



UNIVERSITI PUTRA MALAYSIA

***COMPUTER-MEDIATED COMMUNICATION ATTRIBUTES AND LIFE
SATISFACTION AMONG ADOLESCENTS IN MALAYSIA***

ANG CHIN SIANG

FEM 2014 36



**COMPUTER-MEDIATED COMMUNICATION ATTRIBUTES AND LIFE
SATISFACTION AMONG ADOLESCENTS IN MALAYSIA**

By

ANG CHIN SIANG

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,
in Fulfilment of the Requirements for the Degree of Doctor of Philosophy**

October 2014

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment
of the requirement for the degree of Doctor of Philosophy

**COMPUTER-MEDIATED COMMUNICATION ATTRIBUTES AND LIFE
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October 2014

Chairman : Mansor Bin Abu Talib, PhD

Faculty : Human Ecology

Computer-mediated communication (CMC) can be influential advocates for interpersonal relationship transactions, playing a critical social platform in encouraging adolescents to express emotional freedom and to develop social skills. Despite data indicating that adolescents' involvement in CMC contributes to positive psychological development, the nature and extent of these attributes, and how it relates to life satisfaction remained uncertain. Utilizing Theories of Uses and Gratifications and Self-determination as a major framework, this thesis aimed to: (a) examine a hypothesized model linking CMC attributes (attitude toward online relationship formation, internet habit strength, online communication, online self-disclosure, and psychological need satisfaction in online friendships) to life satisfaction, (b) examine the mediating roles of online communication and online self-disclosure in the links between the attitude toward online relationship formation, internet habit strength, and psychological need satisfaction in online friendships, and (c) examine the moderating roles of age, gender, and loneliness in such hypothesized model.

There were 1572 participants, and the participants were 13-year-old to 18-year-old secondary students who completed a series of validated questionnaires containing self-reports of loneliness, CMC attributes, and life satisfaction. The technique of Structural Equation Modelling (SEM) was applied to investigate the hypothesized model. Results indicated that direct links between attitude toward online relationship formation, internet habit strength, and psychological need satisfaction in online friendships. This study also reported direct links between online communication, online self-disclosure and psychological need satisfaction in online friendships, and also a direct link between psychological need satisfaction in online friendships and life satisfaction.

Bootstrapping procedures further provided evidence that online communication and online self-disclosure emerged as significant partial mediators in the link between

the attitude toward online relationship formation and psychological need satisfaction. In this pattern of links, both mediators were equally strong. Likewise, online communication and online self-disclosure also emerged as significant partial mediators in the link between internet habit strength and psychological need satisfaction. For this pattern of links, both mediators differed significantly in strength. In particular, online communication emerged as a stronger mediator than online self-disclosure.

Multigroup analyses revealed that age, gender, and loneliness acted as significant moderators in the links between CMC attributes and life satisfaction: (a) the positive links between internet habit strength, online self-disclosure, and psychological need satisfaction were observed for younger adolescents only, (b) the positive links between attitude toward online relationship formation and online communication, and between psychological need satisfaction and life satisfaction were stronger for male adolescents than female adolescents, whereas the positive link between internet habit strength and online self-disclosure was observed for female adolescents only, and (c) the positive link between attitude toward online relationship formation and psychological need satisfaction was stronger for the lonely group rather than the non-lonely group. The results highlight the importance of assessing CMC attributes in conjunction with age, gender, and loneliness when studying adolescents' life satisfaction. The study findings suggest that CMC context may serve as a new social milieu for adolescent subjective well-being.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk Ijazah Doktor Falsafah

CIRI-CIRI KOMUNIKASI MELALUI PENGANTARAAN KOMPUTER DAN KEPUASAN HIDUP DALAM KALANGAN REMAJA DI MALAYSIA

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Komunikasi melalui pengantaraan komputer (KMPK) boleh menjadi penyokong yang berpengaruh bagi hubungan interpersonal, berperanan sebagai sebuah jaringan sosial dalam mendorong remaja untuk mengekspresikan kebebasan emosi dan mengembangkan kemahiran sosial. Walaupun data menunjukkan bahawa penglibatan remaja dalam KMPK menyumbang ke arah perkembangan psikologi yang positif, hakikat dan takat sifat-sifat ini, dan bagaimana ciri-ciri ini mempengaruhi kepuasan hidup masih tidak jelas. Menggunakan Teori Kegunaan dan Kepuasan dan Keazaman Diri sebagai rangka utama, tesis ini bertujuan: (a) mengkaji model hipotesis menghubungkan ciri-ciri KMPK (sikap terhadap pembentukan hubungan dalam talian, kekuatan tabiat internet, komunikasi dalam talian, pendedahan sendiri dalam talian, dan kepuasan keperluan psikologi dalam persahabatan dalam talian) terhadap kepuasan hidup, (b) mengkaji peranan komunikasi dalam talian dan pendedahan sendiri dalam talian sebagai pengantara dalam hubungan antara sikap terhadap pembentukan hubungan dalam talian, kekuatan tabiat internet, dan kepuasan keperluan psikologi dalam persahabatan dalam talian, dan (c) mengkaji peranan umur, jantina, dan kesunyian sebagai penyederhana dalam model hipotesis tersebut.

Terdapat 1572 peserta, dan peserta tersebut berusia 13 tahun hingga 18 tahun pelajar sekolah menengah yang telah melengkapkan siri soal selidik disahkan yang mengandungi laporan sendiri mengenai kesunyian, ciri-ciri KMPK, dan kepuasan hidup. Teknik statistik *Structural equation modeling* (SEM) telah digunakan untuk mengkaji model hipotesis tersebut. Hasil menunjukkan hubungan langsung antara sikap terhadap pembentukan hubungan dalam talian, kekuatan tabiat internet, dan kepuasan keperluan psikologi dalam persahabatan dalam talian. Kajian ini juga melaporkan hubungan langsung antara komunikasi dalam talian, pendedahan sendiri dalam talian, dan kepuasan keperluan psikologi dalam persahabatan dalam talian, dan juga hubungan langsung antara kepuasan keperluan psikologi dalam persahabatan dalam talian dan kepuasan hidup.

Prosedur *bootstrapping* seterusnya membuktikan bahawa komunikasi dalam talian dan pendedahan sendiri dalam talian wujud sebagai perantara separa antara sikap terhadap pembentukan hubungan dalam talian dan kepuasan keperluan psikologi. Dalam pola hubungan ini, kedua-dua perantara mempunyai kekuatan setara. Kajian ini juga mendapati komunikasi dalam talian dan pendedahan sendiri dalam talian wujud sebagai perantara separa antara kekuatan tabiat internet dan kepuasan keperluan psikologi. Bagi pola hubungan ini, kedua-dua perantara mempunyai perbezaan signifikan dari segi tahap kekuatan. Khususnya, komunikasi dalam talian wujud sebagai perantara yang lebih kuat daripada pendedahan sendiri dalam talian.

Analisis Berbilang Kumpulan menunjukkan bahawa umur, jantina, dan kesunyian bertindak secara signifikan sebagai penyederhana dalam hubungan antara ciri-ciri KMPK dan kepuasan hidup: (a) hubungan positif antara kekuatan tabiat internet dan pendedahan sendiri dalam talian, dan kepuasan keperluan psikologi diperhatikan dalam kalangan remaja muda sahaja, (b) hubungan positif antara sikap terhadap pembentukan hubungan dalam talian dan komunikasi dalam talian, dan di antara kepuasan keperluan psikologi dan kepuasan hidup adalah lebih kuat bagi remaja lelaki berbanding dengan remaja perempuan, manakala hubungan positif antara kekuatan tabiat internet dan pendedahan sendiri dalam talian diperhatikan dalam kalangan remaja perempuan sahaja, dan (c) hubungan positif antara sikap terhadap pembentukan hubungan dalam talian dan kepuasan keperluan psikologi adalah lebih kuat bagi kumpulan sunyi berbanding dengan kumpulan tidak sunyi. Keputusan menekankan kepentingan menilai ciri-ciri KMPK, bersama faktor umur, jantina, dan kesunyian apabila mengkaji kepuasan hidup remaja. Hasil kajian ini mencadangkan agar konteks KMPK dapat berfungsi sebagai lingkungan sosial baru bagi kesejahteraan subjektif remaja.

ACKNOWLEDGEMENTS

I would like to thank countless people who provided guidance and support to me throughout the development of this research study. This was an exceptionally interesting and rewarding undertaking and my thanks to those who helped make it so are heartfelt. I would particularly like to thank my advisor, Associate Prof. Dr. Mansor Abu Talib for insights, support, and professionalism. I would like to express my appreciation to the dissertation committees: Dr. Tan Jo-Pei and Dr. Siti Nor Yaacob for their continuous advice and guidance to my doctoral study and career development. My appreciation also extends to Dr. Tan Kit-Aun, who provided a lot of constructive comments in the evolution of this dissertation. Thanks also to my love, Ms. Fam Sin Yun and my family members, for their endless support, love, and encouragement. I was also fortunate to be surrounded by a number of colleagues and friends, for being my sounding board and made the process of dissertation writing enjoyable.



I certify that a Thesis Examination Committee has met on 27 October 2014 to conduct the final examination of Ang Chin Siang on his thesis entitled “Computer-Mediated Communication Attributes and Life Satisfaction among Adolescents in Malaysia” in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Doctor of Philosophy.

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LIST OF ABBREVIATIONS

CI	Confidence interval
CMC	Computer-mediated communication
ICQ	Instant messaging computer program
ICT	Information computer technology
IM	Instant Messaging
SDT	Self-determination theory
SEM	Structural Equation Modeling
SMK	Sekolah Menengah Kebangsaan
SNS	Social networking sites
UGT	Uses and gratifications theory

CHAPTER 1

INTRODUCTION

The aim of this chapter is to introduce the conceptualization of the entire research. This chapter begins with the background of the study and the problem statement. The significance of the study and the research objectives are also articulated. This chapter also includes sections presenting the theoretical framework and the conceptual framework to address the relationships of the variables therein. Definition of terms is also discussed to define variables examined in this study. This chapter concludes with an outline of the thesis structure.

1.1 Background of the Study

Life satisfaction reflects an individual's *global* and *subjective evaluations* of his or her quality of life (Diener, 2000). Such positive evaluations are linked to physical and mental health (Gilman & Huebner, 2003; Huebner, Valois, Paxton, & Drane, 2005; Pavot & Diener, 2008; Trzcinski & Holst, 2008), and such negative evaluations are linked to depression, fretfulness, aggressive behaviors, and suicide ideation (Buelga, Musitu, Murgui, & Pons, 2008; Hamdan-Mansour & Marmash, 2007; Huebner & Gilman, 2004; Koivumaa-Honkanen, Kaprio, Honkanen, Viinamaki, & Koskenvuo, 2004; Swami, Chamorro-Premuzic, Sinniah, Maniam, Kannan, Stanistreet, & Furnham 2007).

Psychological need satisfaction has been shown to play a central role in the study of life satisfaction (Deci & Ryan, 2000; 2008). Extant evidence has been found from individualistic (e.g., the United States; Şimşek & Koydemir, 2013, Belgium; Luyckx, *et al.*, 2009) to collectivistic cultures (e.g., South Korea; Jang *et al.*, 2009, Russia; Lynch *et al.*, 2009, and China; Vansteenkiste *et al.*, 2006) from interpersonal (Sheldon & Gunz, 2009) to intra-individual levels (Reis *et al.*, 2000), and from personal (La Guardia & Patrick, 2008) to public domains (Deci, Ryan, Gagné, Leone, Usunov, & Kornazheva, 2001; Leversen, Danielsen, Birkeland, & Samdal, 2012; Lonsdale, Hodge, & Rose, 2009).

As pointed out by Sheldon, Elliot, Kim, and Kasser (2001), psychological needs such as autonomy, competence, and relatedness are the three top highly valued pursuits in a sample of South Korean youths. Specifically, the need for autonomy reflects one's feeling in control of his own behaviors. The need for competence reflects one's sense of mastery through effective social interaction. The need for relatedness reflects one's sense of belonging from one's social contexts. Some researchers further noted these three types of psychological need satisfaction represent one's universal acquisition which is automatically responsive to social context (La Guardia, Ryan, Couchman, & Deci, 2000; Jetten, Haslam, & Haslam, 2011; Vansteenkiste, Niemiec, Soenens, 2010). If one's social context is supportive of meaningful relationships, he or she will experience a heightened sense of psychological need satisfaction.

Computer-Mediated Communication (CMC), a form of communication transaction that occurs through the use of computer networks, has fast become popular a sphere for social interactions and its sphere of penetration continues to grow under the rubrics of ICT development and modernization (Sheldon, Abad, & Hinsch, 2011; Walther, 2011). Indeed, the last few years have seen an exponential growth in the use of CMC among adolescents— as compared to other age groups, adolescents are more inclined to accept computer technology and they represent an active group of Internet communication (Anderson-Butcher, Lasseigne, Ball, Brzozowski, Lehnert, & McCormick, 2010; Mikami, Szvedo, Allen, Evans, & Hare, 2010; Nurullah, 2008).

The expansion of CMC provides attractive platforms for social connection (Baym, 2010) and affords opportunities for need fulfillment (Walther, 2011). In particular, CMC allows individuals to make friends outside their physical social circle (Urista, Dong, & Day, 2009) and to foster social capital (Ellison, Steinfield, & Lampe, 2007). In Sheldon et al.'s (2011) longitudinal study, young active Facebook users reportedly showed higher levels of relatedness, one major type of psychological need satisfaction, as compared to non-Facebook users. Further, Walther (1992) noted that CMC users can easily gain a sense of autonomy following their high levels of self-expression in an anonymous platform. In some extent, CMC offers ample opportunities for its users to channel out their personal views and opinions (McKenna *et al.*, 2002) and to receive verification for their own feelings, thoughts, and actions without a feeling of humiliation or criticism (Livingstone, 2008). CMC may also provide a platform for its young users to learn communication skills (Notley (2008) and to gain social competency (Suler, 2003; Valkenburg & Peter, 2008). Thus, the present study examines the role of psychological need satisfaction in online friendships in the prediction of life satisfaction

This study also focuses on two media orientations. One is attitude toward online relationship formation, the other being Internet habit strength. Firstly, attitude toward online relationship formation, as first described by Attrill and Jalil, (2011), refers to the extent of one's favorability to form a relationship with other users via CMC. Existing studies reported positive associations between attitude toward CMC and satisfaction. In Lenhart *et al.*' (2010) study, the author reported that online activities are of personal choice and could be driven by intrinsic motivation such as attitude toward CMC. Likewise, Luo (2002) documented that e-satisfaction was largely predicted by positive attitude toward the web. A recent study by Ledbetter, Mazer *et al.* (2011) reported that positive attitudes toward online networks significantly predicted need satisfaction and relational closeness.

Secondly, Internet habit strength represents a form of automaticity or ritualistic manner in internet consumption (LaRose & Eastin, 2004; Wohn, 2012) and is predictive of psychological need satisfaction. Inevitably, internet represents an essential part of our daily activities and its use is habitual and routine (Horriagan, 2008; Lenhart, Madden, & Hitlin, 2005). To this end, several scholars noted that internet-based technologies could elicit cognitive, social, and effective gratifications (Rubin, 2002; West & Turner, 2009). In Limayem *et al.*'s (2007) and Oulasvirta *et al.*'s (2012) study, habitual experiences of repetitive internet use were significantly predicted psychological need satisfaction.

Online communication quantifies one's frequency and duration of contact with his or her online counterparts (Bonetti, Campbell, & Gilmore, 2010) and is another determinant of psychological need fulfillment. In one study, Ryan *et al.* (2006) reported that time spent on online games could provide a supplementary way to achieve psychological need satisfaction. Likewise, Valkenburg and Peter's (2007) reported a positive link between the amount of online communication and level of closeness pertaining to friendships. Using a sample of 626 students aged between 10 to 16 years, Bonetti *et al.* (2010) found that time spent for online communication is useful for identity exploration, social interactions, and self-disclosure. Taken together, it is apparent that online communication could exert its positive effects on the achievement of psychological needs in online friendships.

Online self-disclosure represents one's deliberate intention to reveal himself or herself in pursuit of trust and intimacy through the Internet (Schouten, Valkenburg, & Peter, 2007). CMC provides a secure environment, hence, young users prefer online disclosure over face-to-face communication (Gibbs, Ellison, & Heino, 2006; Mazer, Murphy, & Simonds, 2007; Walther, 2011). For example, in a longitudinal study by McKenna *et al.* (2002), online self-disclosure predicted close, stable, and meaningful relationships after 2 years. It is possible that personal information sharing through a potential virtual relationship may satisfy one's longing for emotional needs (Barak & Gluck-Ofri, 2007; Park *et al.*, 2011).

In addition, this study also examined the mediating role of online communication and online self-disclosure in the links between attitude toward online relationship formation and psychological need satisfaction in online friendships. The premise was supported by research studies postulating that if users have positive attitude toward online relationship formation, their psychological need satisfaction could be achieved through their time spent in cyberspace and their sharing of personal and emotional thoughts (Attrill & Jalil, 2011; Bonetti *et al.*, 2010; Ellison *et al.*, 2007; McKenna *et al.*, 2002; Valkenburg & Peter, 2007).

The links between Internet habit strength and psychological need satisfaction in online friendships also proposed would be mediated by online communication and online self-disclosure. The premise is again based on existing research showing that habitual experiences serve as a precursor of online behavior (e.g., LaRose & Eastin, 2004; Verplanken & Aarts, 1999). Such daily repetitive online behaviors could be reinforced through time devoted for communication and self-disclosure (Oulasvirta *et al.*, 2012; Schouten *et al.*, 2007; Wohn, 2012). In turn, accomplishment of psychological need satisfaction on cyberspace could be met (Baym, 2010).

Despite the direct and indirect links between CMC attributes and life satisfaction, there is evidence to support that age, gender, and loneliness could be moderators in the CMC attributes-life satisfaction linkages. Research findings exploring the impact of age and gender, on CMC use and life satisfaction, yielded mixed results (Attrill & Jalil, 2011; Barak & Gluck-Ofri, 2007; Schouten *et al.*, 2007; Wolak, Mitchell, & Finkelhor, 2003). Some evidences also shed light that the links between CMC attributes and life satisfaction could be moderated by loneliness. In some studies, lonely individuals reported greater tendency to online socializing than non-lonely (Bardi & Brady, 2010; Morahan-Martin & Schumacher, 2003). In other studies,

similar patterns of findings emerged in both non-lonely and lonely sample (Ebeling-Witte, Frank, & Lester, 2007; McKenna *et al.*, 2002).

Taken together, the nature of adolescent social interaction patterns in the twenty-first century is dramatically changed (Ahn, 2012; Allen, Evans, Hare, & Mikami, 2010; Baran & Davis, 2011). Subrahmanyam and Smahel (2011) inquired whether adolescents benefit psychologically within the online context. The present study examines a hypothesized model: online communication and online self-disclosure as mediators and age, gender, and loneliness as moderators in the CMC attributes and life satisfaction linkages in a sample of school-going adolescents.

1.2 Problem Statement

Despite numerous studies investigating adult life satisfaction, few studies have been examined adolescent life satisfaction (Gilman & Huebner, 2006; Huebner & Gilman, 2004). As children grow into adolescents, friendship is thought to be of greater importance, playing an indispensable role in enhancing adolescent life satisfaction (Allen *et al.*, 2010; Coleman, 2010; Gilman & Huebner, 2006; Oberle, Schonert-Reichl, & Zumbo, 2011). However, the study of adolescent life satisfaction has been limited to face-to-face friendships (Gilman & Huebner, 2003; 2006; Pavot & Diener, 2008). There is relatively limited evidence documenting the associations between computer mediated-friendships and life satisfaction (Subrahmanyam & Greenfield, 2008).

On the global scale, the estimated number of internet users has reached 6,930,055,154 in year 2011 (Internet World Stats, 2011, March 31) and 44% comprised Asians. In Malaysia, its popularity has made quantum leaps over the past 10 years. In 2000, close to 3.7 million or 15% out of a population of 24 million subscribed to the Internet; as of 2005, it increased to 10 million (37.9% of the population). The internet penetration rate was 60.7%, with majority users aged 12 to 17 (Internet World Stats, 2012). Nowadays, in addition to serving as a main vehicle for commercial and information seeking, the Internet has become a powerful medium of communication (Chou & Peng, 2007; Nurullah, 2008; Phulari, Khamitkar, Deshmukh, Bhalchandra, Lokhande, & Shinde, 2010).

The unprecedented popularity of CMC has consequently fuelled a growing academic concern with respect to its consequences (Whitty, 2008). While research has found that there are potential positive consequences, most of the available studies seem to adopt a negative, or even dystopian perspective, focusing on the adverse effects of CMC use (Chou & Peng, 2007; Engelberg & Sjoberg, 2004; Morahan-Martin, 2008; Ybarra, Mitchell, Wolak, Finkelhor, 2006). This left the positive impact of the CMC attributes on adolescent life satisfaction open to speculation.

Even if critics held the diffusion of CMC, recent years have witnessed that the young users are, nevertheless, not declining, but sharply rising worldwide (Lenhart *et al.*, 2010). As posited by Ryan (1995), it may be that CMC can potentially provide some pleasure or psychological benefits for its users. Indeed, many adolescents enjoy making online friends and they regarded such online relationships as real, deep, and meaningful (Bargh & McKenna, 2004; Leung, 2011; McKenna *et al.*, 2002). Given

CMC has risen to a place of supreme prominence in the lives of teens, this has led to an interest in investigating adolescent life satisfaction from the lens of CMC attributes since CMC, similar to the physical context, could be a place that fosters friendships.

In addition, the current study aims to address two research gaps by examining the associations between CMC attributes and adolescent life satisfaction. First, while the effects of media orientations have been widely demonstrated, the theoretical mechanisms underlying those effects are less clear (Metzger & Flanagin, 2002; Wang *et al.*, 2011). Research has highlighted that media orientations serve as significant correlates of media behaviors. However, most studies have generally looked at the direct relationships between media orientations and online gratification outcomes (Subrahmanyam & Smahel, 2011), but have ignored the possible mediating influence of online communicative behaviors. Therefore, the precise mechanisms that account for online communication and online self-disclosure remain to be delineated.

Second, associations between CMC attributes and life satisfaction are not limited in mediation model. It is plausible that such a mediational model could be moderated by age, gender, and loneliness. The existing literature suggests that age and gender are important moderators in the developmental psychology and both seem to be basic moderators that should be tested on a regular basis (MacDonald, Kreutz, & Mitchell, 2012). Although there is persistent interest in age- and gender differences in the links between CMC attributes and life satisfaction, the results are not generally robust (Baym, 2010). Thus, the moderating analyses for age and gender differences are viewed as an exploratory nature given the lack of clear trends in the existing literature. Furthermore, loneliness may be important in CMC attributes-life satisfaction linkages. Loneliness was found to be associated with keenness to use CMC (Bardi & Brady, 2010). It seems plausible that loneliness may act as moderators that enhance the positive effects of CMC use on adolescent life satisfaction. Consistent with these arguments, several research questions are proposed:

1. What are the effects of CMC attributes (attitude toward online relationship formation, internet habit strength, online communication, online self-disclosure, and psychological needs satisfaction in online friendships) on life satisfaction among Malaysian adolescents?
2. Whether online communication and online self-disclosure mediate the links between attitude toward online relationship formation, internet habit strength and psychological need satisfaction in online friendships among Malaysian adolescents?
3. Whether the hypothesized model linking CMC attributes to life satisfaction is moderated by age, gender, and loneliness?

1.3 Research Objectives

General Objective

In response to the research question, the main objective of this study is to examine a hypothesized model that links the relations between CMC attributes and life satisfaction among Malaysian adolescents.

Specific Objectives

1. To examine a hypothesized model linking CMC attributes (attitude toward online relationship formation, internet habit strength, online communication, online self-disclosure, and psychological need satisfaction in online friendships) to life satisfaction among Malaysian adolescents.
2. To examine whether online communication and online self-disclosure mediate the links between attitude toward online relationship formation, internet habit strength, and psychological need satisfaction in online friendships among Malaysian adolescents.
3. To examine whether the hypothesized model linking CMC attributes to life satisfaction is moderated by age, gender, and loneliness.

1.4 Significance of the Study

This study seeks to gain an understanding of how CMC attributes matter to adolescent life satisfaction. In fact, most of the well-being research has looked almost exclusively at the factors in the physical domain (Milyavskaya & Koestner, 2011; Sheldon & Gunz, 2009; Veronneau, Koestner, & Abela, 2005). As suggested by Greenfield and Yan (2006), it is important for developmental psychologists to study adolescents' development and well-being in the virtual context when the Internet gets diffused into younger lives. In popular discourse, advocate of CMC has become a major part of the youth culture. While some scholars have only recently recognized CMC as a fulfilling and rewarding context (Sheldon *et al.*, 2011; Valkenburg & Peter, 2009), much doubt surrounds the values of CMC on life satisfaction (Akin, 2012; Engelberg & Sjöberg, 2004; Morahan-Martin, 2008; Widianto & McMurrin, 2004). The over-focus on the negative aspects of CMC makes its potential benefit less-realized. This research should add to the limited literature on the subject of adolescents' online socializing and well-being.

From a developmental perspective, friendships play more of a major role during adolescence than other developmental trajectories (Adams, Santo, & Bukowski, 2011; Allen *et al.*, 2010; Mendelson & Aboud, 1999; Valkenburg, Sumter, & Pete, 2011). When parent-child conflicts increase in this phase of life, friendship is considered to be an instrumental part of the adolescent's socializing system (MacEvoy *et al.*, 2011). Having reliable, trustworthy, and supporting friends are clearly important to provide a sense of companionship and intimacy (Stanton-Salazar & Spina, 2005), develop a sense of self and relationship skills, and greatly enhance in well-being (Cheng & Furnham, 2002). In light of the advent of widespread electronic communication, socializing online on the move has become a staple of modern life. With the best-known including MySpace and Facebook, accessibility to computer-mediated relationships is becoming common (Chou & Peng, 2007;

Morahan-Martin, 2008). As a result, many young people consider friendships through the Internet (Lenhart & Maden, 2007; Lenhart, Purcell, Smith, & Zickuhr, 2010; Lenhart *et al.*, 2005). While friendship has received a great deal of attention in the developmental literature, efforts to study friendships that originated from online interaction have been relatively rare. This research gap can be filled by examining the linkages between CMC attributes and life satisfaction in the context of online friendships.

Moreover, family professionals and parents alike have recognized that the high prevalence of social media has become one of the central concerns. The particular concern is that children's interactions with strangers whom they do not have prior relationships in an offline context (Aftab, 2000; Subrahmanyam & Greenfield, 2008). Therefore, parental rejection is a common reaction to CMC (Anderson-Butcher *et al.*, 2010). Such disagreement is commonly the basis of conflict within a family. Thus, the importance of this study relies on the usefulness of its expected outcome. This would expectedly give parents the insight and practical information to closely attune children's attraction to virtual context.

In the push for Malaysia's Vision 2020, considerable progress has been made by the government in encouraging citizens to utilize Information and Communication Technologies (ICTs) in almost all forms of life possible (Mustapha & Abdullah, 2004). For example, Ministry of Science, Technology, and Innovations have enacted the Communications and Multimedia Act 1998 and launched the OneMalaysia Notebook scheme to promote information-based society (Normah, Faridah, Wan Amizah, Fuaziah, Chang, & Maizatul, 2011). Ministry of Youth and Sports also launched Rakan Cyber (Cyber Friend) as an outreach program designed to encourage younger population to be closed to ICTs (Normah *et al.*, 2011). The increased diffusion of ICTs opens up a wide range of online socializing practices. Therefore, this study provides useful insight and informing policy with the purpose of improving the life of adolescents.

And importantly, the hypothesized model exemplifies the psychological process of CMC attributes to adolescents' life satisfaction intensifies the significance of this study. To the best knowledge, this is the first scholarly attempt to combine multiple variables that have otherwise been studied as independently underlying theories of uses and gratifications and self-determination. A model is accordingly proposed and tested using SEM. Such research will serve as a future reference for researchers when CMC continues to evolve and diffuse further into society. In addition, research with predominantly Caucasian samples leads to a paucity of published research in developing countries, particularly in Malaysia. This study could close the perceived gap in the existing literature by conducting an empirical investigation in Malaysia.

1.5 Theoretical Framework

The study of interconnection between CMC attributes and life satisfaction draws upon the theories of uses and gratifications (UGT; Katz, Blumler, & Gurevitch, 1974) and Self-Determination Theory (SDT; Deci & Ryan, 2000; 2008). Developed in 1930, UGT, the most dominant theory in media research, was applied to understand why do people use media and what do they use them for. Historically

speaking, UGT has been used extensively in a variety of early mass media such as radio (Herzog, 1944), television (Rubin, 1983; 1984), printed materials (Lichtenstein & Rosenfeld, 1983), and telephone (Dimmick, Kline, & Stafford, 2000). In subsequent decades, researchers have turned attention to tests its suitability in home computers (Perse & Dunn, 1998), the Internet (LaRose, Lin, & Eastin, 2003; Papacharissi & Rubin, 2000), electronic bulletin boards (James, Wotring, & Forrest, 1995), ICQ (Leung, 2001; 2002), video games (Ryan, Rigby, & Przybski, 2006), personal home pages (Papacharissi, 2002), and social networking sites (Sheldon *et al.*, 2011).

According to UGT, media use is one's goal-directed, purposive, and motivated actions in pursuit of needs and wants (Katz *et al.*, 1974; Baran & Davis, 2011). However, Rubin (2002) argued that users may not always be mindful in their media use, but sometimes habitual. Rubin (2002) therefore classified media orientation into two types: (a) instrumental orientation, one's intention to use media for goal-directed motives, such as relationship formation (henceforth referred to *attitude toward online relationship formation*) and (b) ritualized orientation (henceforth referred to *Internet habit strength*), one's nonselective decision to use media for diversionary motives, such as using a media more out of habit or for passing time. Rubin (2002) also noted that these two media orientations could play a role in promoting media behaviors such as online communication and online self-disclosure and gratification outcomes from using the media.

Uses and gratifications theory per se is not sufficient to provide a full understanding of one's uses and gratifications stemming from his or her media use (Ko *et al.*, 2005). Deci and Ryan's (1985) self-determination theory (SDT) lends further support to the premise that psychological need satisfaction could be replicated in virtual context (Ryan *et al.*, 2006). According to Deci and Ryan (1985; 2000; 2002; 2008), there are three types of psychological need satisfaction: (a) autonomy, the need to act freely in favor of one's own volition, will or choice, (b) competence, the need to perform successful social interactions with skills and ability, and (c) relatedness, the need to establish positive emotional attachment with others. SDT proponents noted these three types of psychological need satisfaction represent one's universal acquisition which is automatically responsive to social context (Jang *et al.*, 2009; Lynch *et al.*, 2009; Vansteenkiste *et al.*, 2006). If one's social context is supportive of meaningful relationships, he or she will experience a heightened sense of psychological need satisfaction.

Psychological need satisfaction could be fostered through social interactions and relationships. A number of studies have indicated that adolescents are bound to make new friends online (Allen *et al.*, 2010; Baran & Davis, 2011). Analogous to face-to-face encounters, CMC plays an equally important role in forming relationships (henceforth referred to *online friendships*) resulting from its meaningful conversations among users in cyber context (Ellison *et al.*, 2007; McKenna *et al.*, 2002; Sheldon *et al.*, 2011; Urista *et al.*, 2009). It appears that online friendship could hold implications for adolescent psychological need satisfaction. From the perspective of SDT, satisfaction of psychological needs is predictive of life satisfaction (Deci & Ryan, 1985; 2002; 2008). Thus, in the present study, the role of psychological need satisfaction in online friendships in the prediction of life satisfaction was examined with an UGT-SDT-based model.

Further, and importantly, both theories theorize individual difference antecedents and conditions of social environment (i.e., loneliness) can affect the magnitude or direction of the theoretical linkages (Deci & Ryan, 1985; Rubin, 2002). For instance, Maner, DeWall, Baumeister, and Schaller (2007) argued that social deficits can disturb the organism's quiescence and push the organism to behave in ways of expressing greater interest in making new friends, showing an increased desire to work with others, forming more positive impressions of novel social targets, and relational dependence on new interaction partners. A study by Gardner, Pickett, Jefferis, and Knowles (2005) also confirmed that people were explicitly seeking out social monitoring (i.e., sensitivity to social cues and opportunities) when lonely.

Accordingly, a proposed theoretical model of the effect of CMC-related aspects on well-being is presented in Figure 1, with conjunction of the moderating effects of individual differences and conditions of social environment. The decision of merging theories provides a better explanation regarding the relationships of study variables than either theory does separately. It is believed that these two theories are compatible and complement each other in this study.

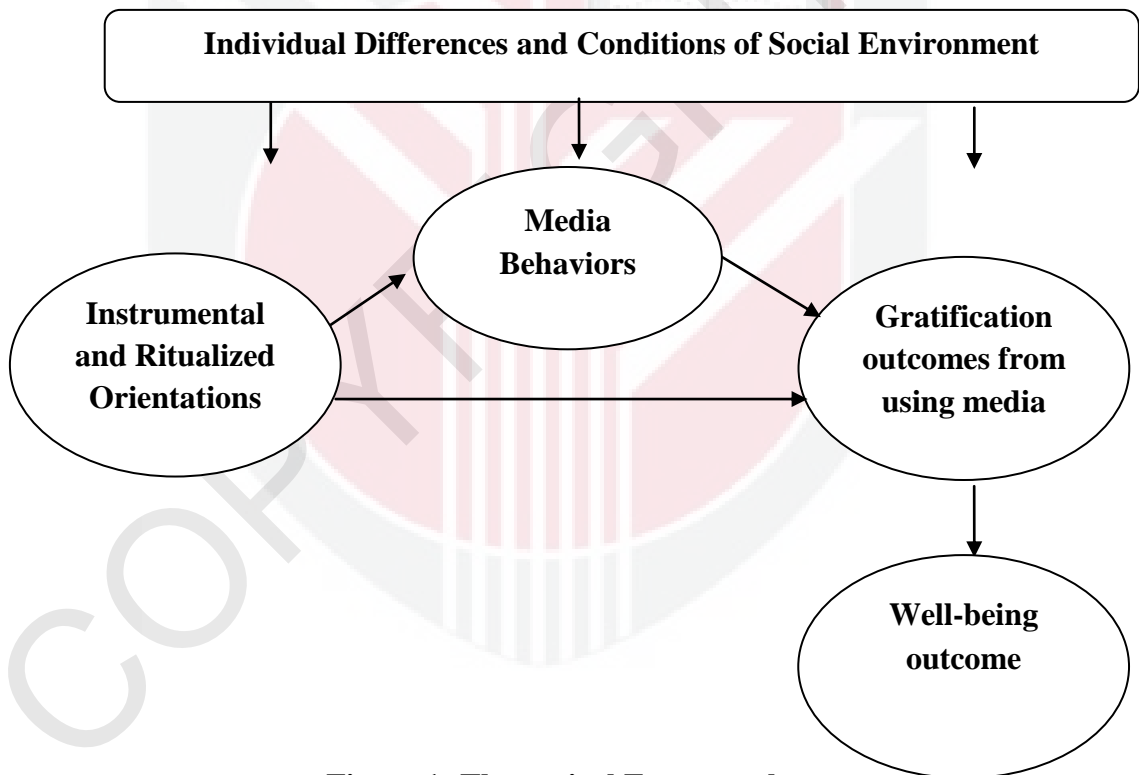


Figure 1: Theoretical Framework

1.6 Conceptual Framework

Drawing from the theories, this study proposes a conceptual framework linking CMC attributes to adolescent life satisfaction (see Figure 2). The proposed framework suggests that both attitude toward online relationship formation and internet habit strength directly influence psychological need satisfaction in online friendships, and indirectly influence psychological need satisfaction in online friendships via online communication and online self-disclosure, which consequently influence adolescent life satisfaction. In addition, age, gender, and loneliness are proposed to moderate the links between study variables. Supporting prior empirical findings are presented in Chapter 2.

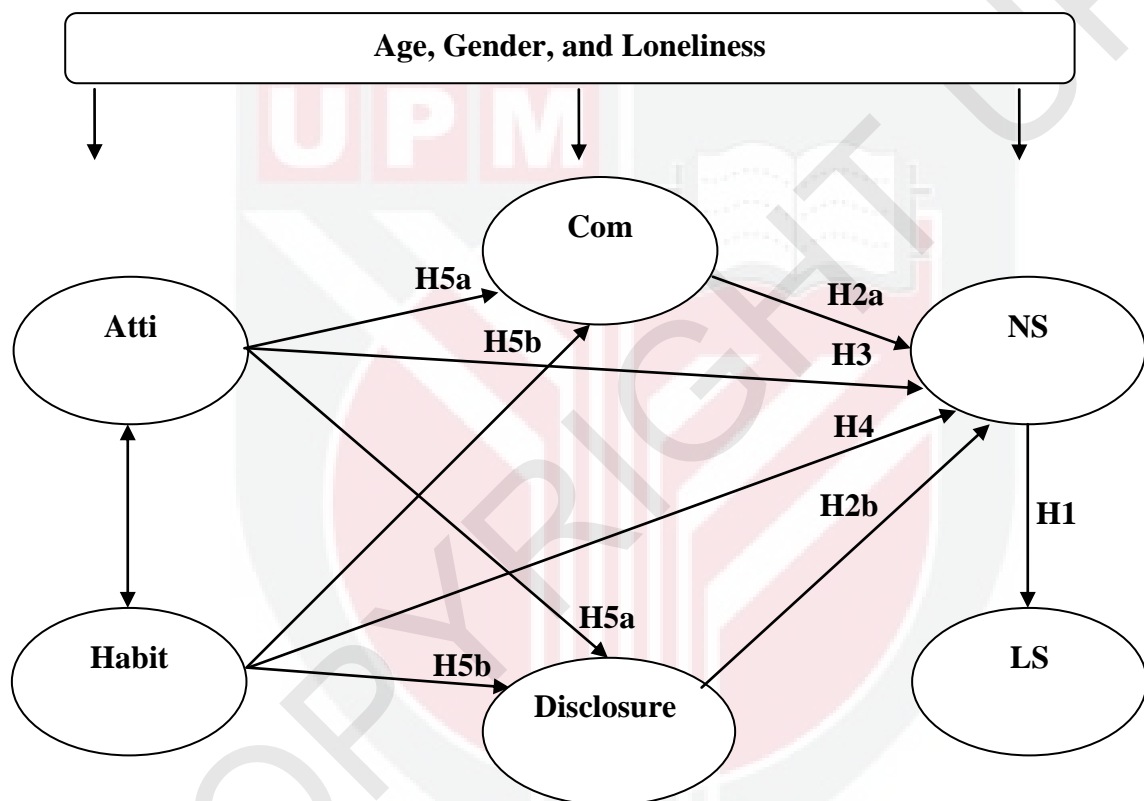


Figure 2: Conceptual Framework

Note. Atti = Attitude toward online relationship formation, Habit = Internet habit strength, Com = Online communication, Disclosure = Online self-disclosure, NS = Psychological need satisfaction, and LS = Life satisfaction.

1.7 Definitions of Terms

Demographic Characteristics

Conceptual definition: Demographic characteristics are one's set of attributes and properties to reflect his or her description (Christenson, Rounds, & Gorney, 1992).

Operational definition: Demographic characteristics in this study refer to the respondent's age, gender, and ethnicity, and their family information (i.e., number of siblings, family size, family monthly income, family structure, and levels of parents' education completed). Age, number of sibling, family size, and family monthly income are continuous variables, and the remaining items are categorical variables.

Channels Used

Conceptual definition: The channels used are defined as the communication modes of online users to perform socializing practices (Nurullah, 2008).

Operational definition: Channels used in this study refer to the platforms/virtual spaces (i.e., instant messenger, social networking sites, twitter, email, forum, and online gaming sites) that respondents are currently using or mostly using to communicate with others online.

Loneliness

Conceptual definition: Loneliness is defined as an unpleasant state in which individuals perceive feelings of deprivation in relation to others, either quantitatively or qualitatively (Ernst & Cacioppo, 1999).

Operational definition: In this study, loneliness refers to the construct measuring the degree to which a respondent feels dissatisfied with their interpersonal relationship. It is measured by University of California Los Angeles Loneliness Scale (UCLA Loneliness 3) (Russell, 1996), with higher scores reflecting greater loneliness.

Attitude toward Online Relationship Formation

Conceptual definition: Attitude toward online relationship formation is defined as an expression of favor or disfavor toward virtual interactions (Attrill & Jalil, 2011).

Operational definition: In this study, attitude toward online relationship formation refers to the degree to which a respondent feels like or dislike toward interactions between two more individuals via an online medium. It is measured by Attitude toward Online Relationship Formation Scale (Attrill & Jalil, 2011), with higher scores reflecting more positive attitudes.

Internet Habit Strength

Conceptual definition: Internet habit strength is defined as an automatic behavior in Internet use that is triggered by an environmental stimulus and performed without conscious motivation (Aarts & Dijksterhuis, 2000).

Operational definition: In this study, Internet habit strength refers to the extent to which a respondent's habitually uses the Internet. It is measured by Habit Strength

Scale (LaRose & Eastin, 2004), with higher scores reflecting stronger habitual activity.

Online Communication

Conceptual definition: Online communication is defined as a pathway or mechanism for individuals to meet someone via computers, where the first contact normally takes place on the net (Döring, 2002).

Operational definition: In this study, online communication refers to the frequency and duration to which a respondent uses the networked computer to interact with online friends (i.e., someone they do not know in offline contexts and their relationship initiation began on the Internet). It is measured by Online Communication Questionnaire (Bonetti *et al.*, 2010), with high scores reflecting higher usage of online communication.

Online Self-Disclosure

Conceptual definition: Online self-disclosure is defined as online communication about personal topics that are typically not easily disclosed, such as one's feelings, worries, and vulnerabilities (Valkenburg & Peter, 2009).

Operational definition: In this study, online self-disclosure refers to the degree to which a respondent is willing to disclose personal topics to online others. It is measured by Online Intimate Self-Disclosure Scale (Schouten *et al.*, 2007), with higher scores indicating greater levels of self-disclosure.

Psychological Need Satisfaction

Conceptual definition: Psychological need satisfaction is defined as essential conditions for personal thriving in autonomy, competence, and relatedness within a context that nourishes growth, integrity, and well-being (Deci & Ryan, 2002).

Operational definition: In this study, psychological need satisfaction refers to the degree to which a respondent satisfies needs of autonomy, competence, and relatedness when they are with their online friends. It is measured by Need Satisfaction in Relationship Scale (La Guardia *et al.*, 2000), with higher scores indicating greater levels of psychological need satisfaction obtained from online friendships.

Life Satisfaction

Conceptual definition: Life satisfaction is defined as an individual's global assessment of the quality of his or her life according to personal standards (Diener, 2000).

Operational definition: Life satisfaction in this study refers to the construct measuring the degree to which a respondent feels satisfaction with their life in general. It is measured by Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985), with higher score indicating greater levels of life satisfaction.

1.8 Organization of Thesis

This thesis is organized into five chapters. Chapter 1 introduces the overall research direction. Chapter 2 continues from Chapter 1 to explain all the study variables in detail to support the study undertaken in this thesis. This chapter is dedicated to literature review and contains a review of existing studies on related topics. Chapter 3 presents the research methodology to generate the data in this study. This includes the following subtopics: research design, population and sample selection, measures, data collection procedure, pilot study, and statistical analyses. In Chapter 4, the results and discussions of the study are reported. This includes measurement assessment of confirmatory factor analysis and tests for structural hypotheses. The final chapter of this thesis includes a summary of the present findings. Other than this, implications, limitations, and suggestions for future research will be covered.



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