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# **The Impact of Technology on Adolescent Identity Development**

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**Abstract**

*This paper explores how technology use in adolescence facilitates adult identity achievement and presents evidence that technological objects, such as smartphones have become adolescent transitional objects. Early and late adolescents were surveyed about technology use and feelings associated with technology. Among older adolescents, anxiety level was related to smart phone use, such that higher anxiety was associated with greater smart phone use. The feelings and behaviors associated with use of the preferred device are consistent with feelings and behaviors associated with use of a transitional object. In contrast, younger adolescents did not appear to use technology as a transitional object. This difference may be that older adolescents are in an active phase of transition, developmentally, with movement to a university. Understanding how technology is viewed by adolescents provides insight into how technology can be used in critical environments, such as schools and homes, to facilitate a healthy transition to adulthood.*

**Keywords:** adolescence; identity development; technology; attachment; anxiety

**1.0 Technology and Adolescent Identity Development: Considerations for the 21<sup>st</sup> Century**

Mahler's and Winnicott's theories about identity development during childhood have been influential for many decades (Mahler 1963; Mahler, Pine and Bergman 1975; Winnicott 1971). In these object relations theories that focus on separation and individuation of self, the belief is that individuals go through critical stages in their developmental quest for individuation and identity development. One such phase occurs in childhood and may involve the adoption of a transitional object. A young child may become intensely attached to a particular blanket, stuffed toy or other item, taking the object with them everywhere and becoming distressed if the object is lost or forgotten. Numerous are the stories of parents backtracking hundreds of miles during a trip to retrieve a stuffed animal left at a roadside rest area. These attachment objects, referred to as transitional objects, reflect a child's level of individuation from the parent or attachment figure. The transitional object is a proxy for the primary attachment figure, generally occurring as a child is beginning the process of separating his/her sense of self from a caregiver. The transitional object helps to soothe the anxiety associated with separation of self and development of independence. The object assists in the integration of a separate self and provides the child with a literal symbol of personal control (Tabin 1992).

Mahler (1963) and Winnicott (1971) focused their theoretical writings about transitional objects on their use in childhood, primarily in preschool-age children and those children in early elementary school. Fewer theorists and researchers have examined the existence of transitional objects in adolescence, the time beginning at approximately 13 years of age and extending to 18 years or later for individuals who choose to attend college (Erikson 1968). Shafii (1986) surveyed over two hundred adolescent boys and girls ages 13 and 14, and found that 88% of the girls and 71% of the boys reported having a transitional object at some point in their childhood. When surveyed further, 21% of the female participants and 10% of male participants reported still using a transitional object and a significant number of those respondents reported using the object on a daily basis. Objects included items such as dolls, blankets or stuffed animals. Boys were found to use non-traditional transition objects more than girls, however the exact nature of these objects was not presented in the study. Thus, empirical evidence indicates that use of transitional objects in early adolescence may be common. While, the use of transitional objects in childhood has been widely examined, object relations theory as it applies to the adolescent transition to independent adulthood in the 21<sup>st</sup> century is less understood.

One theorist who has studied the use of transitional objects in adolescents is Johanna Tabin (2005, 1992). Tabin (1992) theorized that adolescents would turn to transitional objects as they face a new identity

crisis, that of developing an adult identity and becoming a fully autonomous person in society. Tabin (2005, 1992) provided case studies from several adolescents to support her argument. In some of these case studies, transitional objects in adolescence were distinctive from typical objects seen in the preschool years. One 13 year old girl Tabin worked with used her pet cat, Sunshine, as a transitional object. A 16 year old boy used drawings and paintings that he carried with him and then kept sealed in a box. Another 14 year old girl had a set of elephant figurines that she treated as transitional objects. In contrast, other adolescents had transitional objects more commonly seen in younger children. For instance, a 14 year old boy had a small doll made of knotted string, which he kept hidden in his pocket. Another adolescent girl carried a pink stuffed cat and utilized it as a comfort object, while sometimes also using the stuffed cat to “speak” to her therapist on behalf of the girl. Taken as a group, Tabin presents these case studies as strong evidence of the use of transitional objects in adolescence.

Tabin (2005) provides a theory about why adolescents turn again to transition objects. As teenagers struggle in adolescence to define a mature sense of self and establish themselves as autonomous adults, anxiety and fear are commonplace. The use of a transitional object to alleviate anxiety and serve as a coping mechanism would be understandable and not unusual. In adolescence, the transitional object, according to Tabin provides a sense of self-continuity as the teenager moves from one environment to another or as he/she transitions across social groups. Tabin extends the notion of the types of representations that manifest as transitional objects by including behaviors such as the style of dress one wears. Style of dress can be used to communicate who one is across situations and times, becoming a constant reminder to the teen and others of one’s current identity. Few others have discussed the use of non-traditional transitional objects in adolescent identity development. One notable exception is Wolfe (1977) who discussed how pets can be used as transitional objects in adolescence.

Given that previous theory and research has discussed the use of transitional objects in adolescence and has provided some support for the idea that the objects used in childhood and adolescence may be different, this paper expands thinking and study about the use of transitional objects in today’s teenage world. This paper theorizes that over the past 10 years in the US, a new and interesting individuation process is occurring that involves technology use. It is theorized that technological objects, such as cell-phones, smartphones, tablet devices, laptop computers, and the use of these objects are becoming adolescent transitional objects.

Support for the current paper’s focus on technology is provided by Schmitt-Rodermund & Vondracek (1999). They studied role exploration in over nine hundred, 13-19 year olds. Consistent with Marcia’s (1980) theory about identity development, Schmitt-Rodermund & Vondracek predicted that adolescents who had achieved identity would report the most role exploration, while those in a state of identity diffusion would report the least exploration. Their findings supported this hypothesis. Relevant to the present study was that Schmitt-Rodermund and Vondracek reported that exploration in the area of technology and associated activities in childhood was a strong predictor of continued exploration in adolescence with those who achieved identity engaged in higher levels of exploration than those who did not. Although, this study alludes to the role technology use may serve to facilitate identity achievement it is not conclusive by any means.

A newer work by Stern (2007) provides somewhat more evidence that technology use could be a key factor in identity exploration and development in the current environment. Stern (2007) studied the use of instant messaging (IM) by adolescent girls. IM was used in a variety of ways to communicate about self and role in girls’ social networks. Stern argues that IM is used to “articulate an identity” (p. 29) via the sharing of information and gossip, the establishment and maintenance of friendships cliques, fighting with others, and the discussion of male peers and crushes. For all extensive purposes, the IM software and its associated

hardware can be viewed as an object that is used to represent the self electronically to others across time and space, thereby serving as a form of adolescent transitional object (Gallardo 2008). This study by Stern speaks to the importance of technology in the life of today's adolescents. They were raised from toddlerhood with technology and are considered to be digital natives. Their cell phones, computers, gaming consoles and tablets provide for their educational, leisure, and socialization needs. It is not a great stretch to theorize that a physical, technological device, along with its capabilities may indeed become an adolescent transitional object.

Perhaps most relevant, to the argument that technology itself can be viewed as a transitional object, is work by Tapscott (2009). Tapscott surveyed adolescents about their technology use. Tapscott reports that his research found that adolescents deprived of their mobile technologies begin to feel anxious within 24 hours. Tapscott, using a qualitative method, had teenagers create collages about how they would feel if they were unable to use their technologies for a period of one month. The visual answers the teens provided are telling. Pictures of people crying, sleeping, or frowning were present, as were "smiley face-type" images with sad, worried or unhappy expressions. The graphic words in the collages included the terms: dazed, tense, nervous, unsure, lost, frustrated, bored, pointless and withdrawn. Other images contained in collages included a pair of handcuffs and a tree denuded of branches or leaves. These visual representations of how one would feel if a cherished object is taken away are nearly identical to the reports expressed by younger peers when their transitional objects are removed. While the software contained within the technology devices is the actual link between an adolescent and his/her friends and family members, who provide actual support and security, the device itself becomes the object that represents and facilitates the relationships, thus becoming a transitional object.

### **1.1 The Present Study**

The present study explored the use of technology as a transitional object through an empirical investigation. In two separate samples, early and late adolescents were surveyed about their technology use, as well as how they feel about their technology. The survey attempted to establish how attached the adolescents were to their preferred technologies (e.g. mobile/smartphones, tablets, computers) and included questions about behaviors exhibited toward technologies that could indicate their use as transitional objects. For instance, one item assessed whether or not a preferred technology was within reach when participants slept. Another item asked about whether or not participants felt anxious if the technology was not with them. The age groups selected, early and late adolescence, can also be considered a developmental stage at which identity issues arise as these individuals move from dependence on parents and living at home to independent living as they enter college, often away from family and existing friends (Erikson 1968). By the time true identity is achieved, the individual should have a well-formulated idea of who one is, and what he/she wishes to achieve occupationally and morally. In this critical age of movement toward independent adulthood, it is theorized that individuals may once again turn to use of a transitional object to help bridge from adolescence to adulthood, using the object to manage anxiety associated with the transition. Within the identity development stage, Erikson (1968) defines peer relationships as dominant. How peers perceive others is of paramount importance and carrying stuffed animals, or dolls, or holding onto a special blanket may expose an adolescent to unwanted attention. However, carrying a computer or cell-phone with one at all times and using it as a transitional object, may draw no unusual attention from peers at all, especially for late adolescents interacting in a college environment.

## 1.2 Hypotheses

The present study seeks to examine how adolescents use technology as well as their levels of attachment to their technology. Based on the assumption that adolescents may use technology as a transitional object, three primary hypotheses have been developed. First, it is predicted that hours of technology use of the preferred device will be correlated with overall anxiety, such that higher levels of anxiety will be related to greater time spent checking and using the preferred technology device. Second, it is predicted that adolescents in the information style of identity will exhibit the highest levels of anxiety due to active role exploration, followed by those with a diffuse style of identity. Individuals with a normative style of identity are predicted to have the lowest level of anxiety as they are engaged in very low levels of exploration. Third, it is predicted that hours of technology use of the preferred device will be highest among adolescents in the information style of identity and lowest among adolescents in the normative style of identity.

## 2.0 Method

The older adolescent sample was obtained through recruitment in psychology courses at a large Southeastern university. Participants were offered extra credit for participation, and were able to complete an alternate extra credit assignment if they chose not to participate in the study. The younger adolescent sample was obtained through recruitment during a summer camp experience for middle and high school age youth held at a large Southeastern university. Participation was voluntary, and no compensation was offered for participation.

All participants were provided with informed consent, and were allowed to withdraw from the study at any time. Participants completed a demographic survey, a survey regarding technology use, the Beck Anxiety Inventory (BAI: Beck 1990), and the Identity Style Inventory (ISI-6g: White, Wampler and Winn 1998). Completion of the surveys took approximately 30 minutes.

The BAI is a measure of how much anxiety has been experienced in the past week. The ISI is a measure of identity style, with three primary identity categories measured. The diffuse style is characteristic of an individual who does not have identity achievement and who is avoiding rather than exploring identity issues. The normative style describes an individual who is in foreclosure and who has committed to an identity without exploration. The information style is associated with an individual who has either achieved identity as a result of active exploration of roles or who is currently engaged in role exploration as a means to establish a mature identity. Both the BAI and the ISI have satisfactory reliability and validity for use with a college-aged population.

## 3.0 Results

### 3.1 Support for Technology as a Transitional Object Among Older Adolescents

A preliminary study was conducted with college students (older adolescents) to determine how they use technology and their levels of attachment to their technology. The data were collected in spring 2013 and included 71 students in an Introductory Psychology class and 20 students in a Personality class. The mean age of the sample was 21.2 years. The majority of the sample was male (76%), and nearly half were in their first year of college (48%). Demographic information for the older adolescent sample is presented in Table 1.

To determine participants' relationship to technology, they were asked to identify their primary and preferred electronic devices. The primary device was defined as the one they use the greatest number of hours each day, while the preferred device was defined as the device that if absent would cause them the most discomfort. For this paper, the preferred device was of most interest and the device which we

predicted the participant may be most likely to use as a transitional object. Seventy-eight percent of the survey participants listed their mobile or smart phone as their preferred device, while 18% listed their laptop computer as their preferred device. Only 4% of participants listed a different preferred device. Frequency of use for the preferred object was reported primarily as daily use, with 96.7% of participants reporting daily smart phone use, and 85.7% of participants reporting daily laptop use. Overall, participants reported spending an average of 4.97 hours each day on their mobile/smart phone and 4.53 hours each day on their laptops. The main purpose of use for both the primary and preferred object was reported to be communication (42.9% and 52.7%, respectively).

As part of the study, a simple questionnaire was developed to assess participant attachment to their preferred device. The survey questions and the participant responses are provided in Table 2..

It is interesting to note that a majority of participants responded affirmatively to several of the items on the survey, including sleeping near their preferred device, checking it without notifications, using their preferred device to relax, feeling anxious without it, and using the device to avoid awkward situations. In addition, a large minority of respondents also reported feeling angry at their device (31%), feeling that it might interfere with relationships (34%), being criticized for use of the device (36%) and being irritated with technology updates (46%). Taken as a whole, the responses provide evidence that some individuals perceive their preferred technology device as more than just a tool for school work or communication. They keep the device close, feel anxious when away from it and others have noticed their device use and been critical. All of these indicators share commonalities with transitional objects.

To further explore the use of technology as a transitional object, we asked participants to complete two personality surveys, the BAI and the ISI-6G. It was first predicted that hours of technology use of the preferred device would be correlated with overall anxiety. Weak relationships were found between hours of mobile/smart phone use and anxiety, such that higher levels of anxiety were associated with greater mobile/smart phone use. Correlations are presented in Table 3.

Next we examined the relationship between anxiety and identity status, presuming that those individuals in the information style would exhibit the highest levels of anxiety due to their active role exploration, followed by those with a diffuse style. Individuals with a normative style were predicted to have the lowest level of anxiety as they are engaged in very low levels of exploration. There were 37 individuals in the information style, 26 individuals in the diffuse style, and 18 individuals in the normative style group. An ANOVA was calculated using identity status as the factor and BAI score as the dependent variable. The ANOVA was not significant ( $F(2,76)=.454, p>.05$ ). Thus for the older adolescent sample, anxiety scores did not differ across the identity status groups.

A second ANOVA was conducted to explore differences in hours of preferred technology use by identity status grouping. It was found that mobile phone use ( $F(2,78)=.440, p>.05$ ), smartphone use ( $F(2,78)=.799, p>.05$ ), and laptop use ( $F(2,78)=.488, p>.05$ ) were not related to identity status. A final analysis was conducted to examine the relationship between identity status and the items from the technology attachment survey. Using chi-square analyses, no significant relationships between identity status and any of the variables in the technology attachment survey were identified.

### **3.2 Argument Against Technology as a Transitional Object Among Younger Adolescents**

A follow-up study was conducted with middle- and high- students to determine how they use technology and their levels of attachment to their technology. The data were collected in summer 2013 and included 51 students participating in a summer camp experience at the University. The mean age of the sample was 15.1 years. The majority of the sample was male (71%), with 20% of the sample in middle

school and 80% of the sample in high school. Demographics for the younger adolescent sample are presented in Table 4.

As with the first sample, participants were asked to identify their primary and preferred electronic devices, in order to determine participants' relationship to technology. In comparison with the older adolescent sample, younger adolescents showed more variability in identified preferred device, with 47% listing their smart phone as their preferred device, and 22% listing their laptop computer as their preferred device. Other identified preferred devices included desktop computer (8%), MP3 player (8%), iPad (6%), video game console (6%), e-reader (2%), and iPod (2%). Frequency of use for the preferred object was reported primarily as daily use, with 82% of participants reporting daily smart phone use, and 71% of participants reporting daily laptop use. Overall, participants reported spending an average of 3.8 hours each day on their smart phone and 2.3 hours each day on their laptops. The main purpose of use for the primary device was reported to be communication (47.1%), while the main purpose of use for the preferred device was reported to be browsing online (31.4%) followed by communication (25.5%). As with the older adolescent sample, the younger adolescent participants completed a questionnaire to assess attachment to the preferred device. Survey questions and the participant responses are provided in Table 5.

Unlike the older adolescent sample, only two items were heavily endorsed among the younger adolescent sample. A majority of younger adolescents indicated that the use the device to relax (69%) and check their device for notifications/messages even when the device has not provided a notification alert (67%). Perhaps, the less reliance on technology as a transitional object among the younger sample is due to less transition associated with this age group. Younger adolescents may be considering transitions such as college placement and career goals; however, they are not yet in the moment of the transition, still being able to primarily live at home and participate in the local school, as they have been throughout development.

The younger adolescent sample completed the BAI and the ISI, to determine whether a relationship existed between use of technology, overall anxiety, and identity status. In exploring the relationship between technology attachment, anxiety and identity, it was first predicted that hours of technology use of the preferred device would be correlated with overall anxiety. However, no significant relationships were found between hours of mobile/smart phone use and anxiety, laptop use and anxiety, desktop use and anxiety, or MP3 player use and anxiety. These results are presented in Table 6.

Based on the ISI, there were 13 individuals in the information style, 15 individuals in the diffuse style, and 14 individuals in the normative style group. An ANOVA was calculated using identity status as the factor and BAI score as the dependent variable. The ANOVA was not significant ( $F(2,39)=.314, p>.05$ ). Therefore, for the younger adolescent sample, anxiety scores did not differ across the identity status groups. A second ANOVA was conducted to explore differences in hours of preferred technology use by identity status grouping. It was found that mobile phone use ( $F(2,39)=.722, p>.05$ ), smart phone use ( $F(2,39)=1.68, p>.05$ ), and laptop use ( $F(2,39)=.78, p>.05$ ) were not related to identity status.

A final analysis was conducted to examine the relationship between identity status and the items from the technology attachment survey. Using chi-square analyses, a significant association was found between identity status and preferring interaction with the device over interaction with people ( $\chi^2 = 6.972, p<.05$ ). Based on this analysis, younger adolescents with a diffuse identity style were more likely to respond yes to the question, "Do you prefer interaction with your device more than interaction with others (people)." According to Phi and Cramer's V tests, the strength of this association was moderate (Phi, Cramer's V = .407,  $p<.05$ ). However, no significant relationships between identity status and any of the other variables in the technology attachment survey were identified.



#### **4.0 Discussion**

In comparing the older and younger adolescent samples, some interesting findings emerge. In support of the research hypothesis, it does appear that technology may be used as a transitional object among older, but not younger, adolescents. Among older adolescents, a majority of participants reported use of their technology and feelings associated with their technology, in common with transitional objects. Specifically, a majority of older adolescents sleep near their preferred device, check the device even without receiving notifications, feel anxious when away from their device, and use the device to avoid awkward situations. A large minority of older adolescents also feel angry with their device for reasons other than hardware or software malfunctions, feel that device use might interfere with relationships, receive criticism from family/friends for use of the device, and get irritated with software or firmware updates. Based on the high percentage of agreement with a number of the statements on the survey, it is clear that older adolescents do not view their preferred technological devices as simply tools to get their work done. These responses would be indicative that some individuals feel about and use their devices in a manner that is similar to the way younger children have been shown to care about and use transitional objects. Further, overall levels of anxiety were related to mobile/smart phone use, such that higher levels of anxiety were associated with greater mobile/smart phone use. One explanation for this finding is that perhaps those with higher anxiety are using their phones to connect with others for emotional or social support. The feelings and behaviors associated with the use of the preferred device are consistent with feelings and behaviors associated with use of a transitional object early in development. Interestingly, younger adolescents did not appear to use technology as a transitional object. A majority of younger adolescents only responded affirmatively to two of the survey questions, including use of the device to relax, and checking the device even without receiving notifications. Further, there was no relationship observed between levels of anxiety and hours of technology use among younger adolescents.

There are two potential explanations for the discrepancy in use of technology as a transitional object between younger and older adolescents. First, older adolescents are more likely to be in an active phase of transition, developmentally. The older adolescent sample, consisting largely of freshman, have recently experienced a major home and school transition, moving out of the home to the dorms, and moving from high school to a college setting. Based on this active phase of transition, the greater reliance on technology as a transitional object among this sample is logical. A second explanation may relate to the preferred device itself. Among the older adolescents, participants primarily identified mobile/smart phone and laptop as the preferred device, with only 4% of the sample reporting a different preferred device. However, among the younger adolescent sample, participants reported wide variability of identified preferred devices, including mobile/smart phone, laptop, desktop, MP3 player, iPad, iPod, e-reader, and video game console. While younger adolescents frequently engaged their technology to relax and “browse online,” older adolescents primarily engaged their technology for communication. This may explain the difference in use of technology as a transitional object among younger and older adolescents.

The lack of an association between identity style and technology use and attachment among the older adolescent sample was somewhat disappointing. However, an interesting association existed in the younger adolescent sample, whereby those with a diffuse identity style were more likely to report preferring interaction with their technological device over interaction with other people. The diffuse identity style is characteristic of individuals who are avoiding exploration of identity issues and who have not accomplished identity achievement. Perhaps the use of technology in this group of younger adolescents is an extension of avoidance of the social elements of identity exploration. A longitudinal examination of this population would offer further insight regarding how the relationship between identity style and technology use changes as individuals move from a diffuse style to a normative style.

Future research may expand the current work. First, further exploration of how the diffuse identity style relates to technology use among adolescents is warranted. Second, both the older and younger adolescent samples were primarily male, which limits the current validity and generalizability of results; therefore, future samples with more females should be utilized. In addition, it is curious whether the variability in preferred technology observed among the younger adolescent group is related to generational or developmental differences. A longitudinal study, or even follow-up study could help differentiate between these causative factors. Finally, it would be interesting to explore how use of social media sites such as Facebook might impact identity development.

Regardless of the link between technology use and transitional object status, understanding how technology is viewed by adolescents provides insight into how technology can be used in critical environments, such as schools and homes to facilitate a healthy transition to adulthood. The college students studied, expressed an attachment to their technologies that is perhaps not well-understood by parents, teachers and other older adults, who did not grow up as digital natives. Schools and colleges today often limit the use of smartphones, laptops and other devices in classes or to do assignments. However, have individuals in positions of authority in these environments thought of how limiting or banning technology may also create a more anxiety-filled and less optimal learning environment for digital natives? A similar situation can occur in families. If young people use their devices for communication with and social support from their peers, banning or severe limitations on the use of technology may negatively affect adolescent peer relationships, thereby also increasing personal anxiety. What is needed is a more complete understanding of how digital natives feel about and use personal technologies and how usage relates to critical personality development issues, such as identity achievement. With this knowledge, school and home environments can better environments that provide adequate structure and are still conducive to psychological well-being.

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**Table 1**  
*Older Adolescent Sample Demographics*

Gender	Count	Frequency	Class Distribution	Count	Frequency
Male	69	76%	Freshman	44	48%
Female	22	24%	Sophomore	23	25%
			Junior	10	11%
			Senior	11	12%

**Table 2**  
*Older Adolescent Responses Related to Preferred Technology Device*

Survey Question	Survey Response	
	Yes	No
1. Is your device close enough to you when you go to sleep that you can reach out and touch it?	86%	14%
2. Do you feel worried or anxious when you do not have your device with you?	53%	46%
3. Do you use your device to relax?	82%	18%
4. Do you use your device to avoid situations that make you feel uncomfortable?	57%	43%
5. Does your use of your device ever add stress or make you feel awkward in situations?	26%	74%
6. Do your family or friends ever criticize you for your use of the device?	36%	62%
7. Do you ever feel angry with your device for reasons other than hardware or software malfunctions?	31%	69%
8. Do software or firmware updates irritate you?	46%	54%
9. Do you regularly check your device for notifications/messages even though the device hasn't rung/vibrated/notified you?	79%	21%
10. Do you prefer interaction with your device more than interaction with others (people)?	15%	85%
11. Do you ever feel that use of your device interferes with existing personal relationships?	34%	66%
12. Do you ever feel that use of your device interferes with making new friends?	22%	78%
13. Have you ever ended a friendship or personal relationship because you fought over your use of your device?	9%	91%

**Table 3**  
*Correlations Between Technology Use and Anxiety Among Older Adolescents*

Correlation Matrix	BAI Score
Hours of Mobile Phone Use per Day	.234*
Hours of Smart Phone Use per Day	.253*
Hours of Laptop Use per Day	.161

Note: \*p < .05

**Table 4**  
**Younger Adolescent Sample Demographics**

Gender	Count	Frequency	Class Distribution	Count	Frequency
Male	36	71%	Middle School	10	20%
Female	15	29%	High School	41	80%

**Table 5**  
**Younger Adolescent Responses Related to Preferred Technology Device**

Survey Question	Survey Response	
	Yes	No
1. Is your device close enough to you when you go to sleep that you can reach out and touch it?	47%	51%
2. Do you feel worried or anxious when you do not have your device with you?	37%	61%
3. Do you use your device to relax?	69%	29%
4. Do you use your device to avoid situations that make you feel uncomfortable?	49%	49%
5. Does your use of your device ever add stress or make you feel awkward in situations?	26%	75%
6. Do your family or friends ever criticize you for your use of the device?	47%	51%
7. Do you ever feel angry with your device for reasons other than hardware or software malfunctions?	41%	57%
8. Do software or firmware updates irritate you?	49%	49%
9. Do you regularly check your device for notifications/messages even though the device hasn't rung/vibrated/notified you?	67%	31%
10. Do you prefer interaction with your device more than interaction with others (people)?	24%	75%
11. Do you ever feel that use of your device interferes with existing personal relationships?	20%	78%
12. Do you ever feel that use of your device interferes with making new friends?	10%	88%
13. Have you ever ended a friendship or personal relationship because you fought over your use of your device?	4%	94%

**Table 6**  
**Correlations Between Technology Use and Anxiety Among Younger Adolescents**

Correlation Matrix	BAI Score
Hours of Mobile Phone Use per Day	-.127
Hours of Smart Phone Use per Day	.218
Hours of Laptop Use per Day	.012
Hours of Desktop Use per Day	.224
Hours of MP3 Use per Day	.097

Note: \*p < .05, no results were significant