

Excessive Smartphone Usage among Early Adolescents: Impact on Social Competence

Syed Ahmad Muhajir Alhaddad Syed Esa¹
Nurul Hudani Md Nawi
Agnis Sombuling

*Faculty of Education and Psychology
Universiti Malaysia Sabah*

¹Corresponding author: samhaddad91@gmail.com

The benefit mobile technology brings is not limited to learning and entertainment but it also modifies human aspect of social communication. Despite the high number of previous research available concerning smartphones, there is still a gap of research that needs to be addressed such as its effect towards social competence. As the social system becomes complex, communication technology evolves to ensure the social needs are accomplished. For this study, 236 students aged between 13-14 years old were recruited and given a set of questionnaire which comprised Mobile Phone Problem Use Scale, Social Competence Scale for Teenagers and Self Scoring Self-Control Scale. In this study, the researcher attempted to examine the effect of excessive smartphone usage on social competence with self-control as mediator. Regression analysis was used to estimate the effect between the variables. The result indicates that there is negative relationship between excessive smartphone usage and social competence. However, when self-control is tested in the model as a mediator, excessive smartphones usage was not prevalent to predict social competence. This concludes to the apparent role of self-control as a mediator. The implication of study has contributed to the practical importance and methodological aspect of studies involving social competence and self-control.

Keywords: smartphone usage, social competence, self-control

The advent of technological advancement has led to the development of communication without boundaries as demonstrated through the invention of mobile technology devices such as smartphones, tablet PC and iPad. Information can be retrieved, circulated and shared with anyone at any time and space with just matter of a click away. This leads to what is known today as the Information Age or digital age where vast knowledge or information is made available for mankind to grasp and utilize according to their own needs (Ruben, 1985). Based on the data obtained from Malaysian Communications and Multimedia Commission (2017), there were 42.3 million mobile phone

subscriptions in Malaysia as compared to in 2005 with only 16.2 million mobile subscriptions. The survey has confirmed that over the past 10 years, the ownerships of handheld device like mobile phone alone has increased by more than 200%. Concerns were also raised among parents on the issues of social and health that are affected by mobile phone usage (Genc, 2014). The innovation of communication technology such as smartphone not only influences the way people communicate but also modifies their social behaviours (Ploderer, Reitberger, Oinas-Kukkonen, & van Gemert-Pijnen, 2014).

Facilitating social communication has also been made easier with mobile phone

given its nature of encouraging social interactivity by providing the user with privacy or sense of individuality, context sensitivity and also portability since it can be carried and moved around easily as compared to earlier form of communication technology such as the land line phones (Klopfer, Squire, & Jenkins, 2002). It is also crucial to understand that social communication is essential for early adolescents as it plays very important role for them to get connected with their peers. Communication nowadays no longer involves face to face interaction but goes beyond physical proximity as demonstrated through the usage of social media like Facebook or smartphone app (Whatsapp and SMS).

There is also a concern regarding the users of smartphones among children that are entrusted by their parents with the impression that they are able to exert good self-control over their own social behaviours. However, that might not be true for all as mobile technological users particularly early adolescents who are often described as "turbulent and stressful" (Windle, Brener, Cuccaro, Dittus, Kanouse & Murray et al., 2010) and prone to having unstable relationship with others. As a result, children may have difficulties in adjusting themselves socially in the real world given that most of their social experience in communicating with others are gained via mobile technology environment. This is due to fact that social construct made from real life interaction requires the child to communicate face to face with others and read their facial expression to understand the context better unlike social interaction via smartphone where there is no clear distinction of how someone feel.

Therefore, children for the better or worst tend to spend most of their time interacting with either peers or sometimes even strangers via mobile technology.

This is further supported by the fact that when people will listen and interact without criticizing, the young adolescents tend to be comfortable when communicating online. Furthermore, in some cases, early adolescents are most likely to be under the influence of their developmental phase where 'hormonal surge' can result in unpredictable mood swings leading them to behave in aggressive or inappropriately (Fenwick, 1987).

In addition, social development in early adolescence is partly depending on both physical and cognitive maturation. These trigger them to depend on others, understand and personalize with gender and cultural norms, and develop more mature social relationships with adults other than their own parents (Urduan & Klein, 1998). For that reason, the researcher attempted to investigate on the effect of excessive smartphones usage on social competence. The research also attempted to assess whether self-control can play a mediator effect in the model.

Literature Review

Mobile Technology and Smartphone Usage in Malaysia

The nature of mobile technology that distinguishes it from other form of technology is its characteristics of being both portable and offer immediate access to information (Dearnley et al., 2009). Sharing information and sending short messages (SMS) through smartphones are becoming the integral part of student's lives. It has changed the main basic communication mode such as land lines, reaching even remote areas and poor countries (Ismail & Idrus, 2008). In short, smartphones technology has taken its place as the central part of human life regardless of age and physical distance. It has transformed and redefined human social system from not just 'want' but a 'need' as

society continues to adapt the technology in their lives.

In addition, children nowadays can also be found interacting with mobile technology even before they learn how to talk or even walk. Bear this in mind that the researcher is not implying mobile technology should not be allowed to be used by children. The crucial factor lies within the implications on the future social development. Based on the survey conducted by Malaysian Communication and Multimedia Commission (2017), most of the children obtained their hand phones at the age of 12 while the youngest among the participant was a 5 years old child. Moreover, more than 70% of the parents reported to have concerns about what their children are viewing through their hand phones. The concerns regarding mobile phones usage are not limited to only the contents but also its possible impact on social skills, social interactions and identifications (Morrill, 2009). This has also been further explained by the theory of Uses and Gratifications where several assumptions about how and what ways of people's behaviour in relation to mobile technology which are sociability, entertainment, psychological reassurance, mobility and also immediate access (Leung & Wei, 2000). It is still unclear to the extent of how mobile usage has impacted the early adolescents' life and behaviour.

The significant of mobile phone in the lives of adolescents can be understood by looking at the developmental tasks that adolescents face (Ling, 2001, 2004). During the adolescent phase, children are going through the process of autonomy acquisition, identity formation and relationship organization with their families and peers. Mobile technology provides the learning environment that allows early adolescents to communicate and learn from each other. In other words, mobile phone is not just a tool but an

important asset that link children with their peers and the outside world. It helps them going through the difficulties they are facing by equipping them with what they believe the key to channel their unexpressed emotions which can be deemed unacceptable in real world such as frustration and anger. This may indirectly shape their social behaviour to further increase their smartphones usage and lower the rate of meaningful face to face interaction between family members.

Social Competence

Social competence is understood by looking at it as a set of abilities needed to behave constructively in groups and get along with others (Rose-Krasnor, 1997; Smith & Hart, 2004) including children's adequacy, effectiveness and success in interactions with their peers (Cillessen & Bellmore, 2011; Fabes, Gaertner, & Popp, 2008; Rydell, Hagekull, & Bohlin, 1997). Due to its complexity of broad definitions, there is no consensus among experts on how social competence is measured. For instance, Gresham (1986) has identified three sub domains of social competence. The first one is called adaptive behaviour which represents the extent a person has achieved independent and responsible behaviour. Secondly, the social domain which signifies the individual's ability has to interact with others by eliciting positive responses and avoiding negative ones. Lastly, peer acceptance denotes the peer relations, namely the degree to which a person is accepted or rejected by others. In short, social competence is a psychological multi-dimensional construct consisting of many social behaviours that cannot be accessed directly as a construct per se. This can be achieved by assessing every available trait related to the construct of social competence as defined by the scholars regardless of differences in views.

Many past researches have proven that social competence is a foundation for

various positive outcomes, including social well-being, sexual responsibility, self-esteem, friendship quality, work competence and acceptance by peers (Collins & van Dulmen, 2006; Engels, Finkenauer, Meeus, & Deković, 2001; Liang, Tracy, Kenny, & Brogan, 2008; Mpofo, 1997). Positive interactions with peers in children will enhance support, acceptance and nurture. Participating in socially competent interactions can also teach essential skills such as sharing and helping which allow facilitation of later school success and motivation toward academics and achievement (Hampton & Fantuzzo, 2003). Therefore, it is apparent that social competence is an important predictor for children's current and future development in determining their relationship with others.

As for social competence in adolescents, psychiatrist Harry Stack Sullivan mentioned that adolescents who are unable to make a place for themselves in the peer group are likely to develop feelings of inferiority and suffer from psychological distress (Bédard, Bouffard, & Pansu, 2014). Past research by Juvonen and Weiner (1993) also shows that, adolescents are highly concerned with the perception of their peers, with fitting in, and establishing their social identity. Thus, having low social competence can be fatal for children as they need to maintain their connectivity with others as part of the basic needs of an individual for socializing. Children with low social competence are likely to be isolated outside their own small network of friends as they are unable to establish a new one due to the lack of required social skills necessary in approaching others.

Therefore, it can be concluded that social competence is the root for a range of favourable developmental outcomes such as social well-being, self-esteem, friendship quality, sexual responsibility, acceptance by peers, and work competence

(Underwood & Rosen, 2013). In relation with the current study, Moilanen, Shaw and Fitzpatrick (2010) explained that adolescents must deal with drastic changes involving physical, socio-emotional and cognitive changes where they are expected to reflect adult-like behaviour such as making important decision that can strain teenagers' self-regulatory skills and carry significant impact. Thus, in this study the researcher attempted to reveal the extent of causal relationships between adolescents' mobile technology usage and social competence that was presumed to be affected by the difficulties they are facing.

Self-Control

Bandy and Moore (2010) defined self-control as the capability to regulate or manage emotion and behaviour, restrain negative responses, and delay gratification in ways considered socially acceptable or appropriate in a given situation. It involves efficient regulation of thoughts, feelings and behaviours that have been widely examined in many psychological disciplines such as clinical, developmental, social, personality, criminology, and health psychology where each of them have developed substantial knowledge bases regarding the nature and implications of self-control in these areas (e.g., see Vohs & Baumeister, 2004; Gottfredson & Hirschi, 1990). Baumeister and Mick (2002) frequently used the term self-control interchangeably with self-regulation giving readers the idea that both refers to the self's capacity to modify one's own condition and responses (p. 670-671). However, distinction was made by Muraven, Tice, and Baumeister (1998) to narrowly defined self-control as an earlier form of self-regulation. Thus, self-regulation is more complex than self-control as it involves self-generated plans and flexible adaptation to the inconstant demands required by a task as mentioned by Barkley (1997).

In relation with the current study, the researcher is interested to look into the self-control factor of early adolescent pertaining to the usage of smartphone. It is believed that self-control is an important indicator for adolescent's future performance. Consistent with this idea, a number of positive significant outcomes has been correlated with self-control such as academic performance, psychological adjustment, impulse control and interpersonal outcomes (e.g., Tangney, Baumeister, & Boone, 2004; Wolfe & Johnson, 1995). It is also important to look at self-control as part of the variable in this study as it has long term benefit in predicting educational attainment. Individuals engaging in positive behaviour during the phase of adolescence were found to be more likely to accomplish higher levels of education and individuals engaging in negative behaviour during adolescence were less likely to accomplish higher levels of education. In addition, self-control can also predict successful adaptation as individuals manage their feelings, think constructively, regulate and control their behaviours, and modify their contexts to change or eliminate sources of stress (Zimmer-Gembeck & Skinner, 2011).

Mediating effect of Self-control

Past research have demonstrated that self-control can function as a moderator for attitude toward life (Sinha, Nayyar, & Sinha, 2002), number of social support received (Wilcox & Stephen, 2012), moderating mechanism of substance use, depression and numerous outcomes of behavioural problems (Nobles, Cramer, & Kercher, 2012). However, to the researcher's knowledge, self-control has not been investigated as a mediator for mobile technology usage and social competence. The present study therefore, attempts to test the mediating variable of self-control on mobile technology usage towards social competence.

Hence, based on the issues addressed earlier, the researcher has drawn up the following alternative hypotheses.

- H₁:** Excessive Smartphones usage has negative impact on early adolescents' social competence.
- H₂:** Self-control mediates the effect of excessive smartphone usage on social competence.

Method

Research Design

This research has been designed quantitatively with a snapshot survey to provide data for the research aim. The rationale behind the quantitative research method is that it allows the researcher to measure and analyse causal relationships between variables (Denzin & Lincoln, 1994). This design is deemed appropriate for this study as it utilises adapted questionnaires based on previous research instruments and literatures. Furthermore, the survey allows the researcher to describe and infer to the bigger population from a selected sample size (Tang, Way, & Carey, 1993). Many previous researches conducted pertaining mobile technology usage also make use of quantitative method such as Ling (2001), Vrijheid, Deltour, Krewski, Sanchez and Cardis (2006) and Kamibepu and Sugiura (2005).

Population and Sampling

The population of this study is determined from the data obtained from Malaysian Communication and Multimedia Commission (2017) which indicates that the highest number of users is from WP Kuala Lumpur and Selangor respectively. As for the sampling technique used for this study, stratified random sampling was implord to ensure effective and systematic data collection to

reduce sampling errors (Hair, Anderson, Babin, & Black, 2010). The participants consisted of 236 students, mainly secondary school students within the age range of 13 to 14 years old which fits the category of early adolescents (Lane, Brundage, & Kreinin, 2017). Early adolescents are specifically selected for this study because they are often described in this stage as turbulent and stressful period in the life of individuals. During this particular phase, early adolescents experience various psychological and social transformations and are submitted to important developmental ordeals (Windle et al., 2010). Even though students age 10 to 12 are considered early adolescents, they are not chosen for this study as the researcher only has permission to collect the data from secondary school granted by the Ministry of Education.

Procedure

Firstly, the researcher obtained approval letter from Ministry of Education to permit researcher to access the students in the selected schools. Prior to that, the information regarding the population of students in Selangor was also obtained from Kementerian Pendidikan Malaysia (Ministry of Education) as it was required in order to proceed with the sampling process. The questionnaires were then handed to the schools as the researcher was not allowed to have direct contact with the students. The questionnaires were then taken by the school principle personally to be distributed among the teachers so it can be filled by their own students in the class. The questionnaire contained the form for informed consent as part of the ethical consideration to participate in the study. For every completion of the survey, tokens were given including a pen and file holder. The data obtained were then computed into SPSS version 22 for further analysis.

Instruments

The questionnaire employed was based on a combination of three instruments consisting the Mobile Phone Problematic Use Scale (MPPUS-10), Social Competence Scale (SCS) and Self-Scoring Self-Control Scale (SSCS). The instruments were originally in English and translated to Bahasa Melayu using back-translation. All the questions were designed to a Likert scale where 1 to 5 represents strongly disagree to strongly agree. However, neutral was used denoting as 3 to ensure students will complete all the data with less expected missing values. Despite researchers have suggested neutral answers will distort the data, neutral answer is warranted when questions asked are unfamiliar among the samples or respondents as to ascertain the information from their perceptions (Garland, 1991). Based on closed ended questions, the questionnaire has been designed with 29 questions. The questions also enclosed demographic information on gender, age, and race.

Mobile Phone Problem Use Scale

The MPPUS-10 by Foerster, Roser, Schoeni and Rösli (2015) is a shorter version of the original Mobile Phone Problem Use Scale developed by Bianchi and Phillips (2005) which has 27 items originally. It has only 10 items but still suitable instrument for research in early adolescents. The items were rephrased to avoid ambiguity and ensure the suitability of reading based on age of the respondents. It can help to measure excessive mobile phone use in adolescents and explore similarities and differences to other technological addictions. For that reason, the researcher chose this instrument as it can be used to measure mobile technology usage. In terms of reliability, the MPPUS-10 had a mean of $M = 28.2$ ($SD 15.6$; $min = 10$, $max = 96$) with a theoretic maximum range of 10–100. Cronbach's alpha

measuring the internal consistence was good with $\alpha = 0.85$. Other than that, the retest reliability of the MPPUS-10 after 1 year assessed through Pearson's correlation between baseline and follow-up data was relatively low ($r = 0.40$, $p < 0.001$).

Social Competence Scale for Teenagers

The social competence scale for teenagers used in this study was developed by Carver, (n.d.) from Child Trends for the Templeton foundation. It has been found to have good reliability ($\alpha=.79$) and concurrent validity (correlated with better grades and a lower likelihood of smoking, fighting, and depressive symptoms). The tool has nine items that are used to measure social competence in children. The tool measures social competence by looking at a set of positive social skills necessary to get along well with others and function constructively in groups. The components involved are respecting and expressing appreciation for others, being able to work and communicate well with others, listen to the ideas of others', demonstrating context-appropriate behaviour that is in line with the social norms, and using a range of skills or processes aimed at resolving conflict

Self-Scoring Self-Control Scale

Self-control is measured by using the short 10-item version adopted from Brief Self-Control Scale (Tangney et al., 2004). The scale originally has 13 items however only 10 items were used for the present study. It involved five domains of self-control which look at task performance, impulsive behaviours, psychological adjustment, interpersonal relationship and

lastly moral emotions. In terms of reliability, the original items show high internal consistency with $\alpha .89$ while the test-retest reliability was $.87$ for the Brief SCS.

Data Analysis Procedure

The data collected throughout the surveys were analysed using SPSS version 22. Descriptive statistics which include frequency and percentages were used to reveal the breakdown information on demographic variables. The hypotheses testing involve inferential statistics which use correlation and multiple regression analysis to identify and explain the nature of relationships between smartphones usage, self control and social competence. Through multiple regression analysis, the researcher was able to predict the effect of mobile technology usage on early adolescents' social competence this way. Other than that, before the test is carried, all the negative items of social control were recoded to positive. The items were then computed based on the overall mean score to represent each construct.

Results

From the total of 300 samples, only 236 samples were valid for the study. The participants are 116 males (49.2%) and 120 females (50.8%) respectively. Table 1 shows the mean distribution, standard deviation and Cronbach's alpha for each construct. All the mean scores for all of the variables are below 4. Excessive mobile or smartphone usage show low mean score which indicates the adolescents' moderation in the use of their mobile technology.

Table 1

Mean, Standard Deviation and Cronbach's alpha

	<i>M</i>	<i>SD</i>	Cronbach's alpha
Self control	3.16	.54	.704
Social competence	3.83	.46	.719
Excessive mobile usage	2.69	.61	.740

Prior to address the causal relationship between excessive smartphone usage, social control on social competence; Pearson correlation has been carried out to ensure the nature of relationships between the variables. The correlation between excessive mobile usage and social competence indicates negative association with significant at two tails ($r=-.189$ at $p=.001$ and $p=.005$). A significant positive correlation also exists between self-control and social competence ($r=.351$ at $p<.001$).

Self –control is also negatively associated with excessive mobile usage at $r=-.400$ ($p<.001$). Thus, it can be concluded that there is weak negative relationship between mobile usage and self-control.

A simple linear regression was also calculated to predict the outcome for social competence with excessive smartphone usage. Table 2 below demonstrates the regression analysis conducted.

Table 2

Coefficients Variables Resulting from Linear Regression Analysis

	Unstandardized Coefficients		Standardized Coefficients		
	B	SE	Beta	<i>t</i>	<i>p</i>
Constant	4.216	.134		31.508	.000
Mobile Usage	-.142	.048	-.189	-2.939	.004

Note. Dependent variable: social competence.

The significant regression equation is found as Social Competence = 4.22 - .189(excessive mobile usage). The model is also significant based on the ANOVA results ($F(1,234)=8.64$, $p<.001$ $R^2=.36$;) where excessive smartphones usage is treated as the predictor to social competence. However, when two

predictors are computed together namely self- control and excessive usage smartphone towards social competence, it has been revealed that excessive mobile usage does not significantly predict social competence. Only self- control has significant causal relationship with social competence.

Table 3

Coefficients Variables Resulting from Multiple Linear Regression Analysis

	Unstandardized Coefficients		Standardized Coefficients		
	B	SE	Beta	t	p
Constant	3.065	.267		11.491	.000
Mobile usage	-.043	.050	-.057	-.855	.393
Self-control	.279	.057	.329	4.915	.000

Note. Dependent variable: social competence

In order to test for mediation effect, two steps were considered. The first step is to identify causal relationship between excessive smartphone usage and social competence. The second step includes self-control to predict social competence in multiple regressions. The illustration is provided in Table 4 to reflect the mediation process. Based on the results, when self-control is included, excessive smartphone usage no longer predicts the

outcome of social competence as the effect from excessive of use towards social competence diminished. This is an indicator of full mediator effect of self control. A mediation effect depicts hypothesized causal relationships with one construct affect another, and in turn affect the third construct (Newsom, 2002). Thus, it is found here that self-control is able to act as the mediator between excessive smartphone usage and social competence.

Table 4

Step by Step Model Analysis for Mediation between Usage, Social Competence and Self-control

Analysis	
Step 1	Excessive mobile usage ➔ social competence
Step 2	Excessive mobile usage ➔ Self-control ➔ social competence

Thus, it can be concluded that;

- H₁ : Excessive Smartphones usage has negative impact on early adolescents' social competence is accepted.
- H₂ : Self-control mediates the effect of excessive smartphone usage on social competence.

Discussion

This study attempted with an investigation to gain an insight on the relationship and effect of excessive mobile technology usage among early adolescents towards social competence. Based on the

findings, the first hypothesis is accepted as there is a negative correlation between excessive smartphones usage and social competence in early adolescents. The present result can be interpreted in a way that as early adolescents use their smartphones excessively, their real life

social communication that takes place around them are also affected. This may be due to the fact that virtual communication does not require children to look into the person and identify any visual cues that reflect the person's emotion. Similar finding can also be found in Rotondi, Stanca and Tomasuolo (2017) in which they found that smartphone usage affect the quality of social interaction as the users perceived time spent with friends to be worth less than the time spent on smartphone. As a result, as real social communication takes place, early adolescents may have hard time getting along with others since they spent more time on using smartphones not knowing that quality social interaction is very important when interacting.

As self-control is placed as a predictor in the hypothesized model, excessive smartphone usage no longer has effect on social competence. Thus, the second hypothesis which states that self-control mediates the effect of excessive smartphone usage towards social competence is accepted on this basis. This is in line with the previous finding related to the role of self-control in mediating harmful effects such as substance abuse among adolescents (Wills, DuHamel, & Vaccaro, 1995) which stemmed from the same problem related to addiction. Thus, this study has proven that self-control plays very important role to mediate the effect of excessive effect smartphone usage among early adolescents.

However, further studies should be done to assess its effect holistically as this study is at its initial stage where other researcher may be able to provide the full extension related to the effect of excessive smartphone usage among early adolescents. Other than that, consideration for WP Kuala Lumpur as the targeted population for sampling is also highly recommended as it has the highest potential for more

accurate data given its status as the highest number of smartphone users in Malaysia.

Implications

The findings of this study clearly show that excessive smartphone usage among early adolescents has negative impact on their social competence. From the aspect of practical importance, this serves as a wakeup call for parents and guardians alike to understand their children's behaviour better especially when it comes to smartphone usage. Parents should be more involved in their child's activities and supervise their daily dose of smartphone usage.

In terms of theoretical aspect, this study can be used to expand the current Psychological theory in the era of information technology such as Uses and Gratification Theory which postulates how users of mobile technology voluntarily spent their time using the devices in order to satisfy their needs for social interaction or even diversion and escape from problems (LaRose & Eastin, 2004.). The finding helps in expanding the theory by including factor such as self-control in mediating the effect of excessive smartphone usage which is found to affect social competence negatively as the theory assumed that the goal of communication technology is to enhance social interaction not making it worst (McQuail, 2010).

Conclusion

From this study, it can be concluded that excessive smartphone usage should be taken seriously as it predicts low quality of social competence among early adolescents. Having low quality of social competence implies early adolescents do not have good social skills which can be bad for their social development. This study also demonstrates the role self-control plays in mediating the effect of excessive smartphone usage towards the

social competence of early adolescents. Therefore, it is advisable for early adolescents to be more aware of their smartphone usage to ensure quality social interaction.

References

- Bandy, T., & Moore, K. A. (2010). Assessing self-regulation: A guide for out-of-school time program practitioners. *Washington, DC, Child Trends*.
- Barkley, R. A. (1997). *ADHD and the nature of self-control*. Guilford Press.
- Baumeister, R. F., & Mick, D. G. (2002). Yielding to temptation: Self-control failure, impulsive purchasing, and consumer behavior. *Journal of Consumer Research*, 28 (4), 670-677.
- Bédard, K., Bouffard, T., & Pansu, P. (2014). The risks for adolescents of negatively biased self-evaluations of social competence: The mediating role of social support. *Journal of Adolescence*, 37 (6), 787-798.
- Bianchi, A., & Phillips, J. G. (2005). Psychological predictors of problem mobile phone use. *Cyber Psychology & Behavior*, 8 (1), 39-51.
- Carver, B. (n.d.). *Social Competence Scale for Teenagers*. Retrieved from <http://performwell.org/index.php/find-surveyassessments/outcomes/social-development/social-competencesocial-skills/social-competence-scale-for-teenagers>
- Cillessen, A. H., & Bellmore, A. D. (2011). Social skills and social competence in interactions with peers. *The Wiley-Blackwell Handbook of Childhood Social Development, Second Edition*, 393-412.
- Collins, W. A., & Van Dulmen, M. (2006). The significance of middle childhood peer competence for work and relationships in early adulthood. *Developmental Contexts in Middle Childhood: Bridges to Adolescence and Adulthood*, 23-40.
- Dearnley, C., Taylor, J., Hennessy, S., Parks, M., Coates, C., Haigh, J., ... & Dransfield, M. (2009). Using mobile technologies for assessment and learning in practice settings: Outcomes of five case studies. *International Journal on E-Learning*, 8 (2), 193-207.
- Denzin, N. K., & Lincoln, Y. S. (1994). *Handbook of Qualitative Research*. Sage Publications, Inc.
- Engels, R. C., Finkenauer, C., Meeus, W., & Deković, M. (2001). Parental attachment and adolescents' emotional adjustment: The associations with social skills and relational competence. *Journal of Counseling Psychology*, 48 (4), 428.
- Fabes, R. A., Gaertner, B. M., & Popp, T. K. (2008). Getting along with others: Social competence in early childhood. In *Blackwell Handbook of Early Childhood Development*. Blackwell Publishing Ltd.
- Fenwick, J. J. (1987). *Caught in the Middle. Educational Reform for Young Adolescents in California Public School. Report of the Superintendent's Middle Grade Task Force*. Publication Sales, Bureau of Publications, California State Department of Education, PO Box 271, Sacramento, CA 95802-0271.
- Foerster, M., Roser, K., Schoeni, A., & Rösli, M. (2015). Problematic mobile phone use in adolescents: derivation of a short scale MPPUS-10. *International Journal of Public Health*, 60 (2), 277-286.
- Garland, R. (1991). The mid-point on a rating scale: Is it desirable? *Marketing Bulletin*, 2 (3), 66-70.

- Genc, Z. (2014). Parents' perceptions about the mobile technology use of preschool aged children. *Procedia-Social and Behavioral Sciences*, 146, 55-60.
- Gottfredson, M. R., & Hirschi, T. (1990). *A general theory of crime*. Stanford University Press.
- Gresham, F. M. (1986). Conceptual and definitional issues in the assessment of children's social skills: Implications for classifications and training. *Journal of Clinical Child Psychology*, 15 (1), 3-15.
- Hair, J. F., Anderson, R. E., Babin, B. J., & Black, W. C. (2010). *Multivariate data analysis: A global perspective* (Vol. 7): Pearson Upper Saddle River.
- Hampton, V., & Fantuzzo, J. (2003). The relationship between interactive peer play in kindergarten and school adjustment for low income urban children. *School Psychology Review*, 32, 77-91.
- Ismail, I. B., & Idrus, R. M. (2008). Development of SMS mobile technology for m-learning for distance learners. *International Journal of Interactive Mobile Technologies (iJIM)*, 3 (2), 55-57.
- Juvonen, J., & Weiner, B. (1993). An attributional analysis of students' interactions: The social consequences of perceived responsibility. *Educational Psychology Review*, 5 (4), 325-345.
- Kamibeppu, K., & Sugiura, H. (2005). Impact of the mobile phone on junior high-school students' friendships in the Tokyo metropolitan area. *Cyberpsychology & Behavior*, 8 (2), 121-130.
- Klopfer, E., Squire, K., & Jenkins, H. (2002). Environmental detectives: PDAs as a window into a virtual simulated world. In *Wireless and Mobile Technologies in Education*, 2002. *Proceedings. IEEE International Workshop on* (pp. 95-98). IEEE.
- Lane, C., Brundage, C. L., & Kreinin, T. (2017). Why we must invest in early adolescence: Early intervention, lasting impact. *Journal of Adolescent Health*, 61 (4), S10-S11.
- LaRose, R., & Eastin, M. S. (2004). A social cognitive theory of Internet uses and gratifications: Toward a new model of media attendance. *Journal of Broadcasting & Electronic Media*, 48 (3), 358-377.
- Leung, L., & Wei, R. (2000). More than just talk on the move: Uses and gratifications of the cellular phone. *Journalism & Mass Communication Quarterly*, 77 (2), 308-320.
- Liang, B., Tracy, A., Kenny, M., & Brogan, D. (2008). Gender differences in the relational health of youth participating in a social competency program. *Journal of Community Psychology*, 36 (4), 499-514.
- Ling, R. (2001). "We release them little by little": Maturation and gender identity as seen in the use of mobile telephony. *Personal and Ubiquitous Computing*, 5 (2), 123-136.
- Ling, R. (2004). *The mobile connection: The cell phone's impact on society*. Morgan Kaufmann.
- Malaysian Communication and Multimedia Commission (2014). *Hand Phone Users Survey*. Retrieved from <https://www.mcmc.gov.my/resources/statistics/hand-phone-surveys>
- Malaysian Communication and Multimedia Commission (2017). *Hand Phone Users Survey*. Retrieved from <https://www.mcmc.gov.my/resources/statistics/hand-phone-surveys>

- Malaysian Communication and Multimedia Commission (2017). Hand Phone Users Survey. Retrieved from <https://www.mcmc.gov.my/skmmgovmy/media/General/pdf/2017-Pocket-Book-110618.pdf>
- McQuail, D. (2010). *McQuail's mass communication theory*. Sage publications.
- Moilanen, K. L., Shaw, D. S., & Fitzpatrick, A. (2010). Self-regulation in early adolescence: Relations with mother-son relationship quality and maternal regulatory support and antagonism. *Journal of youth and adolescence*, 39 (11), 1357-1367.
- Morrill, T. B. (2009). *Cell phone use and psychosocial development among emerging adults*. Unpublished dissertation, Utah State University.
- Mpofu, E. (1997). Children's social acceptance and academic achievement in Zimbabwean multicultural school settings. *The Journal of Genetic Psychology*, 158 (1), 5-24.
- Muraven, M., Tice, D. M., & Baumeister, R. F. (1998). Self-control as a limited resource: Regulatory depletion patterns. *Journal of personality and social psychology*, 74 (3), 774.
- Newsom, J. (2002). *Testing mediation with regression analysis*. Retrieved from http://www.ioa.pdx.edu/newsom/us_p534/ho_mediation.doc.
- Nobles, M. R., Cramer, R. J., & Kercher, G. A. (2012). *Understanding how some victims become perpetrators: Self-control as a moderator*. Crime Victims' Institute, Sam Houston State University.
- Ploderer, B., Oinas-Kukkonen, H., & van Gemert-Pijnen, J. E. (2014). Social interaction and reflection for behaviour change. *Personal and Ubiquitous Computing*, 18 (7), 1667-1676.
- Rose-Krasnor, L. (1997). Topic review the nature of social competence: A theoretical review. *Social Development*, 6, 1.
- Rotondi, V., Stanca, L., & Tomasuolo, M. (2017). Connecting alone: Smartphone use, quality of social interactions and well-being. *Journal of Economic Psychology*, 63, 17-26.
- Ruben, B. D. (1985). The coming of the information age: information, technology and the study of behavior. *Information and Behavior*, 1 (3-26).
- Rydell, A. M., Hagekull, B., & Bohlin, G. (1997). Measurement of two social competence aspects in middle childhood. *Developmental Psychology*, 33(5), 824.
- Sinha, S. P., Nayyar, P., & Sinha, S. P. (2002). Social support and self-control as variables in attitude toward life and perceived control among older people in India. *The Journal of Social Psychology*, 142 (4), 527-540.
- Smith, P. K., & Hart, C. H. (Eds.). (2004). *Childhood social development*. Oxford: Blackwell Publishing Ltd.
- Tang, K. L., Way, W. D., & Carey, P. A. (1993). *The effect of small calibration sample sizes on TEOFL IRT-based equating (TOEFL technical report TR-7)*. Princeton, NJ: Educational Testing Service.
- Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality*, 72 (2), 271-324.
- Underwood, M. K., & Rosen, L. H. (Eds.). (2013). *Social development: Relationships in infancy, childhood, and adolescence*. Guilford Publications.
- Urdan, T., & Klein, S. (1998). Early adolescence: A review of the

- literature. Washington, DC: US Department of Education Office of Educational Research and Improvement.
- Vohs, K. D., & Baumeister, R. F. (2004). *Handbook of self-regulation: Research, theory, and applications*. Guilford Publications.
- Vrijheid, M., Deltour, I., Krewski, D., Sanchez, M., & Cardis, E. (2006). The effects of recall errors and of selection bias in epidemiologic studies of mobile phone use and cancer risk. *Journal of Exposure Science and Environmental Epidemiology*, 16 (4), 371.
- Wilcox, K., & Stephen, A. T. (2012). Are close friends the enemy? Online social networks, self-esteem, and self-control. *Journal of Consumer research*, 40 (1), 90-103.
- Wills, T. A., DuHamel, K., & Vaccaro, D. (1995). Activity and mood temperament as predictors of adolescent substance use: Test of a self-regulation mediational model. *Journal of Personality and Social Psychology*, 68 (5), 901.
- Windle, M., Brener, N., Cuccaro, P., Dittus, P., Kanouse, D. E., Murray, N., ... & Schuster, M. A. (2010). Parenting predictors of early-adolescents' health behaviors: Simultaneous group comparisons across sex and ethnic groups. *Journal of Youth and Adolescence*, 39 (6), 594-606.
- Wolfe, R. N., & Johnson, S. D. (1995). Personality as a predictor of college performance. *Educational and Psychological Measurement*, 55 (2), 177-185.
- Zimmer-Gembeck, M. J., & Skinner, E. A. (2011). The development of coping across childhood and adolescence: An integrative review and critique of research. *International Journal of Behavioral Development*, 35 (1), 1-17.