which can be expected to be associated with increased levels of intimacy. Lack of a negative correlation between those two variables is somewhat not surprising. It could be concluded that a relationship based on long friendship would be associated with increased levels of intimacy.

Placing loved ones’ needs before their own, characterized by the Agape style was found to be associated with increased levels of attachment anxiety. The Eros style is a friendship love and high levels of interpersonal trust associated with this style were found to be negatively related to the Anxious dimension and positively correlated with the Depend dimension. These findings suggest that an ability to depend on others to be accessible when desired is associated with higher degree of a passionate love attitude. Most of relationships between the Love subscales and the Attachment dimensions that were found in previous research were also found in the current study.
Hypothesis Two

Hypothesis two sought to establish if there was a statistically significant difference of scores on the Love Scale between males and females. Previous studies suggest that men tend to demonstrate the Ludic style significantly more, whereas females demonstrated a stronger preference towards the styles of Erotic, Storgic, Pragmatic and Manic than males (Hendrick & Hendrick, 1986; Jonason & Kavanagh, 2010). The current research found females to score higher on the Pragma scale. It suggests that females are more concerned with their partner’s suitability as a parent and a family member. Males were found to score significantly higher on the Agape scale which indicates that males in this study are more likely to be altruistic and lover intense. Similar results were obtained by Jonason & Kavanagh (2010).

These results are inconsistent with the general view that females tend to be more altruistic than males (Rushton et al., 1986). There were no significant differences found for any other Love Styles. Most notably, the current study did not deliver expected differences on the Ludus scale. It can be suggested that many gender differences have dissolved with the evolution of modern technology aiding communication and the development of sexual equality. This has impacted how women and men are expected to behave. Women are often likely to choose to be single and more ludic in their love attitude than the general stereotype would have predicted nearly 30 years ago. This attitude towards love may be the result of the present option for females to develop their careers and postpone motherhood into later stages of their lives.
Hypothesis Three and Four

Analysis of hypothesis three and four will be combined. These hypotheses sought to identify if there is any link between reported IM behaviour or habit and scores on Love and Attachment scales. It was anticipated that there will be significant differences between scores on the Love Style scales on the Attachment dimensions between groups created by IM questions. Each of the six IM questions divided participants into two groups. Scores on the Attachment Scale and Love Scale where then compared between those groups and checked for any significant differences.

IM_delay

A majority of people claimed they prefer to respond immediately to messages from a romantic partner which is somewhat consistent with previous findings (Mesch et al., 2012). This Immediate group (n = 250) was found to score statistically higher on the Eros scale than Delay group (n = 66). Similar significant result was obtained after equalizing group sizes by extracting a random sample of 66 participants from the Immediate group and then comparing it with Delay group. A simple delay in response to a message can elicit anxiety and a lower sense of belonging of a partner (Mith & Williams, 2003). This finding suggests that a passionate love is likely to be associated with a preference to provide an instant response.

The Immediate group was found to score higher than the Delay group on the Depend dimension. Such a result could suggest that a person that finds it easy to trust and depend on their partner is likely to immediately respond to a partner’s message. However, after equalizing group size there was no significant difference found between these two groups on the same dimension. The extracted random sample could not have
been very representative of the Immediate group of respondents. Nevertheless, a lack of significance found on the retest, brings the validity of the test with a big group size differences into question.

**IM_check**

A large majority of participants (n = 230) claimed to be checking their phone often. This group were found to score significantly higher on the Mania scale and lower on the Eros scale than those who claimed they did not check their phones as often. At the same time the phone checking group was positioned much higher on the Anxiety dimension. Such results suggest that passionate lovers are not concerned with their partner having to pay attention to them at all times are likely not to check their phones. Scores high on the Mania scale and the Anxiety scores in the group who check their phone often support the view that such behaviour could be a form of a non-verbal behaviour with the objective of proximity seeking (Schachner et al., 2005).

**IM_again**

The group that answered Communicate again (n = 103) was found to score significantly higher on the Mania scale than those in the Wait for response group (n = 213). The vulnerability one experiences while anticipating a new text was discussed (Prøitz, 2005). This studies results suggest that an intensive and possessive kind of love involving high levels of anxiety characterized by the Mania style is associated with an inability to wait for a response from romantic partner. It would be expected that the Communicate again group would also be higher on the Anxiety dimension than the Wait for response group since there is a strong positive correlation between these two
variables in the overall sample of the study. However, such difference was not found between those two groups.

**IM_reread**

This question aimed to explore the tendency participants have in rereading previous parts of a conversation with a romantic partner. Participants that answered yes (n = 236) were found to score significantly higher on the Mania scale and the Anxiety dimension than the group that answered no (n = 80). From an attachment theory point of view such behaviour could be partially explained as serving a purpose of satisfying a need for proximity of an attachment figure (Schachner et al., 2005). Results suggest that those who reread messages are associated with higher attachment anxiety and Mania type of love attitude.

**IM_length**

Participants claiming to be concerned with a message length (n=121) were found to score statistically higher on the Mania scale and the Anxiety dimension, and at the same time score significantly lower on the Eros scale than participants that are not concerned with the length of messages (n = 195) that they address to their romantic partners. Text messages were previously compared to a ritual of gift giving relating to age old practises (Taylor & Harper, 2002). It is hypothesized that complimenting or giving 'tit for tat', IM users could be concerned with the size of their gift or message (Taylor & Harper, 2002). Such concern seems to be associated with higher levels of relationship anxiety and possessiveness than in those individuals that are not concerned with the length of a message. On the other hand, the passionate Eros style is likely to
not be associated with such minute detail as the length of a message addressed to a partner.

**IM_hide**

Participants were asked to answer the question whether they ever hide their online presence from their romantic partner. In total, 72 participants answered positively and were found to be statistically higher on the Mania scale and the Anxiety attachment dimension. They were also significantly lower on the Eros scale than participants who claimed they did not hide their online presence from their romantic partners (n = 244). Additionally, those subjects with a tendency to hide their presence from their romantic partner scored significantly higher on the Ludus scale than those reporting not to have the same tendency to hide. The behaviour involving hiding an online presence from a lover (possibly to communicate with another lover) fits the description of the Ludus style as a game playing love (Hendrick & Hendrick, 1986).

Process of equalizing groups was carried out in each case to verify the findings of tests carried between groups that greatly differed in size. In all, but one mentioned above case (Depend scale differences between IM_delay groups) significant findings were replicated.

**Developing IM_tendency**

Further analysis was carried out to investigate trends for hypothesis three and hypothesis four. Answers for the following questions were found to be significantly correlated with each other: IM_check, IM_reread, IM_length and IM_hide. Answers to
these questions were clustered together to create exploratory IM_tendencies. These created groups divided participants into three groups of IM_tendencies:

- **IM_nonactive (n = 94)** consisted of participants that answered ‘no’ to at least any three out of four of the questions. This tendency group aims at representing a portion of participants that are unlikely to check their mobiles for message delivery status (or partner’s online status), unlikely to reread previous messages, unlikely to be concerned with the length of a message and unlikely to ever hide their online presence from romantic partners.

- **IM_neutral (n = 101)** represented a group that answered ‘yes’ to any two questions in any combination. This group represented a portion of participants that are likely to exhibit both kinds of behaviours presented by each of the IM_tendency question.

- **IM_active (n = 121)** consisted of participants that answered ‘yes’ to at least any three out of four of the questions. It represented a portion of participants that are likely to check their mobile phones for message delivery status (or a partner’s online status), likely to read previous messages, likely to be concerned with the length of a message and that are likely to hide their online presence from their romantic partners.

Statistical analysis of IM_tendency compiled a range of results that support hypothesis three and four. The Anxiety dimension was found to be positively associated with the likelihood of the IM_active type of behaviour which is consistent with the view that the Net Generation is likely to be experiencing high attachment anxiety (Pomerantz,
2013). This conclusion is supported by a positive relationship between the likelihood of
the IM_active type of behaviour and a possessive attitude towards a romantic partner as
defined by the Mania style. It was found that committed and passionate love (Eros) is
not associated with having an IM_active tendency to same extent as having an
IM_nonactive tendency. Additionally, the ability to trust and to depend on others
described by the Depend dimension is positively associated with the likelihood of
exhibiting a preference for IM_nonactive behaviour.

Developing Texting Style

Analysing answers on the IM_delay and the IM_again questions resulted in
dividing participants into groups. Four hypothetical Texting Styles groups were
developed:

- Active style group (n = 89) contains participants that respond immediately to a
  message and would communicate again with their partner in case of no response
to a message.
- Passive style group (n = 59) consists of subjects that delay their responses to
  their romantic partners and wait for a response from their partners.
- Accepting style group (n = 161) consists of subjects that respond immediately to
  a message and wait for a response from their partners.
- Dissonant style group (n = 14) is made of participants that delay a message to
  their romantic partner, but at the same time communicate again in case of no
  reply from their romantic partners. Due to very small group size Dissonant style
group was ruled out from further analysis.
The Active style group scored much higher on the Mania scale suggesting that possessive and intensive kind of love could be associated with pro-active texting behaviour where an individual responds quickly to a message and expects the same kind of behaviour from the partner. Communicating again with a partner in case of no reply could be considered as a type of attention seeking behaviour carried out from childhood (McCurdy, 2007). A simple delay in response to a message was found to increase anxiety and lower the sense of belonging (Mith & Williams, 2003). However, contrary to expectations, no significant differences on the Anxiety dimension were found between the Active, Passive and Accepting groups. It suggest that caution needs be maintained linking pro-active texting behaviour with increased attachment anxiety despite the strong association seen on the Mania scale scores between those groups.

**Limitations**

The results of the study should be considered in light of several limitations. As with all survey data, self-reporting has inherent limitations, however the surveys used were previously published and possess valid psychometric properties. The use of self-reporting style is appropriate for use in establishing data on Love Styles and Attachment dimensions, but its accuracy in exploring a complex behaviour associated with a use of IM apps is yet to be confirmed. A 2:1 gender ratio in favour females is also limiting the implication of results. Culture and nationality of participants were not taken into account, which also limits generalizability of the results.

The Revised Adult Attachment scale (Collins, 1996), used in the study captured fundamental dimensions underlying attachment styles, but does not actually allow defining attachment style itself as a category. It places individuals on a sliding scale on
each dimension. It allows a valid statistical comparison of fundamental dimensions underlying adult attachment patterns, but does not describe individual’s attachment style in its full complexity.

Exploratory IM habits questions that were developed for this study capture the most prevalent issues associated with IM communication, but they only provide participants with two choices to each question. The questionnaire containing those six questions was piloted with six individuals and only one of them brought up an issue associated with these questions. It was pointed out that answers to some of the questions would depend on the situation the individual could be in. Big disparities in group sizes created by each individual IM question state a significant result on their own. However, unequal group ratios make further analysis of differences on psychological scales less valid.

Another limitation to this study is that the sample is a snowball sample acquired through Facebook. Participants of the study are related to the researcher or to researcher’s friends. Generalizing results to a broader population needs to be done with high level of caution.

**Implications for Future Research**

This study is trying to explore communication dynamics from a ‘digital body language perspective’, where each behaviour associated with the use of an IM app serves a purpose mediated by the psychological make-up of an individual. This research is useful in understanding how IM apps are used by individuals and the highly reported differences for each behaviour gives guidance for further research. Each of the posed
IM questions require further analysis in relation to other IM behaviours as well as in relation to psychological measurements exploring characteristics of romantic relationships.

Development and validation of a continuous scale as regards to IM behaviours explored in this study is suggested. Use of sliding scales will produce a scale of measurement that can be re-used and continuously validated in conjunction with a range of other psychological measurements. Also, it is recommended to use more up-to-date measurements to allow calculation of accurate adult’s attachment and love styles.

**Conclusion**

Today’s generation depends on Smartphone’s and constant uninterrupted communication with a significant other. There are notable differences recorded outlining trends in the way participants responded to questions regarding use of IM apps in emerging romantic relationships. These responses were used to create hypothetical tendency groups, which significantly differed in scores on used psychometric measurements. The Anxiety dimension was positively correlated with the Mania style and high scores on these variables were linked with likelihood of repeatedly checking phone, rereading messages, considering message length and hiding online.

Significant differences on the Anxiety attachment dimension are consistent with results of past studies suggesting a high level of attachment anxiety exists in today’s Net Generation (Pomerantz, 2013). Not all gender differences found on Love Styles support previous research findings. Females were more pragmatic and males scored higher on the Agape style. Expected gender differences on the Ludus style were not found. It is
suggested that a development of a Likert scale as regards to discussed IM habits could improve accuracy and implications of a future research in the area of digital communication in romantic relationship.
REFERENCES


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APPENDIX

This appendix includes a copy of the consent form and questionnaire used in the study.

Instant Messaging and Romantic Relationships

Hello, my name is Janusz Stolarek and I am conducting psychological research that explores characteristics of romantic relationships and instant messaging habits through platforms such as Facebook, WhatsApp and Viber.

I would like to invite you to take part in this study. Participation involves completing the online anonymous survey below. This survey should take approximately 15 minutes to complete. If your device or internet connection crashes during the process of filling out the questionnaire, you can start over from the beginning once you resolve your technical issues. This online form is a smart phone browser friendly. You are kindly asked to answer every single question in the questionnaire.

Your participation is voluntary, anonymous and confidential. It is impossible to link any data from responses to any one participant. You can withdraw from taking part in the study at any time before you click the 'submit' button at the end of the questionnaire. Once the questionnaire is completed and the 'submit' button clicked, it is impossible to withdraw from taking part in the study. By submitting your responses, you consent to participation in this research. The data will be kept secure in electronic format.

Majority of questions used in the survey have been extracted from a number of established assessments used for research. If you feel that some of these questions elicit any unwanted or uncomfortable feelings, you are recommended to avail of support services.

Please contact the Samaritans at:


Should you require any further information about the research, please contact me at

. The supervisor for this research study can be contacted at.

The report of this study is expected to be available at your request in May 2014. If you are interested in findings of this study, please send me an email and the report will be sent out to you.

Thank you in advance for taking the time to complete this survey.
* Required

**Are you over 18 and wish to continue?**

Participants must be over 18 to take part. Responses from participants under 18 will not be included in the final research project.

- yes
- no

**Do you currently have a romantic partner?**

- yes
- no

**What is your gender?**

- male
- female

**Do you use any of the following instant messaging applications/messengers: WhatsApp, Facebook Messenger (Chat), Viber, Line, WeChat, iMessage or KaKao Talk?**

- yes
- no

**What is your age?**

_____

**What are you using to fill out the questionnaire?**

- Laptop
- Desktop
- Tablet
- Mobile Phone
- other
Please read each of the following statements and rate the extent to which it describes your feelings about romantic relationships. Please think about all your relationships (past and present) and respond in terms of how you generally feel in these relationships. If you have never been involved in a romantic relationship, answer in terms of how you think you would feel.

Please use the scale below each of the question by choosing a number between 1 and 5. Select a value from a range of 1, Not at all characteristic of me, to 5, Very characteristic of me.

I find it relatively easy to get close to people. *

1  2  3  4  5

Not at all characteristic of me  ○  ○  ○  ○  ○  Very characteristic of me

I find it difficult to allow myself to depend on others. *

1  2  3  4  5

Not at all characteristic of me  ○  ○  ○  ○  ○  Very characteristic of me

I often worry that romantic partners don't really love me. *

1  2  3  4  5

Not at all characteristic of me  ○  ○  ○  ○  ○  Very characteristic of me

I find that others are reluctant to get as close as I would like to. *

1  2  3  4  5

Not at all characteristic of me  ○  ○  ○  ○  ○  Very characteristic of me

I am comfortable depending on others. *

1  2  3  4  5

Not at all characteristic of me  ○  ○  ○  ○  ○  Very characteristic of me
I don't worry about people getting too close to me. *

1 2 3 4 5

Not at all characteristic of me  ○ ○ ○ ○ ○ Very characteristic of me

I find that people are never there when you need them. *

1 2 3 4 5

Not at all characteristic of me  ○ ○ ○ ○ ○ Very characteristic of me

I am somewhat uncomfortable being close to others. *

1 2 3 4 5

Not at all characteristic of me  ○ ○ ○ ○ ○ Very characteristic of me

I often worry that romantic partners won’t want to stay with me. *

1 2 3 4 5

Not at all characteristic of me  ○ ○ ○ ○ ○ Very characteristic of me

When I show my feelings for others, I'm afraid they will not feel the same about me. *

1 2 3 4 5

Not at all characteristic of me  ○ ○ ○ ○ ○ Very characteristic of me

I often wonder whether romantic partners really care about me. *

1 2 3 4 5

Not at all characteristic of me  ○ ○ ○ ○ ○ Very characteristic of me
I am comfortable developing close relationships with others. *

1  2  3  4  5

Not at all characteristic of me  ○  ○  ○  ○  ○  Very characteristic of me

I am uncomfortable when anyone gets too emotionally close to me. *

1  2  3  4  5

Not at all characteristic of me  ○  ○  ○  ○  ○  Very characteristic of me

I know that people will be there when I need them. *

1  2  3  4  5

Not at all characteristic of me  ○  ○  ○  ○  ○  Very characteristic of me

I want to get close to people, but I worry about being hurt. *

1  2  3  4  5

Not at all characteristic of me  ○  ○  ○  ○  ○  Very characteristic of me

I find it difficult to trust others completely. *

1  2  3  4  5

Not at all characteristic of me  ○  ○  ○  ○  ○  Very characteristic of me

Romantic partners often want me to be emotionally closer than I feel comfortable being. *

1  2  3  4  5

Not at all characteristic of me  ○  ○  ○  ○  ○  Very characteristic of me
I am not sure that I can always depend on people to be there when I need them. *

1 2 3 4 5

Not at all characteristic of me  ○ ○ ○ ○ ○ Very characteristic of me

Some of the items refer to a specific love relationship, while others refer to general attitudes and beliefs about love. Whenever possible, answer the questions with your current partner in mind. If you are not currently dating anyone, answer the questions with your most recent partner in mind. If you have never been in love, answer in terms of what you think your responses would most likely be.

My partner and I have the right physical “chemistry” between us. *

○ 1 - strongly agree
○ 2 - moderately agree
○ 3 - neutral
○ 4 - moderately disagree
○ 5 - strongly disagree

I feel that my lover and I were meant for each other. *

○ 1 - strongly agree
○ 2 - moderately agree
○ 3 - neutral
○ 4 - moderately disagree
○ 5 - strongly disagree

My partner fits my ideal standards of physical beauty/handsomness *

○ 1 - strongly agree
○ 2 - moderately agree
○ 3 - neutral
○ 4 - moderately disagree
○ 5 - strongly disagree
I believe that what my partner doesn’t know about me won’t hurt him/her *

1 - strongly agree
2 - moderately agree
3 - neutral
4 - moderately disagree
5 - strongly disagree

I have sometimes had to keep my partner from finding out about other lovers. *

1 - strongly agree
2 - moderately agree
3 - neutral
4 - moderately disagree
5 - strongly disagree

My partner would get upset if he/she knew of some of the things I’ve done with other people. *

1 - strongly agree
2 - moderately agree
3 - neutral
4 - moderately disagree
5 - strongly disagree

Our love is the best kind because it grew out of a long friendship. *

1 - strongly agree
2 - moderately agree
3 - neutral
4 - moderately disagree
5 - strongly disagree

Our friendship merged gradually into love over time. *

1 - strongly agree
2 - moderately agree
3 - neutral
4 - moderately disagree
5 - strongly disagree
Our love relationship is the most satisfying because it developed from a good friendship *

☐ 1 - strongly agree
☐ 2 - moderately agree
☐ 3 - neutral
☐ 4 - moderately disagree
☐ 5 - strongly disagree

A main consideration in choosing my partner was how he/she would reflect on my family. *

☐ 1 - strongly agree
☐ 2 - moderately agree
☐ 3 - neutral
☐ 4 - moderately disagree
☐ 5 - strongly disagree

An important factor in choosing my partner was whether or not he/she would be a good parent. *

☐ 1 - strongly agree
☐ 2 - moderately agree
☐ 3 - neutral
☐ 4 - moderately disagree
☐ 5 - strongly disagree

One consideration in choosing my partner was how he/she would reflect on my career *

☐ 1 - strongly agree
☐ 2 - moderately agree
☐ 3 - neutral
☐ 4 - moderately disagree
☐ 5 - strongly disagree
When my partner doesn’t pay attention to me, I feel sick all over. *
- 1 - strongly agree
- 2 - moderately agree
- 3 - neutral
- 4 - moderately disagree
- 5 - strongly disagree

I cannot relax if I suspect that my partner is with someone else. *
- 1 - strongly agree
- 2 - moderately agree
- 3 - neutral
- 4 - moderately disagree
- 5 - strongly disagree

If my partner ignores me for a while, I sometimes do stupid things to try to get his/her attention back. *
- 1 - strongly agree
- 2 - moderately agree
- 3 - neutral
- 4 - moderately disagree
- 5 - strongly disagree

I would rather suffer myself than let my partner suffer. *
- 1 - strongly agree
- 2 - moderately agree
- 3 - neutral
- 4 - moderately disagree
- 5 - strongly disagree

I cannot be happy unless I place my partner’s happiness before my own. *
- 1 - strongly agree
- 2 - moderately agree
- 3 - neutral
- 4 - moderately disagree
- 5 - strongly disagree
I am usually willing to sacrifice my own wishes to let my partner achieve his/hers.*

- 1 - strongly agree
- 2 - moderately agree
- 3 - neutral
- 4 - moderately disagree
- 5 - strongly disagree

Please answer following questions regarding 'Instant Messaging' habits in a new and developing romantic relationship. If you are not currently in a new relationship, please reflect on a period of time in your life when a new relationship was developing. If you have never been in a relationship, please answer the questions considering patterns you were most likely to adopt.

Do you generally immediately respond to your romantic partner or do you generally delay the response? *

- Immediately
- delay

If no response from your romantic partner, would you keep checking the conversation window to see the last time your romantic partner was online or to see whether your message was read/seen? *

- yes
- no

Your romantic partner receives and reads your message, but doesn't reply to you for longer than expected period of time. What do you generally do in this situation? *

- communicate again
- wait for response

If no reply from your romantic partner, would you reread previous parts of the conversation?*

- yes
- no
Do you consider the length of the message from your romantic partner and adjust your response accordingly? *

- yes
- no

Do you ever hide your online presence from your romantic partner? *

- yes
- no

Your response has been recorded. Thank you for your participation in my research! If you want to find out more about the purpose and conclusions of this study, please do not hesitate to contact me.