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Anxiety and Dependence to Media and Technology Use: Media Technology Use and Attitudes, and Personality Variables in Portuguese Adolescents

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Abstract
This study examined the relationships between anxiety/dependence of Information and Communication Technologies (ICT) involving the frequency of and attitudes towards its use and personality dimensions in a sample of Portuguese adolescents. The sample consisted of 322 subjects aged between 12 and 18 years. The Portuguese version of the scale Use and Attitudes towards Information and Communication Technologies (MTUAS-PY; Costa, Matos, Pinheiro, Salvador, Dias & Zenha-Rela, 2016) and the Ten-Item Personality Inventory (TIPI, Gosling, Rentfrow, & Swann Jr., 2003) were used. The results showed that individuals with high anxiety/dependency had higher averages in several ICT use indicators (emailing, social networking, etc.), attributed more importance to ICT, scored higher in the simultaneous execution of multiple tasks, and presented lower scores in the personality dimensions of emotional stability and consciousness. We can conclude that anxiety/dependence relates to the use and attitudes towards ICT as well as with personality variables.

1. Personal Internet use and explanatory hypotheses
The worldwide use of Information and Communication Technologies (ICT) is simultaneously extremely high and has an enormous potential of growth. Forty-six percent of the world population uses the Internet (3.419 billions of people) and 31% (2.307 billions) use social media, mainly Facebook which, in 2015, had 1.550 billion users, surpassing the world’s most populous country (mainland China with 1.354 billions) (Kemp, 2016).

The Millennial generation (people born between 1980 and 2000) have been using the Internet and mobile communications systems since birth and, because of that, are called “digital natives” (Prensky, 2001). Generation Z (people born between 1995 and 2015) increased dramatically the intensity and the complexity of ICT usage through smartphones, social networks, and always on-line behavior patterns.

Using the Internet and social networks is a very common activity both globally and in Portugal. Internet and social media access is a reality for 70% of Portuguese families, mainly in men, until the age of 44, and those with a higher level of education (high school and college). Data has also shown 70% of Portuguese are involved in social media interaction, and that 2/3 are using mobile Internet access with smartphones or tablets. In families with children over the age of 15, Internet use increases to 90% (INE, 2015).

The impact of information technology on humans has been receiving increasing attention from behavioral investigators. Rosen, Cheever and Carrier (2015) recently presented an excellent review of extensive contribution to the Psychology of Technology in understanding the social media phenomena and the preference for task switching. Research efforts have also been developed in order to improve our knowledge about gender patterns of ICT use, as well as positive and negative impacts of this use.

1.1 Gender
In the literature, many studies have explored Internet and social media use and differences between genders regarding the involvement with the Internet, type of activities, association with life
satisfaction, academic achievement, peer pressure, disclosure of information, and friendship development.

Regarding online activities, studies found several gender differences. Joiner et al. (2005), with a sample of 608 English undergraduate psychology students, found greater male use of the Internet especially in the ownership of a personal page, game websites, and downloading of contents. Hinostroza, Matamala, Labbé, Claro, and Cabello (2014) studied secondary student’s computer use and found that usual activities included socializing, academic activities, gaming and production activities, with similar patterns within the same socio-economic group and equivalent levels in ICT experience and self-confidence in use. Searching for homework information and playing games were the most popular online activities for all adolescents. The variable that differentiated user profiles was gender. Girls presented higher values on socializing and academic activities while boys had higher values for gaming and production activities.

Jhala and Sharma (2016) studied Internet use among 1331 Indian adolescents between 13 and 19 years old. Results showed that Internet use is prevalent and influenced by place (rural areas showed greater interference with school activities and preference for online activities, as opposed to going out with friends); school grade (the 9th grade students were more affected) and gender (more intense use for boys). Lin and Yu (2008) found that searching for homework information and playing games were the most popular online activities for all Taiwanese adolescents. While girls tended to prefer searching for information and e-mailing friends, boys tended to prefer playing games and downloading software.

Durkee et al. (2012) studied Problematic Internet Use (PIU) in European adolescents with a special focus on demographic and social factors. Data from 11,956 adolescents (56% female and mean age of 14.9, SD = 0.89) showed that the preferred activities were watching videos, frequenting chat rooms, and social networking. Males had higher scores in playing single-user games and females had higher scores in social networking. Data also showed that lack of emotional and psychological family support were risk factors for PIU.

The link between life satisfaction and Internet use was also studied by Lachmann, Sariyska, Kannen, Cooper, and Montag (2016) who examined the relation of PIU with life satisfaction both in general and in specific aspects, like job satisfaction, leisure, and health. High and negative associations were found between life satisfaction, general and specific, and PIU, with stronger associations for females, although they had lower levels of PIU. The authors suggested that gender was a variable that influences the association between life satisfaction and PIU.

Another focus of research is on the relation between Internet use, academic achievement, and gender (Chen & Fu, 2009). Online searching for information had a positive impact on academic achievement but using the Internet for socializing, gaming, and going to Internet cafes had the opposite effect. Gender differences were found. If searching for information helped boys and girls, online socializing made girls particularly vulnerable to lower academic achievement, while online gaming and going to Internet cafes only impaired boys’ academic achievement.

Studying the importance of peer support, Kirman and Gündoğdu (2010) evaluated the relationship between Internet addiction, peer pressure, and perceived peer support among 558 Turkish adolescents (52% female) from 9th to 10th grade. Results showed that low levels of peer pressure reduced Internet addiction, and the same effect was present when parental and teacher support was high. Furthermore, a lower incidence of Internet addiction was present in girls. The amount and type of information disclosed on the Internet was studied, by Sozio, et al. (2015), on a multi-nation study that included 8 countries (Brazil and seven European countries that included Portugal) on Internet use, with children from 9 to 16 years of age. Regarding gender, girls tended to present their social-media profiles as private more often than boys, but disclosed more information such as personal photos, full names, and personal address.

Finally, gender differentiation is also present in the strategies to develop intimate relationships with peers. Desjarlais and Willoughby (2010) reviewed several studies on gender differences in Internet usage of social media and concluded that while boys focus on shared online activities and interests, girls tend to engage in discussion (like talking about events, gossiping, sharing compliments) and in personal disclosure behaviors.

The reviewed literature focused primarily on differential Internet use for girls and boys. However, Gross (2004), based on adolescent self-reporting, found that both genders described their online activities as occurring in private settings, as e-mail and instant messages, with friends that are part of...
offline lives and with common but intimate contents, such as gossiping or talking about friends. Online pretending was more associated with playing a joke than with identity exploration. No associations between on-line activities and well-being were found.

In a sample of Portuguese adolescents, aged between 11 and 15 years, Simões, Camacho, Reis, and Equipa Aventura Social (2014) found no associations between ICT activities and gender.

Bessière, Kiesler, Kraut, and Boneva (2008) in a survey conducted in 2001 and 2002, in the USA, found that almost all respondents reported using the Internet for information, entertainment, and communicating with friends and family. Only 20% used the Internet to meet new people and talk in online groups.

Erwina, Turk, Heimberg, Fresh and Natulab (2004) and Davis (2001) pointed out, as advantages of using the Internet, the access to a wider network of people with similar interests or concerns, and the increased ability to be in contact with geographically distant friends and family members.

1.2 Explanatory hypotheses

Huang (2010, 2012), in literature reviews, identified a debate as to whether the effect of Internet use on psychological well-being is beneficial (augmentation hypothesis) or detrimental (displacement hypothesis). The augmentation hypothesis suggested that the association was positive since the Internet use for communication provides a context for social interaction and interpersonal development, thus improving the user’s psychological well-being. The displacement hypothesis indicated that the association between Internet use and well-being was negative, because Internet use for communication replaces face-to-face interaction or real-life interaction. According to Huang (2010, 2012), in the literature reviewed, the findings about Internet use and psychological well-being were diverse. This author added that in two previous meta-analyses and in his meta-analysis with 40 studies about well-being (e.g., loneliness, depression, self-esteem, and life satisfaction), a relationship between Internet use and psychological well-being was not found. An emphasis was given to the need to ameliorate the measurement instruments of social networking use and the complexity of the studies (e.g., moderator effects should be studied).

Nie and Hillygus (2002, 2009) proposed the time-displacement hypothesis, asserting that the use of the Internet implies a reduction, in a non-work context, of the time spent in direct contact with friends and family.

It seems that, if on the one hand, the use of online communication could somehow encourage the development of online friendships, increase feelings of self-esteem and social support, on the other hand, it is associated with greater social isolation in real life, and lower quantity and quality of face-to-face friendships, implying a greater risk of online exploitation (Gapsiso & Wilson 2015; Wolak, Mitchell, & Finkelhor, 2003).

Other authors claimed that communicating with others on the Internet via text messages allows preventing certain unpleasant aspects of social interactions while partially meeting the needs for personal contact and belonging (Erwin, et al. 2004).

Desjarlais and Willoughby (2010), in a longitudinal study of adolescents, examined support for the social compensation and rich-get-richer hypotheses, including social anxiety as a moderating factor. The social compensation hypothesis suggests that adolescents with high levels of social anxiety may report more positive friendship quality if they use computers with friends or on line communication than other adolescents who also have high social anxiety but do not use ICT to compensate for their social anxiety. This was suggested to occur because computer-based interactions may create a more comfortable social situation for socially anxious adolescents in comparison to traditional face-to-face interaction. The rich-get-richer hypothesis proposes that subjects who are already comfortable in social situations can use ICT to look for additional opportunities for socialization, with the aim being talking on the phone, or in person. Results showed that, among girls, the main effect of using computers with friends or online communication on friendship quality was positive, providing support for both hypotheses. For boys, social anxiety moderated this relation, supporting the social compensation hypothesis.

More recently, Kardefelt-Winther (2014a) provided a compensation theory that explains excessive Internet use without framing the behavior as pathological and considers the importance of motives. This author hypothesized that excessive Internet use may be a coping strategy to deal with life stress, driven by the necessity to escape real life problems and/or reduce negative moods, i.e., a strategy...
originated in the confluence of stressful life situations and the ubiquitous availability of Internet. This hypothesis of a coping strategy rather than a compulsive behavior could help explain why some people keep spending so much time online despite experiencing negative outcomes. Positive and negative outcomes were pointed out: an individual feels better because he gets the desired social stimulation but he may not go out and make new offline friends, which in the long run means he could become dependent on the Internet for social stimulation. According to Kardefelt-Winther (2014a), “this scenario would be labelled as an Internet addiction when approached through a pathological perspective” (p. 352). This author also suggested that studies to test this theory should move away from a focus on direct effects models and consider mediation and interaction effects between psychosocial well-being and motivations in the context of Internet addiction. In a study on online playing (World of Warcraft game), with 702 players from 14 to 60 years, Kardefelt-Winther (2014b) studied previously identified aspects as relevant for gaming: social anxiety, loneliness and stress, and motivations such as success, escape, and social interaction. The results showed that stress is the most important aspect, giving empirical support to the compensatory model. The results also revealed that although loneliness and social anxiety were correlated with excessive use, they lost significance when stress was controlled for. Furthermore, all psychological predictors lost significance when escapism and achievement were controlled for “upon entering motivations in the model all psychological characteristics lost significance” (p. 211). Higher levels of stress were associated with negative outcomes of play, but this was an indirect effect explained by the escapism motivation. The author concluded that these results suggested that the effect of psychological characteristics on negative outcomes was indirect, i.e., mediated by motivations.
2. Detrimental effects of Internet use

Most humans use the Internet without considerable negative outcomes, exploring its huge benefits. However, for some, use becomes misuse when problematic consequences arise.

The communication mediated by ICT can have a negative effect on the lives of individuals, particularly when its use becomes excessive, and can be particularly severe in subjects with pathologies such as social anxiety. These subjects tend to see the virtual social interactions as less threatening than the face-to-face interaction (Lee & Stapinski, 2012).

Several studies showed that excessive Internet use can lead to negative effects on the lives of adolescents, such as decline in mental health (De Leo & Wulfert, 2013; Shapira, Goldsmith, Keck, Khosla & McElroy, 2000).

Bessière, et al. (2008), in a longitudinal study, explored the impact of different uses of the Internet on a measure of depression, moderated by social resources. The use of Internet for information, entertainment, and escape had no impact on subsequent changes in depression level. Internet use for communicating with friends and family predicted lower depression scores six months later. However, Internet use to meet new people and talk in online groups predicted depression scores and this relationship was influenced by the initial levels of social support: those having high or medium levels of social support showed higher depression scores, and those with low levels of social support did not experience these increases in depression. These authors emphasized that those with lower levels of social support, i.e., fewer strong relationships to neglect, do not suffer the negative impact of this type of Internet use. They concluded that individual differences and people’s choices of how they use the Internet may account for the different outcomes.

Young (1998) pointed out that several studies revealed significant correlations between excessive time spent on the Internet and psychological and behavioral problems. This author emphasized that intensive Internet users often have negative changes in their lives within the family and/or in professional and educational contexts, and that this intense use remains despite the negative results: marriages, dating relationships, parent child relationships, and close friendships were disrupted by excessive use of the Internet. Work-related and financial problems were also found. Finally, mild to moderate physical complaints were noted among dependents, and user sleep patterns were typically disrupted, causing excessive fatigue, often making academic or occupational functioning impaired, and decreasing physical exercise. He also found that there was an increased risk for pathological Internet use with more interactive applications utilized by the on-line user.

Weiser (2001) proposed that the psychological effects of Internet use depend primarily on users’ reasons and goals. Studying those reasons and objectives allowed the identification of two dimensions accounting for more than 50% of the variance: Socio-affective Regulation (SAR) and Goods-and-information Acquisition (GIA). SAR was conceptualized as a social or affiliative orientation and GIA as a practical or utilitarian one. Social integration and psychological well-being were enhanced by GIA but reduced by SAR use.

Using a web survey and a sample of 1839 college students, Junco and Cotten (2012) found that students’ use of the ICT apparatus in several activities was not related with study during schoolwork. Data showed that the use of Facebook and texting during school related activities was negatively associated with overall Grade Point Average (GPA) in school.

Mark, Wang, and Niiya (2014) pointed out that the generalization of ICT use increased the number of multitasking situations, which revealed a relation with stress. Computer logs and data from biosensors of 48 college students during seven days were compared. A positive relationship was found between stress and daily time spent with computers and with the amount of multitasking but that relation is inversely with Facebook and social media use. Also, heavy multitasking was associated with more use of social media and lower positive affect, accompanied by longer duration of computer use for late-nighters.

Brown, Manago, and Trimble, (2016) analyzed the use of mobile phone during a face-to-face interaction and concluded that the higher the use the lower the quality of the interactions. David, Kim, Brickman, Ran and Curtis (2014) considered that the smartphone poses a challenge to individual self-regulation. During homework, frequency of multitasking by texting and using social media was associated with task interference, mainly among owners of a smartphone and women. Larry, Alex, Mark and Nancy (2011) studied the impact of texting on memory recall in a classroom environment. Results
showed that the high texting group scored significantly lower (10.6%) than the no/low text messaging groups and that the impact of texting on memory recall was inversely proportional to the time elapsed between receiving the message and answering.

3. Understanding Internet addiction

Research about problematic Internet use began with the work of Young (1996, 1998a, 1998b) and Griffiths (2000). Several authors (Davis, 2001; Griffiths, 1999, 2000; Yellowless and Marks, 2007) emphasized the importance of differentiating between addictions on the Internet and addictions to the Internet. According to Griffiths (1999, 2000), most Internet addicts use the Internet excessively as a medium to fuel other addictions (e.g., gambling). That is, with the Internet they find new ways of engaging in previous pathological behavior patterns. Other addicts show an addiction to the Internet itself (using idiosyncratic features and specific functions of the Internet like chat rooms and Facebook). According to Griffiths, Kuss, Billieux, and Pontes (2016), this differentiation remains important. In the last decade, research has been growing and developing in order to understand the serious psychological and social problems of this phenomenon, but theoretical models and specialized interventions need to be tested in order to pursue effective recovery programs from Internet addiction. Several variables may influence the use, abuse, and dependence on the Internet, like personality traits, interpersonal skills, and other well-known psychological problems such as depression and anxiety.

The Internet Addiction Disorder is described as excessive Internet use (Weinstein and Lejoeux, 2010) concomitant with compulsivity and severe interference with daily life and has also been designated as Compulsive Internet Use (Meerkerk, Eijnden, and Garretsen, 2006), Problematic Internet Use (Aboujaoude, 2010; Davis, 2001) or iDisorder (Rosen, 2013). The term was also used to describe "the discomfort or anxiety caused by the non-availability of mobile phones, personal computers or any other virtual communication device in individuals who use them habitually" (King et al., 2013, p. 141).

Beard and Wolf (2001) mentioned that the "Excessive Internet users have been called Internet addicts, pathological Internet users, computer addicts, computer mediated communication addicts, and computer junkies" (p. 378). These authors believe that terms such as excessive, problematic, or maladaptive Internet use are most optimal for describing this behavior as they involve fewer theoretical overtones than terms such as Internet addiction.

Davis (2001) introduced the term Pathological Internet Use (PIU), as a distinct pattern of Internet-related cognitions and behaviors that result in negative life outcomes. This author proposes that there are two distinct forms: specific and generalized. Specific pathological Internet use involves the overuse or abuse of content-specific functions of the Internet (e.g., gambling). Generalized pathological Internet use is conceptualized as a multidimensional overuse of the Internet itself, i.e., for no specific purpose, which results in negative personal and professional consequences. Symptoms of generalized PIU include maladaptive cognitions and behaviors related to Internet use that are not linked to any specific content and occurs when an individual develops problems due to the unique communication context of the Internet. These individuals are drawn to the experience of being online in and of itself, and demonstrate a preference for virtual, rather than face-to-face, interpersonal communication.

In the process of development of the Generalized Problematic Internet Use Scale (GPIUS), with a factorial analysis, Caplan (2002) identified seven factors that characterize pathological Internet use: "mood alteration, perceived social benefits available online, negative outcomes associated with Internet use, compulsive Internet use, excessive amounts of time spent online, withdrawal symptoms when away from the Internet, and perceived social control available online." (p. 553)

Internet addiction has been extensively studied (cf. Montag & Reuter, 2015; Weinstein, Feder, Rosenberg, & Dannon, 2014) with revisions within the literature showing different numerical indicators. International prevalence rates for Internet addiction range globally from 1.5% to 8.2% (Petersen, Weymann, Schelb, Thiel, & Thomasius, 2009) with a survey of 11 European countries showing a prevalence of 4.4% (Durkee et al., 2012). Recently, Cheng and Li (2014) presented an extensive review of studies from 1996-2012, that used the Young Diagnostic Questionnaire or Internet Addiction Test, and included a total of 89,291 subjects of 31 nations from seven world regions. Data indicated a global prevalence of 6% with highest values in the Middle East (10.9%) and lowest found in Northern and Western Europe (2.6%). Incidence rates vary according different evaluation criteria and various cut off points. The impact of these differences can be very important. With the same measurement instrument, Pontes, Patrão, and Griffiths (2014) found, in Portugal, a prevalence of
Internet addiction of 1.2% using the initial cut off presented by Young in 1998 (Internet addiction = 70-100 point) but these values downsize to zero with the second cut-off criteria (Internet addiction = 80-100 points).

Cheng and Li (2014), in a multinational meta-analysis including data from 80 reports and 89,281 participants from 31 nations, found a prevalence of Internet addiction of 6.0% [95% CI 5.1–6.9]. The Internet addiction was positively associated with lower quality of life evaluated by subjective (life satisfaction) and objective (quality of environmental conditions) indicators.

It is very important to study the association between mental health problems and Internet use. Rosen, Whaling, Rab, Carrier and Cheever (2013) studied the association between mental health problems and Internet use, in a cross-sectional design, with a sample 1143 subjects from adolescents to adults, and found data that corroborate the amplification role of social media in psychopathology. Namely, they found that a positive attitude towards information technology was associated with fewer signs of mood disorders but negative attitudes were related with signs of major depression and dysthymia. A positive relation was found between mood disorders and anxiety about not checking text messages and Facebook. Anxiety about missing text messages predicted antisocial and paranoid disorders, and anxiety about not checking Facebook predicted narcissism, antisocial, and compulsive disorders.

Vaghela (2014) found out, in a sample of 160 male adolescents, that Internet addicts have a greater level of anxiety than non-addicts, regardless of the environment (rural or urban).

In youth, although findings are controversial, loneliness or certain types of loneliness, like family-related or peer-related loneliness, are associated with Internet usage or problematic use (Kim, LaRose, & Peng, 2009; Morahan-Martin & Schumacher, 2000, 2003; Teppers, Luyckx, Klimstra & Goossens, 2014). Loneliness is also related with social anxiety (Huan & Chye 2014), which, in turn, is another variable clearly associated with problematic Internet use (Huan, Ang, & Chye, 2014; Lee & Stapinski, 2012).

The question about causality between Internet addiction and psychopathology has been studied with inconsistent results. Ciarrochi, Parker, Sahdra, Marshall, Jackson and Gloster (2016) recently presented a four-year longitudinal study, with 2068 subjects followed from grade 8 to 11. Results showed that compulsive Internet use predicted mental health problems but that mental health problems are not predictors of compulsive Internet use. Furthermore, results showed that both variables have increased values along the study, and that females presented higher values than males. On the other hand, in a longitudinal study with teens, young adults and adults, Ko, Yen, Cfhen, Yeh and Yen (2009) found that psychopathology predicts Internet addiction.

Cognitive-behavior theory attempts to develop models about the etiology, development, and outcomes associated with addictions and other health and behavior problems, and it has been applied to technology and Internet usage.

Young (1998) developed a cognitive model to explain why Internet users develop a habit or compulsive use and how negative self-thoughts maintain patterns of compulsive behavior.

Davis (2001) characterized the cognitive symptoms of PIU as a ruminative cognitive style, feelings of self-consciousness, low self-worth, a depressogenic cognitive style, low self-esteem, and social anxiety. This author described a cognitive-behavior model of PIU that emphasizes the role of maladaptive cognitions, along with reinforcement, in intensifying or maintaining the maladaptive responses. These cognitions can be divided into two subtypes: thoughts about the self and thoughts about the world. Thoughts about the self are guided by a ruminative cognitive style, like constantly thinking about problems associated with the individual’s Internet use, rather than being able to be distracted by other events in one's life. This cognitive pattern interferes with instrumental behavior (i.e. taking action), and with engaging in effective interpersonal problem solving. The individual has a negative view of himself and uses Internet to achieve more positive responses from others. Cognitive distortions about the world involve maladaptive cognitive processes, like all-or-nothing thinking, with Internet being the only place where the individual feels respected, which, in turn, exacerbates Internet dependence. These are the main proximal causes of PIU identified in the proposed model. As a distal cause that vulnerabilitizes for PIU, the role of existing psychopathology is emphasized.
4. Personality dimensions and Internet use

According to the Diathesis-stress model, used to explain abnormal behavior, we can conceive that one other distal contributory cause (“diathesis”) of PIU, besides existing psychopathology, is personality. Some dimensions of personality might render individuals vulnerable to pathological Internet use and interact with “stress” or life event (introduction to Internet or some new technology found on the Internet).

Users with different personality characteristics have their own preferences, needs, and motives, using new technologies in a variety of ways and obtaining diverse results. The personality characteristics can interact with Internet usage adding its negative or positive impact on psychological functioning and well-being.

Several studies, using the personality theory of the Big Five model (Costa & McCrae, 1992; 1994) to characterize the determinants of pathological and general Internet use were carried out in different countries.

Tan and Yang (2012), in a sample of 148 individuals, mainly young males, found that social networking and transactions were mainly influenced by levels of extraversion (higher levels of extraversion were associated with higher scores in social networking and transactions), and, in a lower degree, by neuroticism, but finance (e.g., online payments) was only affected by extraversion (also with a positive association).

Kuss, Griffiths and Binder (2013) studied the relationships between Internet activities and personality dimensions in 2257 English university students. Results showed that 3.2% of the students (1.2% for males and 1.9% for females) were classified as addicted to the Internet and that high neuroticism and low agreeableness combined with frequent online shopping and social online activities increased the probability of being Internet dependent. Furthermore, neuroticism and online shopping lowered that risk, but online gaming and openness to experience augmented it.

In the Netherlands, in a sample of 3105 adolescents, (Kuss, Van Rooij, Shorter, Griffiths, & Van de Mheen, 2013) found that 3.7% of the subjects were potentially addicted to the Internet (1.2% males and 2.0% females). The risk was expanded with online gaming and social applications activities and reduced for extraversion and conscientiousness.

Servidio (2014), in a sample of 190 Italian college students, found that it was more frequent that males had, not Internet addiction, but a “moderate behavior disorder” (11% for males and 8.18% for females), and that agreeableness and extraversion were negatively associated with Internet addiction, but that openness showed a positive relation to it.

Samarein, et al. (2013), among 400 Iranian university students, found that mean scores for Internet addiction were higher in males and, in general, positively related to neuroticism and negatively associated with extraversion, agreeableness and conscientiousness.

Öztürk, Bektas, Ayar, Özgüven Öztornacı, and Yağcı (2015) studied 328 Turkish adolescents and concluded that extraversion and openness scores of adolescents at risk for developing Internet addiction were significantly higher than those adolescents that were not at risk. Logistic regression results showed that only 8.6% of the risk for Internet addiction was explained by personality traits and that only openness to experience presented statistically significant values.

Papastylianou (2013) studied the relation of Internet use, personality and depression, in a sample of 404 Greek college students, mainly females. They obtained that 9.4% of the individuals were addicts/marginally addicts. Internet addiction was mainly related with openness and only marginally with neuroticism but further analysis controlling for depression and other aspects (gender and type of studies like social sciences, humanities and exact sciences) showed that only openness remained significantly correlated and that depression increased the probability of Internet addiction.

5. Aims and Methods

The main purpose of this research was to identify possible trends in youth’s Media and Technology Use (MTU) and Attitudes, taking in to account the possible influence of gender, and emphasizing the role of anxiety/dependence related to MTU and its possible association with
personality. Specific aims were to study the relationships of anxiety/dependence with other dimensions of MTU, like smartphone use, emailing, gambling, media sharing, text messaging, internet search, online friendships, and attitudes towards MTU, also exploring their relationship with the personality dimensions of the Big Five model.

5.1. Participants

The sample was a convenience one and comprised of 322 students (58.91% female and 41.09% male) between 12-18 years of age, with an average age of 14.78 years ($SD = 2.04$), attending between the 6th grade to the 12th grade. Males ($M = 14.62, SD = 2.09$) and females ($M = 14.72, SD = 2.12$) did not differ in age [$F(1, 330) = 0.200, p = .655$]. Regarding educational level, 30% of the cases attended the 6th grade (second cycle of studies in Portuguese educational system), 35% of the subjects attended grades between 7th and 9th (third cycle of studies) and 36% attend grades between 10th and 12th (high school). There were no differences in the frequency of the three educational levels [$\chi^2(2) = 2.168, p = .338$]. In the second cycle of studies, 42.9% of the subjects were males and 57.1% were females, in the third cycle of studies, 51.5% were boys and 48.5% were girls. In high school, 25.0% were males and 75.0% were females. The differences between educational groups, regarding gender, were statistically significant [$\chi^2(2) = 12.945, p = .002$]. In the post hoc procedures for Chi-Square, we verified that the number of boys was significantly lower than the number of girls, in high school ($p < .05$).

Exclusion criteria were: (a) to be younger than 12 years or older than 18 years of age, and (b) clear evidence of difficulties in understanding that would preclude the correct completion of the assessment instruments.

5.2 Instruments

Media and Technology Usage and Attitudes Scale – Portuguese version for Youth (MTUAS-PY, Costa, et al. 2016)

The scale MTUAS-PY is a translation and adaptation to Portuguese youth, between 12 and 18 years of age, of the Media and Technology Usage and Attitudes Scale (Rosen, Whaling, Carrier & Rokkum, 2013) originally designed for adults. The MTUAS-PY is a self-report instrument that assesses technology and media usage (41 items), and attitudes toward technology (15 items). The first 40 items, regarding technology and media usage, are rated by frequency of use on a Likert scale of 10 points ($1 = \text{"Never" to 10 = \text{"All the time"}) and items 41 to 44 are assessed with a Likert scale of 9 points to evaluate the number of online friendships ($1 = \text{"0" to 8 = \text{"751 or more"}$). As regards the use of Information Technology (items 1-41), the ACP oblimin rotation revealed ten factors that explained 72.81% of total variance: (1) Facebook use (11 items), (2) e-mailing (5 items), (3) media sharing/Internet searching (6 items), (4) smartphone usage (5 items), (5) picture and video recording (2 items), (6) video gaming (3 items), (7) information searching (3 items), (8) watching TV (2 items), (9) media searching (2 items), and (10) online friendship (2 items). Attitudes toward technology are assessed with 15 items on a Likert scale of 5 points ($1 = \text{"Strongly disagree" to 5 = \text{"Strongly agree"}$). An ACP with varimax rotation found four factors that explain 60.92% of the variance: (1) anxiety and dependence (6 items), (2) preference for task switching (3 items), (3) positive attitude (3 items), and negative attitude (3 items). In our sample, Cronbach alphas for the 14 factors varied between .952 and .672.

TIPI

The Ten-Item Personality Inventory is a very short inventory (TIPI, Gosling, et al., 2003) based in the Big-Five personality dimensions model proposed by Costa and McCrae (1992, 1994). The TIPI is a 10-item self-report instrument which evaluates five dimensions: Extroversion (Item 1 - Extraverted, enthusiastic and Item 6 - Reserved, quiet), Agreeableness (Item 2 - Critical, quarrelsome and Item 7 - Sympathetic, warm), Conscientiousness (Item 3 - Dependable, self-disciplined and Item 8 - Disorganized, careless), Emotional stability (Item 4 - Anxious, easily upset and Item 9 - Calm, emotionally stable), and Openness to experience (Item 5 - Open to new experiences, complex and Item 10 - Conventional, uncreative). The items are rated on a Likert scale of 7 points (from 1 = "Disagree strongly" to 7 = "Agree strongly"). The authors present the instrument as a useful alternative to a personality evaluation when a brief measure is necessary. Original studies of validity emphasized its
adequate level of convergence with the Big Five Inventory (BFI, John & Srivastava, 1999) and good test-retest reliability levels. The level of convergent correlations with the BFI were $r = .87$ ($p < .01$) for extraversion, $r = .81$ ($p < .01$) for emotional stability, $r = .75$ ($p < .01$) for conscientiousness, $r = .70$ ($p < .01$) for agreeableness, and $r = .65$ ($p < .01$) for Openness. The test-retest reliability was computed comparing evaluations in two sessions separated by six weeks. Results presented a mean $r = .72$, with values oscillating between $r = .62$ for Openness and $r = .76$ for Conscientiousness.

5.3 Procedure
The sample collection took place in 2016 and the questionnaires were administered individually. All the participants that volunteered to participate signed an informed consent and their answers were anonymous. Permission to conduct the study, integrated in a research project, was obtained from national entities that regulate scientific research.

6. Results
6.1 Data analysis
The IBM SPSS Statistics for Windows Version 22 (IBM Corp., 2011) was employed for the descriptive and inferential analyses.

Outliers were identified and accommodated with winsorization. The distribution of the sample was studied. Normalities were assessed by skewness and kurtosis coefficients. According to the Central Limit Theorem the sample was considered large, allowing the use of parametric tests.

Differences between genders, regarding MTUAS-PY and TIPI, were calculated with ANOVA. To test the homoscedasticity (Test of Homogeneity of variances) the Levene test was computed, and, when heterogeneity was found, the Brown-Forsythe correction was calculated.

The scores of the Internet anxiety and dependence factor were transformed into three categories: high, moderate, and low scores. The recoding was based on tertiles (tertile splits) in which each of the three groups contains approximately the same number of cases (rank cases procedure Nties of the IBM SPSS 22). Gender and age differences, between the three categories of anxiety and dependence to the Internet and between the three educational levels were tested using Chi Square test or ANOVA.

The magnitude of the effect was obtained with the Cohen's d test (Cohen, 1988). The interpretation proposed by Cohen (1988) was as follows: .20 - small; .50 - moderate; .80 - high.

Significance was set at the .01 and .05 levels.

6.2 Descriptive data and comparison by gender
Descriptive statistics were calculated both for the total sample and for boys and girls on the MTUAS-PY and MIPI values. When the comparison of means by gender showed statistically significant differences, the magnitude of effect was computed.

Results for MTUAS-PY are divided in usage and attitudes (Table 1). For the sample considered globally, regarding the frequency of usage, the highest mean values were found on smartphone usage, Facebook usage, and media searching and the lowest values were found for online friendship and information searching. Concerning attitudes, the highest values were obtained for positive attitudes and the lowest for preference for task switching.

When boys and girls were compared, gender differences were found in MTUAS-PY usage and attitudes. In usage, boys present statistically significant higher values for video gaming [$F(1,321) = 50.545, p = .000, d = .79$]. Girls, on the other hand, presented higher values in Facebook usage [$F(1,321) = 6.578, p = .011, d = .26$], e-mailing [$F(1,321) = 24.859, p = .000, d = .56$], and picture and video recording [$F(1,321) = 17.393, p = .000, d = .47$]. In attitudes, boys presented higher values in preference for task switching [$F(1,321) = 10.338, p = .001, d = .36$] and girls had higher values in negative attitude [$F(1,321) = 9.153, p = .003, d = .35$].

In summary there were statistically significant differences between genders on usage and attitudes in 6 of the 14 sub-scales of MTUA-PY. Boys-presented higher values on video gaming and in preference for task switching with a moderate effect size. Girls have higher values for Facebook usage, e-mailing, pictures and video recording, and in negative attitudes also with a moderate effect size.
Table 1. MTUAS-PY values for the total sample (N = 322) and comparison of means by gender

<table>
<thead>
<tr>
<th>MTUAS-PY</th>
<th>Total</th>
<th>Boys</th>
<th>Girls</th>
<th>F(1,321)</th>
<th>Cohen d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UF1 - Facebook usage</td>
<td>5.72 (2.37)</td>
<td>5.31 (2.55)</td>
<td>6.00 (2.21)</td>
<td>6.578**</td>
<td>0.26</td>
</tr>
<tr>
<td>UF2 - e-mailing</td>
<td>4.26 (2.08)</td>
<td>3.60 (1.92)</td>
<td>4.71 (2.04)</td>
<td>24.859**</td>
<td>0.56</td>
</tr>
<tr>
<td>UF3 - media sharing/ Internet searching</td>
<td>4.91 (1.81)</td>
<td>4.80 (1.91)</td>
<td>4.98 (1.71)</td>
<td>0.843</td>
<td></td>
</tr>
<tr>
<td>UF4 - smartphone usage</td>
<td>7.67 (1.83)</td>
<td>7.53 (1.86)</td>
<td>7.79 (1.68)</td>
<td>1.769</td>
<td></td>
</tr>
<tr>
<td>UF5 - picture and video recording</td>
<td>4.15 (1.68)</td>
<td>3.70 (1.51)</td>
<td>4.43 (1.63)</td>
<td>17.393**</td>
<td>0.47</td>
</tr>
<tr>
<td>UF6 - video gaming</td>
<td>4.55 (2.48)</td>
<td>5.64 (2.33)</td>
<td>3.80 (2.31)</td>
<td>50.545**</td>
<td>0.79</td>
</tr>
<tr>
<td>UF7 - information searching</td>
<td>3.75 (1.86)</td>
<td>3.52 (1.76)</td>
<td>3.88 (1.86)</td>
<td>3.175</td>
<td></td>
</tr>
<tr>
<td>UF8 - watching TV</td>
<td>5.06 (2.07)</td>
<td>5.00 (2.08)</td>
<td>5.10 (2.07)</td>
<td>0.210</td>
<td></td>
</tr>
<tr>
<td>UF9 - media searching</td>
<td>5.72 (2.14)</td>
<td>5.68 (2.29)</td>
<td>5.75 (2.04)</td>
<td>0.076a</td>
<td></td>
</tr>
<tr>
<td>UF10 - online friendship</td>
<td>2.37 (1.70)</td>
<td>2.35 (1.58)</td>
<td>2.33 (1.57)</td>
<td>0.011</td>
<td></td>
</tr>
<tr>
<td>Attitudes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AF1 - anxiety/dependence</td>
<td>3.41 (0.80)</td>
<td>3.42 (0.71)</td>
<td>3.39 (0.84)</td>
<td>0.077a</td>
<td></td>
</tr>
<tr>
<td>AF2 - preference for task switching</td>
<td>2.42 (0.85)</td>
<td>2.59 (0.84)</td>
<td>2.29 (0.82)</td>
<td>10.338</td>
<td>0.36</td>
</tr>
<tr>
<td>AF3 – positive</td>
<td>4.25 (0.57)</td>
<td>4.26 (0.54)</td>
<td>4.26 (0.52)</td>
<td>0.300</td>
<td></td>
</tr>
<tr>
<td>AF4 – negative</td>
<td>3.11 (0.82)</td>
<td>2.94 (0.76)</td>
<td>3.22 (0.84)</td>
<td>9.153</td>
<td>0.35</td>
</tr>
</tbody>
</table>

a Significant Levene Test, with Brown-Forsythe correction. * p < .05; ** p < 0.01

Table 2. TIPI means (M), and standard deviations (SD) for the total sample (N = 322) and comparison of means by gender

<table>
<thead>
<tr>
<th>TIPI</th>
<th>Total</th>
<th>Boys</th>
<th>Girls</th>
<th>F(1,321)</th>
<th>Cohen d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extraversion</td>
<td>9.35 (2.31)</td>
<td>9.47 (2.41)</td>
<td>9.29 (2.24)</td>
<td>0.473</td>
<td>-</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>10.42 (1.89)</td>
<td>10.31 (1.93)</td>
<td>10.51 (1.84)</td>
<td>0.880</td>
<td>-</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>10.01 (2.33)</td>
<td>8.99 (2.27)</td>
<td>10.67 (2.12)</td>
<td>46.145**</td>
<td>0.77</td>
</tr>
<tr>
<td>Emotional stability</td>
<td>9.47 (2.39)</td>
<td>9.64 (2.32)</td>
<td>9.40 (2.46)</td>
<td>0.800</td>
<td>-</td>
</tr>
<tr>
<td>Openness to experience</td>
<td>10.32 (1.96)</td>
<td>10.22 (2.11)</td>
<td>10.36 (1.85)</td>
<td>0.418</td>
<td>-</td>
</tr>
</tbody>
</table>

** p < 0.01

Mean scores for TIPI on the 5 sub-scales ranged between a lowest value for Extraversion and the higher for Agreeableness (Table 2). Comparison of values by gender only detected statistically significant differences on Conscientiousness [F(1,321) = 46.145, p = .000, d = .77] with higher values for girls compared with boys.

6.3 Internet anxiety/dependence and the personality measured by TIPI

Three categories in the Internet anxiety and dependence factor of MUTUAS-PY (low, moderate or high anxiety and dependence) were considered and results were analyzed taking in to account these different severity levels. The anxiety/dependence measure used is composed by 6 items: three items that belong to original anxiety and dependence factor of the MTUAS (Rosen et al., 2013) (“I get anxious when I don’t have my cell phone”, "I get anxious when I don’t have the Internet available to me", and "I am dependent of my technology") associated with other three items that describe a positive, may be idealized, attitude toward technology ("Technology will provide solutions to many of our problems", "With technology everything is possible", and "I feel that I get more accomplished because of technology").
Descriptive data regarding the three categories are described in Table 3.

### Table 3. Descriptive data of the Internet anxiety and dependence categories

<table>
<thead>
<tr>
<th>Anxiety/dependence</th>
<th>Count</th>
<th>Minimum</th>
<th>Maximum</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>112</td>
<td>1.49</td>
<td>3.00</td>
<td>2.53</td>
<td>0.40</td>
</tr>
<tr>
<td>Moderated</td>
<td>111</td>
<td>3.17</td>
<td>3.83</td>
<td>3.48</td>
<td>0.23</td>
</tr>
<tr>
<td>High</td>
<td>99</td>
<td>4.00</td>
<td>5.00</td>
<td>4.30</td>
<td>0.33</td>
</tr>
</tbody>
</table>

Differences regarding the anxiety and dependence categories across genders and ages were studied. No significant differences were found between genders ($\chi^2(2) = 0.746, p = .689$). There were also no differences in mean age between the three groups ($F(2, 321) = 0.746, p = .475$).

Data showed that the three groups were homogenous regarding gender and age. The differences between the three levels of Internet anxiety and dependence in the personality dimensions measured by TIPI were then analyzed (Table 4).

### Table 4. Means, standard deviations and ANOVA for TIPI dimensions, according to the categories of Internet anxiety and dependence

<table>
<thead>
<tr>
<th>TIPI</th>
<th>Anxiety/dependence</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>F(2,321)</th>
<th>Post hoc</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extraversion</td>
<td>Low</td>
<td>113</td>
<td>9.30</td>
<td>2.12</td>
<td>0.122a</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>116</td>
<td>9.37</td>
<td>2.20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>102</td>
<td>9.44</td>
<td>2.63</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agreeableness</td>
<td>Low</td>
<td>113</td>
<td>10.60</td>
<td>2.01</td>
<td>0.892</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>116</td>
<td>10.41</td>
<td>1.68</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>102</td>
<td>10.25</td>
<td>1.95</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>Low</td>
<td>113</td>
<td>10.27</td>
<td>2.13</td>
<td>3.558**</td>
<td>L&gt;H, p = .044</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>116</td>
<td>10.14</td>
<td>2.23</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>102</td>
<td>9.48</td>
<td>2.59</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional stability</td>
<td>Low</td>
<td>113</td>
<td>9.85</td>
<td>2.35</td>
<td>5.694**</td>
<td>L&gt;H, p = .007</td>
<td>0.45</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>116</td>
<td>9.69</td>
<td>2.38</td>
<td></td>
<td>M&gt;H, p = .030</td>
<td>0.38</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>102</td>
<td>8.79</td>
<td>2.39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Openness experience</td>
<td>to Low</td>
<td>113</td>
<td>10.19</td>
<td>1.81</td>
<td>0.494a</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>116</td>
<td>10.29</td>
<td>2.12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>102</td>
<td>10.46</td>
<td>1.94</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Significant Levene Test, with Brown-Forsythe correction. ** p < 0.01

Significant differences were found for Conscientiousness and Emotional stability, but the three groups were homogenous on Extraversion, Agreeableness and Openness to experience. Regarding the Conscientiousness dimension, significant differences [$F(2,321) = 3.558$, $p = .030$], were obtained between the Low and the High anxiety and dependence groups, with higher values obtained for the Low group when compared with the High group ($p = .044$, $d = 0.33$). Emotional stability also presented significant differences [$F(2,321) = 5.694$, $p = .004$], revealing higher values for the Low group compared with the High group ($M = 8.70, SD = (p = .007, d = 0.45$), and also higher scores for the Low group compared with the Moderate group ($p = .030$, $d = 0.38$). The effect sizes were low.

We can state that those who had higher anxiety and dependence on MTUAS-PY were those who had lower scores in Emotional Stability (described as calm, relaxed, and not anxious or easily upset) and lower scores in Conscientiousness (described as dependable, self-disciplined, organized, and careful).
6.4 Internet anxiety and dependence, and usage and attitudes measured by MTUAS-PY

The study of the differences between the three levels of Internet anxiety and dependence in the several factors of usage and attitudes measured by MTUAS-PY revealed that the only factor where there were no significant differences was watching TV. In all other nine factors statistically significant differences were obtained (Table 5).

Table 5. Means, standard deviations and ANOVA for the MTUAS-PY usage factors, according to the categories of Internet anxiety/addiction

<table>
<thead>
<tr>
<th>Usage factor</th>
<th>Anxiety/dependence</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>F(2,321)</th>
<th>Post hoc</th>
<th>Cohen d</th>
</tr>
</thead>
<tbody>
<tr>
<td>UF1 - Facebook usage</td>
<td>Low</td>
<td>112</td>
<td>5.02</td>
<td>2.24</td>
<td>16.585**</td>
<td>H&gt;L, p = 0.000</td>
<td>0.82</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>111</td>
<td>5.53</td>
<td>2.46</td>
<td></td>
<td>H&gt;M, p = 0.000</td>
<td>0.55</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>99</td>
<td>6.78</td>
<td>2.05</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UF2 - e-mailing</td>
<td>Low</td>
<td>112</td>
<td>3.84</td>
<td>2.01</td>
<td>4.684**</td>
<td>M&gt;L, p = 0.010</td>
<td>0.42</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>111</td>
<td>4.68</td>
<td>2.06</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>99</td>
<td>4.25</td>
<td>2.09</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UF3 - media sharing/Low Internet searching</td>
<td>Moderate</td>
<td>111</td>
<td>4.97</td>
<td>1.68</td>
<td>8.717**</td>
<td>H&gt;L, p = 0.000</td>
<td>0.56</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>99</td>
<td>5.38</td>
<td>1.77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UF4 - smartphone usage</td>
<td>Low</td>
<td>112</td>
<td>7.07</td>
<td>1.83</td>
<td>13.759**</td>
<td>H&gt;L, p = 0.000</td>
<td>0.72</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>111</td>
<td>7.86</td>
<td>1.67</td>
<td></td>
<td>M&gt;L, p = 0.002</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>99</td>
<td>8.26</td>
<td>1.49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UF5 - picture and video recording</td>
<td>Low</td>
<td>112</td>
<td>3.74</td>
<td>1.44</td>
<td>7.701**</td>
<td>H&gt;L, p = 0.001</td>
<td>0.55</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>111</td>
<td>4.11</td>
<td>1.64</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>99</td>
<td>4.60</td>
<td>1.70</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UF6 - video gaming</td>
<td>Low</td>
<td>112</td>
<td>4.13</td>
<td>2.35</td>
<td>3.782a*</td>
<td>H&gt;L, p = 0.013</td>
<td>0.39</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>111</td>
<td>4.46</td>
<td>2.65</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>99</td>
<td>5.05</td>
<td>2.34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UF7 - information searching</td>
<td>Low</td>
<td>112</td>
<td>3.21</td>
<td>1.49</td>
<td>8.726a*</td>
<td>H&gt;L, p = 0.000</td>
<td>0.58</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>111</td>
<td>3.75</td>
<td>1.73</td>
<td></td>
<td>M&gt;L, p = 0.037</td>
<td>0.34</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>99</td>
<td>4.24</td>
<td>2.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UF8 - watching TV</td>
<td>Low</td>
<td>112</td>
<td>4.89</td>
<td>2.07</td>
<td>2.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>111</td>
<td>4.90</td>
<td>2.10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>99</td>
<td>5.40</td>
<td>2.05</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UF9 - media searching</td>
<td>Low</td>
<td>112</td>
<td>5.23</td>
<td>2.30</td>
<td>4.638**</td>
<td>M&gt;L, p = 0.035</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>111</td>
<td>5.97</td>
<td>2.15</td>
<td></td>
<td>H&gt;L, p = 0.032</td>
<td>0.37</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>99</td>
<td>6.00</td>
<td>1.86</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UF10 - online friendship</td>
<td>Low</td>
<td>112</td>
<td>1.75</td>
<td>1.11</td>
<td>22.386a**</td>
<td>H&gt;L, p = 0.000</td>
<td>0.94</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>111</td>
<td>2.23</td>
<td>1.46</td>
<td></td>
<td>H&gt;M, p = 0.000</td>
<td>0.54</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>99</td>
<td>3.10</td>
<td>1.76</td>
<td></td>
<td>M&gt;L, p = 0.018</td>
<td>0.37</td>
</tr>
</tbody>
</table>

a Significant Levene Test, with Brown-Forsythe correction. * p < .05; ** p < 0.01

Data from table 5 showed that:

a) High anxiety and dependence is accompanied with a more frequent use of Facebook [F(2,321) = 16.585, p = .000]; post-hoc Scheffé showed higher values for the High group compared with the Moderate (p = .000, d = 0.82) and Low groups (p = .055, d = 0.55);

b) E-mailing use (UF2) only presented statistical significant differences between the Moderate group and the Low group (M = 3.84, SD = 2.09), [F(2,321) = 4.684, p = .010], with the adolescents with moderate Internet anxiety and dependence showing a more frequent use of emailing (p = .010, d = 0.42);
c) For Media sharing/Internet searching significant differences [F(2,321) = 8.717; p = .000], were found between the Moderate and Low groups (p = .000, d = 0.72), and between the High and Low groups (p = .002, d = 0.25), with the Moderate and High groups showing a higher usage of media sharing/Internet searching than the Low group;

d) In smartphone usage factor the same tendency just described for Media sharing/Internet searching factor was verified, i.e., significant differences were obtained [F(2,321) = 13.759; p = .000] between the Moderate and low groups (p = .000, d = 0.82), and between the High and Low groups (p = .000, d = 0.72), with the Moderate and High groups showing higher values than the Low group;

e) For picture and video recording [F(2,321) = 7.701; p = .000], values of the High group were higher than those of the Low group (p = .001, d = 0.55);

f) In video gaming values [F(2,321) = 3.782; p = .024], values were higher for the High group when compared with the Low group (p = .001, d = 0.39);

g) The information searching factor presented significant differences [F(2,321) = 8.726, p = .000] between the High and Low groups (p = .000, d = 0.58), and between the Moderate and Low groups (p = .037, d = 0.34), with the High and Moderate groups showing higher values than the Low group;

h) The media searching factor revealed statistically significant differences [F(2,321) = 4.638, p = .010] between the Moderate and Low groups (p = .035, d = 0.33), and between the High and Low groups (p = .032, d = 0.37), with the Moderate and High groups showing a higher usage of media searching than Low group;

i) The online friendship factor presented statistically significant differences between the three groups [F(2,321) = 22.386, p = .000]. Those of the High group had higher values than those of the Low (p = .000, d = 0.94) and Moderate groups (p = .000, d = 0.54). Also, the Moderate group values were higher than those of the Low group (p = .018, d = 0.37).

Summing up, individuals with high Internet anxiety/dependence had significantly higher averages in Facebook usage, media sharing/Internet searching, Smartphone usage, Picture and video recording, Information searching, Media searching and Online friendship. The Watching TV factor did not present significant differences in the three groups, and e-mailing only differentiated the moderate group from the low group.

The severity of Internet anxiety/dependence was associated with different levels of Internet usage in 9 of the 10 factors of the MTUAS-PY. Adolescents with higher anxiety/dependence tend to have higher values on the usage scales of MTUAS-PY, and the effect sizes were generally moderate.

6.5. Anxiety and dependence and other attitudes regarding MTU

After comparing MTUAS-PY factors regarding usage for the low, moderate and high Internet anxiety/dependence groups, we compared data regarding the MTUAS-PY Internet attitudes (Table 6).

Table 6. Means, standard deviations and ANOVA of the MTUAS-PY attitudes factors, according to the categories of Internet anxiety/addiction

<table>
<thead>
<tr>
<th>Anxiety/dependence</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>F(2,321)</th>
<th>Post hoc</th>
<th>Cohen d</th>
</tr>
</thead>
<tbody>
<tr>
<td>AF2 - preference for task switching</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>112</td>
<td>2.23</td>
<td>0.79</td>
<td>6.093**</td>
<td>H&gt;L, p = .003</td>
<td>0.49</td>
</tr>
<tr>
<td>Moderate</td>
<td>111</td>
<td>2.41</td>
<td>0.88</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>99</td>
<td>2.63</td>
<td>0.83</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AF3 - positive attitude</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>112</td>
<td>4.00</td>
<td>0.50</td>
<td>26.355**</td>
<td>M&gt;L, p = .000</td>
<td>0.74</td>
</tr>
<tr>
<td>Moderate</td>
<td>111</td>
<td>4.35</td>
<td>0.44</td>
<td></td>
<td>H&gt;L, p = .000</td>
<td>0.90</td>
</tr>
<tr>
<td>High</td>
<td>99</td>
<td>4.46</td>
<td>0.52</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AF4 - negative attitude</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>112</td>
<td>3.11</td>
<td>0.79</td>
<td>0.593a</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Moderate</td>
<td>111</td>
<td>3.04</td>
<td>0.72</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>99</td>
<td>3.17</td>
<td>0.94</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Significant Levene Test, with Brown-Forsythe correction. ** p < 0.01

Data showed statistically significant differences for preference for task switching and for positive...
attitudes towards the Internet, and no differences for negative attitudes towards the Internet. Regarding AF2 - preference for task switching there were significant differences \([F(2,321) = 6.093, p = .003]\) between the High and Low group \((p = .003, d = 0.49)\), with the former presenting higher values. For AF3 - positive attitudes, significant differences were found \([F(2,321) = 26.355, p = .000]\) between the High and Low group \((p = .000, d = 0.74)\), with a moderate effect size, and between the Low group and Moderate group \((p = .000, d = 0.90)\) with a high effect size.

In conclusion, individuals with high scores of Internet anxiety and dependence had a more positive attitude towards the Internet and more frequently performed a simultaneous execution of multiple tasks when compared with adolescents with low scores on Internet anxiety and dependence. Subjects with moderate levels of Internet anxiety and dependence also presented a more positive attitude towards Internet than those with low Internet anxiety and dependence.

7. Discussion
Considering the aims of the present study, the authors examined the relationships established between the specific attitude of anxiety/dependence toward information technologies (score from MTUAS-PY - Attitudes scales), the different usage forms of the information and communication technologies (obtained from the MTUAS-PY- Usage scales) and personality dimensions (obtained from the TIPI).

Gender differences were observed in relation to four MTUAS-PY Usage scores in the present sample (higher usage frequency of Facebook, e-mail, and picture and video recording by females and higher usage frequency of the video games and multitasking by males). Males and females significantly differed in their MTUAS-PY on Attitudes towards multitasking (higher value for males) and negative attitudes towards ICT technologies (higher values from females).

Those findings concerning the technology and media usage by gender are consistent with other studies that showed that girls tend to favor conversations and prefer socializing while boys prefer gaming (e.g. Hinostroza, et al., 2014).

Concerning the age of the sample, no differences were found between the three categorized groups divided by their scores on anxiety/dependency towards ICT technology. Again, dissimilarly with the literature, age was not an important factor for anxiety/dependence. For Internet addiction, some studies (Demetrovics et al.; Morrison & Gore; Ni, Yan, Chen & Liu; Smahel, Brown & Blinka, cit in Pontes, Patrão & Griffiths, 2014), revealed age as an important factor, with younger people displaying higher levels of dependency than older people.

As mentioned by Pontes, Patrão and Griffiths (2014) a possible explanation for different studies’ outcomes may be the fact that most of the studies come from different countries where cultural effects may be playing an important role in terms of social representations of the Internet itself and its misuse. Furthermore, in terms of methodology, our study has a younger sample (the age ranged between 12 and 18 years) than the studies above mentioned (whose samples were composed by college students and young adults), which may account for some of the discrepancies regarding age.

Our data showed that higher levels of anxiety/dependence were associated with more frequent usage in 8 of 10 dimensions (Facebook usage, media sharing/Internet searching, smartphone usage, picture and video recording, video gaming, information searching, media searching, and online friendship) and with preference for task switching and a more positive attitude towards ICT. Therefore, the level of anxiety/dependence can be an overall differentiator of intense Internet use. The relevance of this finding is better understood if paired with the important problems associated with a heavy use of the Internet. High levels of Internet use are associated with decline in mental health (De Leo & Wulfert, 2013; Shapira, et al. 2000; Young, 1988) and with stress (Mark, Wang & Niiya, 2014).

Further investigations on disparities of use and attitudes towards Internet must consider the importance of establishing criteria/cut-off scores for problematic behavior and analyze the relation between anxiety/ dependence and measures of problematic Internet use.

Our results also showed that personality and Internet anxiety and dependency were significantly associated, but only in some personality dimensions. Similarly with previous studies (Papasttylianou, 2013; Samarein et al., 2013), more emotionally instable (neurotic) adolescents scored higher on Internet anxiety and dependence, although in these studies the samples were composed not by adolescents but by college students. Kuss, et al. (2013) also found that higher levels of neuroticism associated with more frequent online shopping were related with Internet addiction. We can hypothesize that
emotionally unstable adolescents, who are prone to negative affectivity, like anxiety and depression, may use the Internet to relieve these symptoms, for example by searching for information to reduce ambiguity that is usually related to anxiety or by searching for sources for online help. Regarding consciousness, adolescents who scored higher in this dimension presented lower levels of Internet anxiety and dependence, consistent with the findings of other studies with adolescents or youth (Kuss, Van Rooij, Shorter, Griffiths, & Van de Mheen, 2013; Samarein et al., 2013). It seems that more conscious individuals may be more careful with their Internet use, displaying less problematic Internet use. In the present study, extraversion, openness to experience, and agreeableness showed no relationship with Internet anxiety and dependence. Other studies, with adolescents or college students, showed positive relationships for agreeableness, (Kuss, Griffiths & Binder, 2013; Servidio, 2014) and openness, (Öztürk, et al. 2015; Papastylianou, 2013; Servidio, 2014), and contradicting associations for extraversion, that is, either positive, among adolescents (Öztürk, et al. 2015; Kuss, Van Rooij, Shorter, Griffiths, & Van de Mheen, 2013) or negative relations, in college students (Samarein, et al. 2013; Servidio, 2014).

Regarding the literature reviewed on the relationship between personality and Internet use or PIU, we would like to emphasize that some studies had problems related to small and not balanced samples. Although there are already some large-scale studies (e.g., Kuss, Griffiths & Binder, 2013; Kuss, Van Rooij, Shorter, Griffiths, & Van de Mheen, 2013), others have rather small samples (e.g., Samarein, 2013; Tan and Yang, 2012). Additionally, one of the studies reviewed included mainly young males (Tan & Yang, 2012) and others mainly young females (Papastylianou, 2013). These sample problems, and the heterogeneity of subjects’ age could have influenced some contradictory results found. In our study, there is a slightly higher number of girls, and although the variable Internet anxiety and dependence was not associated with gender, consciousness was (girls had higher scores than boys). Gender could have influenced the association obtained between consciousness and Internet addiction, and it will be important to make separate analysis for both genders in order to replicate this finding. Culture influences regarding Internet usage may also help to explain some differences between the studies reviewed and between these studies and our own. Regarding other dimensions, like extraversion and openness to experiences, we expected that there would be a significant association to Internet anxiety and dependence, because individuals with these personality characteristics usually seek stimulation from sources outside of themselves and seem to be attracted to a range of features that Internet offers. Nevertheless, no significant associations were found.

Specifically, our findings indicate that the adolescents that are more anxious, moody, easily upset or stressed and less calm and self-confident (emotional instability dimension of personality) have higher values of anxiety and dependence to Internet. Probably these individuals are more likely to go online to relax and find support and comfort, gaining confidence while online and modulating their negative moods. Additionally, the Internet environment allows an anonymity and greater control, which is usually aimed at by anxious individuals.

We also found that more disorganized, careless and impulsive and less self-discipline, and responsible adolescents (consciousness dimension of personality) tend to be more problematic in terms of anxiety and dependence to Internet. Less conscious adolescents may be less careful in online usage.

All in all, online activities do not require the same problem solving and interactional skills compared to real life and may therefore attract individuals with these personality traits that may be less adapted to school work and social interaction in real life leading them to use the Internet more.

Gradually, adolescents with these personality characteristics may become more drawn to their online activity, using it as a mean to escape from real life struggles, like modulating emotions and be involved in work in a dependable and responsible way, and increasing emotional instability and lack of self-discipline and organization. With time, these individuals would have an increased risk to be involved in a compulsive use of the Internet and to have negative outcomes such as lowered academic achievement, missing school and avoiding social interactions face to face.

In future studies, we intend to study the associations between personality, Internet usage and attitudes, and other symptoms of PIU. Additionally, we would like to explore not only the importance of personality in determining behavior on the Internet and attitudes towards new technologies, but also the impact of this interaction on net users’ well-being.

According to our results, personality traits of emotional instability and lack of consciousness may
be risk factors for Internet anxiety and dependence. These results suggest that parents and teachers should pay more attention to youth who show characteristics of these personality traits, helping them to lower the risk to become addicted to the Internet.

These results have other implications for prevention and early intervention work with adolescents, with respect to anxiety and dependence to Internet. Based on these findings, and other studies (see Young, 2015, for a revision), future research should develop treatment protocols and conduct outcome studies for effective management of this Internet anxiety and dependence.

In order to improve the efficacy of interventions on problematic use of Internet, namely anxiety and dependence to Internet, gender and characteristics of the personality must be taken in account. In line with other authors we suggest that therapy should not only address dysfunctional computer usage, but also promote lifestyle changes for life without the Internet (Hall & Parsons, 2001; Young, 2007). Cognitive Behavioral Therapy (CBT) will be an effective treatment for compulsive Internet use (Young, 2007).

There are several limitations involved in this study. The sample size is small and it is not well balanced by gender. There were more girls than boys, despite having demographically matched the three groups (low, moderate and high anxiety/dependence) by gender and age. Therefore, one must be cautious with the generalizability of results. This study is exploratory and focused on one symptom of problematic Internet use, anxiety and dependence. Further research should include larger sample sizes, well balanced in terms of gender.

Alongside personality (a distal cause), other psychosocial variables like loneliness and social anxiety (proximal antecedents) should be studied, to better understand and treat anxiety and dependence from Internet. These can be mechanisms (mediators) that transport the effect of the dimensions of personality like emotional instability, mechanisms through which personality exerts its influence (Davis, 2001). CBT can be the basis for this conceptualization and should be tested in future studies to account for a better understanding of Internet-related problematic behaviors.

Additional research should also examine the role of personality dimensions as risk, moderator or mediator variables of Internet use, abuse and dependence. The personality dimensions of the Big Five theory (Costa & McCrae, 1992, 1994), studied in the present research, correspond to enduring patterns of thoughts, feelings, and behaviors that distinguish one person from another.

Theoretically, these dispositional characteristics are conceptualized as antecedent variables, so the directionality of the relation between personality and Internet use and attitudes is not questionable. However, the exact nature of these linkages must be studied. Additionally, the effects of other variables (such as loneliness and social anxiety) in these relations, as the effect of personality in the relation to other variables (including Internet usage, attitudes and motives) need further investigation.

The impact of personality on Internet use or misuse may be influenced by the type of activities developed on line. So we intend explore the relationships of personality dimensions with the types of use (e.g., Facebook usage communication or emailing) and attitudes regarding Internet (multitasking, positive or negative attitudes regarding Internet) in the prediction of anxiety and dependence to Internet and other PIU symptoms. Longitudinal studies will be carried out in order to clarify the links between variables like personality, loneliness, social anxiety and Internet use/attitudes and PIU.

Loneliness and social anxiety can be both mediators between personality and problematic Internet use. Furthermore, psychosocial variables like loneliness, social anxiety, social isolation, social rejection and depression can lead to PIU, and PIU can lead to further psychosocial problems, in reciprocal interactions that are established over time. Only longitudinal studies will allow the improvement of our understanding of these dynamics. Mediation analyses must be conducted to explore the mechanisms contributing to the relationship between variables of interest. Variables like gender and level of depression must be controlled, as did Papastylianou (2013).

Different instruments to assess PIU and not only Internet anxiety and dependence should be used in future studies. Another great challenge will be to refine theory-based instruments, namely based in cognitive-behavior models like the one of Davis (2001) for problematic Internet use (e.g., the Generalized Problematic Internet Use Scale, Caplan, 2002) and use them in order to test a theory that explains why Internet use appears to be problematic for some individuals and how PIU might be related to mental health.

Additional studies on the prevalence and incidence of PIU and its comorbidity with other psychiatric disorders are needed. Studies with clinical samples of youth and adults are desirable. All
studies revised used subjects from general population to study the relationship of PIU and mental health disorders.

We have analyzed a wide set of Internet behaviors and attitudes, but some authors centered only on specific dimensions, like usage of social networking sites (e.g., O’Keeffe & Clarke-Pearson, 2011). With more than 35 years and staggering development (cf. the evolution of Conversation Prism between 2008 and 2014, Solis, 2014, conversationprism.com) the Web has been changing rapidly. As new applications develop, it becomes harder to define categories of usage, and this is important as it affects comparisons of studies over time. New and emerging Internet behaviors arise as the Internet evolves. Further research will be needed to confirm and further understand this phenomenon.

8. References


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Willingness to Pay for Adaptation Measures to Sea Level Rise: The Case of Coastal Areas in Batu Pahat District, Johor, Malaysia

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Abstract

Sea level rise is one of the major impacts of climate change which poses serious threat to enormous physical property and livelihood interests as well as economic growth and human development. Adaptation measures are an effective approach to reduce the vulnerability from these adverse impacts of climate change. Direct and indirect benefits of adaptation measures include avoiding physical damage, business interruptions, loss of working days, providing a sense of security and responsibility towards current and future generations among others. However, many of the adaptation measures are non-marketed public goods and services. Therefore, non-market valuation is important to estimate the monetary value of the benefits that a community derives from the adaptation measures. Based on a survey of 211 local residents in the coastal areas of Batu Pahat district in Johor, Malaysia, this article evaluates the value of willingness to pay (WTP) by using contingent valuation methods for the adaptation measure, i.e. building a geotube along the coastline. The survey results found that about 13% of the local residents were willing to pay for the adaptation measure while majority of them (73%) were not willing to pay. The average WTP for adaptation measures were estimated at RM54.00 (US $13) per capita which indicates the monetary value of adaptation benefits. The reason for low willingness for WTP might be due to the limited income as well as lack of education and awareness pertaining to climate change issues. Though the majority of the respondents were not willing to pay, 57% of the respondents opined that there is a need for adaptation funds and 58% of them urged that adaptation initiatives should be carried by the government. The results showed that majority of the local residents understood the potential benefits of the adaptation measure. However, the lower value of WTP may not reflect the adaptation benefits accurately rather the value of willingness to accept (WTA) compensation for the livelihood damage would be the correct measure. Thus, the value of WTP showed the moral satisfaction of contributing to public goods and services, not the economic value of the adaptation measure. Finally, the study suggests further research on compensation for the adverse impacts of sea level rise, which might be useful for developing countries to negotiate in climate change issues at the global level.

1. Introduction

In recent years, climate change accompanied by anthropogenic global warming has become a serious issue as the changes are predicted to cause large adverse impacts affecting enormous physical property and livelihood interests as well as economic growth and human development. Sea level rise is among the most profound effects of global climate change caused by the melting of glaciers and massive ice sheets around the world and the thermal expansion of the ocean when the average global temperature increases (Wei & Chatterjee, 2013). Over recent years, the global sea level has risen on average 2.4mm to 3.8mm (IPCC, 2007) and the sea level along Malaysia’s coastline has risen 2.73mm to 7mm during 1993 to 2010. This accelerating rate of global climate change is unprecedented in human history and is estimated to increase in the future. For instance, by the year 2100, sea level is projected to rise 2.5mm to 5.2mm in Peninsular Malaysia with the maximum in Kelantan and Kedah, and 4.3mm to 10.6mm in East Malaysia with the maximum in north and east coast of Sabah (NAHRIM, 2010).
Sea level rise (SLR) is one of the major impacts of climate change which poses a serious threat to the coastal community including increased coastal erosion, higher storm-surge flooding, inhibition of primary production processes, more extensive coastal inundation, changes in surface water quality and groundwater characteristics, increased loss of property and coastal habitats, increased flood risk and potential loss of life, loss of nonmonetary cultural resources and values, impacts on agriculture and aquaculture through decline in soil and water quality, and loss of tourism, recreation, and transportation dysfunctions (Handmer et al. 2012). Furthermore, the economic cost of future sea levels rising without any adaptation measures is huge; US$20.4 billion for the coast of United States (Yohe & Schesinger, 1998), for instance, US$23 million for the coast of Montevideo, Uruguay (Saizur, 1997), and US$30 billion for the total cost of land loss for the coasts in Poland (Zeider, 1997). Thus, adaptation measure are a necessary approach to reduce the vulnerability of the adverse impacts of climate change and must be effective when made.

Climate change adaptation refers to any adjustments to human activities that reduce the vulnerability of humans and ecosystems to climate change impacts (IPCC, 2007). Common hard adaptation measures in the coastal areas include geotubes, ban land along the coast line, storm surge barriers, dikes, and sea walls. These adaptation measures offer both direct and indirect benefits. For instance, direct benefits of adaptation include avoiding physical damage to infrastructure (e.g. energy facilities, transportation, waste management, water resources), residential and cultural heritage buildings, business establishment, stock of inventory, mangroves, business interruption, loss of working days while indirect benefits of adaptation are those such as providing a sense of security and responsibility towards current and future generations. However, many of the adaptation measures are non-marketed public goods and services. In the absence of a market for public goods and services, non-market valuation techniques are important to estimate the monetary value of the benefits that a community derives from the adaptation measures (Nuva et al. 2009). Valuing the benefits of adaptation provides insights into the perspective of the residents as well as guides policy and decision making for managing climate change impacts. Thus, people are simply asked what they would do in a hypothetical situation, which is known as the contingent valuation method (CVM). CVM involves obtaining direct information from individuals about their willingness to pay to implement the adaptation measures to offset the damage of sea level rise. CVM has widely been used in climate change studies to assess respondents’ willingness to pay (WTP) for adaptation measures in the agricultural sector. For instance, Masud et al. (2015) assessed farmers’ willingness to pay (WTP) for a planned adaptation programme for addressing climate issues in the Malaysian agricultural sector and found that 74% respondents were willing to pay for a planned adaptation programme. Similarly, Ahmed et al. (2015) assessed WTP for adaptation in Pakistan’s agricultural sectors for planned adaptation programme and reported that 67% respondents were willing to pay for it. In addition, 71.6% farmers were willing to pay for climate change mitigation policies in Ghana (Acquah, 2011). Gay (2005) also conducted a survey in the coastal town of Dumangas in the Philippines to know if farmers are willing to pay to reduce their vulnerability and found that 87% were willing to pay for planned adaptation programs. On the other hand, in Semarang Urban Area, Indonesia, only 38% of the people were willing to pay a maximum of 40000 rupiah (approximately RM 12) every year for the adaptation strategy dealing with urban air quality to reduce mobile pollution sources (Gravitiani and Rosalina, 2015). Similarly, Tapsuwan et al. (2014) found that WTP is low for most types of water conservation adaptation strategies (17%) except for greywater diversion devices (67%) in South East Queensland, Australia.

In Malaysia, most of the WTP studies for adaptation measures focused mainly on the agricultural sectors. However, there is a lack of WTP studies that measure the adaptation benefits in the coastal area. Therefore, our research has investigated the value of willingness to pay from local residents’ perspectives for a specific adaptation measure, i.e. building a geotube along the coastline in Batu Pahat. Batu Pahat district is one of the low lying coastal areas and is the second largest city in Johor state of Malaysia, which is significantly threatened by the sea level rise.

2. Data collection and WTP estimation

Data was collected through interviews with local residents of coastal areas in Batu Pahat district during August 2015. Interviews were conducted through face to face questionnaire survey administration
where the ‘purposive random sampling’ method was used. The final analysis was based on a 211 sample of local residents. The sample is comprised of 72.6% respondents who were from Segenting, Rengit, Sungei (river) Buloh, Kelicap, Koris, Minyak Beku, Lapangan Terbang, Sungei Punggor and Sungei Lurus and 27.7% of respondents who were from Parit Botak, Parit Haji Bajuri, Parit Haji Moin, Parit Kuda, Pantai Simen, Sungei Ayam Luar, Sungei Kelambu, Telok Buloh, Lubok, and Bagan Laut. The selected samples are reasonably representative of the coastal residents in Batu Pahat.

2.1. Hypothetical market
The questionnaire asked for responses to questions concerning hypothetical scenario which was to evaluate local residents’ WTP to avoid the potential damage of sea level rise or not willing to pay and accept the worse situation. They were informed about the severe impact of sea level rise in Batu Pahat, as projected by NAHRIM (2013). For instance, within 100 years, sea level is projected to increase by average 0.253 meter to 1 meter at Batu Pahat. According to the projected sea level rise by an average of 0.253 meter, 46.88% of road networks will be lost, residential areas 14.08%, population by 10.46% and mangroves by 89.88%. On the other hand, with a 1 meter increase in sea level, all of the resources will be completely inundated and Batu Pahat will be threatened with submergence under the sea. They were also informed about the necessity of the funds to implement the adaptation measure (building a geotube) to reduce the damage of sea level rise. A geotube is used for erosion control and storm surge protection. They are sediment-filled sleeves of geo-textile fabric having an oval cross section of approximately 12 feet. Based on this scenario, respondents were free to decide their WTP.

2.2. WTP estimation
Due to the anchoring effect of the close-ended method, an open-ended question was used to estimate the WTP for implementation of adaptation practices. In the interview process, at first residents were asked whether they were willing to pay (or not) for the adaptation practices. If “yes”, respondents were asked how much they would be willing to pay (by the open ended contingent valuation questionnaire) for implementing these adaptation measures to reduce the damage from sea level rise.

3. Results and discussion
3.1. Socio-economic characteristics of the sample
Respondents’ socio-economic characteristics consist of information related to the demographic such as gender, race, age group, occupation, monthly household income, and their education background. The majority of the respondents were male (70.1%) (female, 29.9%) and Malay (76.3%). The dominant age groups were between 26 to 45 years old and 46 to 59 years old, representing 32.7% and 37.4% of the total sample respectively.

A majority of the respondents (47.7%) only went to primary school. The main occupations of the respondents were businessmen (21.3%), farmers (17.5%) and fishermen (13.3%). Respondents’ incomes varied across the different income brackets with two particular dominant groups, which are the low income below RM1000 (7.6%) and lower middle income with income below RM 3000 per month (46%), comprising 53.6% of total sample. Table 1 summarises the socio-economic characteristics of the respondents.
Table 1
Socio-economic characteristics of the respondents

<table>
<thead>
<tr>
<th>Variable</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>70.1%</td>
</tr>
<tr>
<td>Female</td>
<td>29.9%</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>76.3%</td>
</tr>
<tr>
<td>Chinese</td>
<td>13.3%</td>
</tr>
<tr>
<td>Orang Asli</td>
<td>10.0%</td>
</tr>
<tr>
<td>Others</td>
<td>0.5%</td>
</tr>
<tr>
<td><strong>Age Group</strong></td>
<td></td>
</tr>
<tr>
<td>18-25</td>
<td>6.2%</td>
</tr>
<tr>
<td>26-45</td>
<td>32.7%</td>
</tr>
<tr>
<td>46-59</td>
<td>37.4%</td>
</tr>
<tr>
<td>60+</td>
<td>23.7%</td>
</tr>
<tr>
<td><strong>Highest Completed Level of Education</strong></td>
<td></td>
</tr>
<tr>
<td>Never went to school</td>
<td>10.9%</td>
</tr>
<tr>
<td>Primary School</td>
<td>41.7%</td>
</tr>
<tr>
<td>Lower Secondary School</td>
<td>15.6%</td>
</tr>
<tr>
<td>High School</td>
<td>27.5%</td>
</tr>
<tr>
<td>Institute of Higher Education</td>
<td>4.3%</td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td></td>
</tr>
<tr>
<td>Farmer</td>
<td>17.5%</td>
</tr>
<tr>
<td>Business</td>
<td>21.3%</td>
</tr>
<tr>
<td>Labourer</td>
<td>4.3%</td>
</tr>
<tr>
<td>Fishermen</td>
<td>13.3%</td>
</tr>
<tr>
<td>Housewife</td>
<td>11.8%</td>
</tr>
<tr>
<td>Others</td>
<td>31.8%</td>
</tr>
<tr>
<td><strong>Monthly Household Income</strong></td>
<td></td>
</tr>
<tr>
<td>Low Income (&lt;RM 1000)</td>
<td>7.6%</td>
</tr>
<tr>
<td>Lower Middle Income (RM 1000 – &lt; RM 3000)</td>
<td>46%</td>
</tr>
<tr>
<td>Middle Income (RM 3000 – &lt;RM 5000)</td>
<td>24.1%</td>
</tr>
<tr>
<td>Upper Middle Income (RM 5000 – &lt; RM 8000)</td>
<td>7.1%</td>
</tr>
</tbody>
</table>

3.2. WTP responses

Table 2 summarises the responses of the local residents according to their willingness to pay. This study found that 57.3% of the local residents agreed to set up an adaptation fund. However, only 12.8% local residents were willing to pay for building a geotube and 73% residents were not. On the other hand, 58.3% of the residents said government should pay for that adaptation and 7.1% of the respondents said they were willing to pay but didn’t have the financial ability. The reasons for not willing to pay might be due to limited income of the residents, and lack of education and awareness pertaining to climate change issues and knowledge about adaptation benefits.

Table 2
WTP responses of local residents

<table>
<thead>
<tr>
<th>Adaptation Practices</th>
<th>Responses</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
<td>Number</td>
</tr>
<tr>
<td>Set up Adaptation Fund</td>
<td>121</td>
<td>57.3%</td>
<td>60</td>
</tr>
<tr>
<td>Geotube</td>
<td>27</td>
<td>12.8%</td>
<td>184</td>
</tr>
</tbody>
</table>
3.3. WTP values
Table 3 summarises the maximum WTP values (RM) among residents from Batu Pahat. The results show that 5.2% of the respondents were willing to pay RM10 and 4.3% were willing to pay RM100 while 1.9% residents were willing to pay RM50 for the adaptation measure. On the other hand, the results indicate that 0.5% respondents reported RM20, RM50 and RM150 as their maximum WTP for adaptation measure. The average willingness to pay is estimated at RM54.00 (US$13) which shows that the coastal residents of Batu Pahat perceived the adaptation benefits in monetary values.

Table 3
Average maximum WTP for building geotube

<table>
<thead>
<tr>
<th>Maximum WTP per person</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>RM10</td>
<td>11</td>
<td>5.2</td>
</tr>
<tr>
<td>RM20</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>RM50</td>
<td>4</td>
<td>1.9</td>
</tr>
<tr>
<td>RM80</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>RM100</td>
<td>9</td>
<td>4.3</td>
</tr>
<tr>
<td>RM150</td>
<td>1</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Average WTP = RM54.00 (US$13)*

*Exchange Rate US$1= RM 4.15 during August 2015 when the survey was conducted

4. Discussion and Conclusion

Based on a survey of 211 local residents in the coastal areas of Batu Pahat district in Johor bahru, Malaysia, this article evaluates the value of willingness to pay (WTP) by using contingent a valuation method for the adaptation measure involving building a geotube along the coastline. The survey results found that about 13% of the local residents were willing to pay for the adaptation measures while the majority of them (73%) were not. The average WTP for adaptation measures were estimated at RM54.00 (US$13) that indicates the existence of monetary value of adaptation benefits. Moreover, as adaptation measures are public goods and services, the value of WTP responses may reflect the willingness to pay for the moral satisfaction of contributing to public goods and services, not the value of them (Kahneman and Ketsch, 1990). In addition, lack of education and awareness pertaining to climate change issues may have played a role in low levels of WTP responses. Since the majority of the respondents only went to primary school, they may not be fully aware about climate change and its severe impacts in the present and future. Therefore, when the households do not perceive that they are vulnerable, they may feel less incentive to pay for any adaptation measures (Veldhuizen et al. 2011).

Another reason for fewer responses supporting WTP might be the limited income of the local residents. For instance, about 54% of the respondents were from low to lower middle income households. Therefore, their WTP for adaptation measures to reduce climate change damage is likely to be minimal, merely because their incomes are limited. Similary, about 51% of the respondents’ occupations were directly threatened by SLR as they were fishermen, businessmen and farmers near the coast. Hence, those affected by sea level rise may not able to bear the financial responsibility of adaptation measures. However, this does not reflect that the magnitude of the adaptation benefit is small. Though a majority of the respondents were not willing to pay, 57% of the respondents opined that there is a need for adaptation funds and 58% of them urged that adaptation initiatives should be carried by the government. The results showed that a majority of the local residents perceived the potential benefits of adaptation measures that can significantly reduce the impacts of SLR in Batu Pahat.

Instead of respondents’ low WTP for implementing adaptation measures to reduce the destruction of their livelihoods, the correct measure of adaptation benefit for the population with limited income would be the level of compensation that they accept having their livelihoods damaged due to SLR without any adaptation. Thus, evaluating the value of willingness to accept (WTA) for
compensation of the livelihood damaged due to SLR would be the correct measure. Stage (2010) also emphasised the moral argument that the issue is not about how much the poor inhabitants are willing to pay to prevent the climate change, the issue is how much that rich countries should pay in compensation for the damage that they are causing for poor inhabitants to measure the impact of climate change.

The willingness to accept (WTA) when correctly measured is likely to be considerably larger than WTP when they are environmental assets, public goods and play a major role and have no close substitute in the lives of the respondents (Brown and Gregory, 1999; Graves, 2009 and Stage, 2010). In addition, Hanemann (1991) noted that “in the limit, WTP could equal the individual’s entire (finite) income, while WTA could be infinite”. Therefore, for adaptation measures to SLR in coastal areas, WTA could capture more of the adaptation benefit in monetary terms compared to the value of WTP. Finally, the study suggests further research on compensation for the adverse impacts of SLR, which might be useful for developing countries to negotiate the climate change issues at the global level.

Acknowledgements

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References


Individualized Literacy Instruction in High School: Two Case Studies

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Abstract

Between 2003-2012, the number of students with IEPs who spend more than 80% of the day in general education classes has increased from 49.9% to 61.9% (U.S. Department of Education, 2014). In terms of creating a more inclusive school experience for students with disability labels, it appears that we are moving in the right direction. At the same time, however, it is important that students – especially secondary students who struggle with reading – are getting the individualized instruction they need to be able to independently access print. In many cases, the needs of students have been conceptualized as an ‘either/or’ proposition. That is, either students are included in general education classes and receive the support (often Resource Room) to pass these classes but don’t receive literacy instruction; or they receive the majority of their instruction, including reading instruction, in a more restrictive setting. The finite resource available in schools that seemingly creates this dichotomy is time: there are only so many hours and minutes in a school day. Is it possible to have inclusion and individualized instruction in high schools? The emergence of Response to Intervention (RTI) in recent years (Duffy & Scala, 2012; Fisher & Frey, 2013.) has been one potential solution to this issue. Depending on the design of RTI in a given school building, RTI has the potential to maintain the spirit of principles of inclusion, while at the same time providing individualized instruction. However, for those students who have significant reading delays, is traditional reading instruction the best use of the students’ time in school? Could they be taught to make use of technologies to support their access to print, while at the same time being provided with modeling that is a necessary (but not sufficient) aspect of reading instruction? Combining technology with principles of literacy instruction provides students with both skills and confidence to be successful readers (Silver-Pacullia, Ruedell, & Mistrett, 2004). Although technologies are available and RTI does offer a possible resolution to the either/or structure of the past, school administrators do not always take advantage of these possibilities. In this article, I present two case studies of students who had significant reading delays and the approaches used in each case assist them in accessing print.

Keywords: reading instruction, learning disabilities, high school, assistive technology
Between 2003 and 2012, the number of students with IEPs who spend more than 80% of the day in general education classes has increased from 49.9% to 61.9% (U.S. Department of Education, 2014). In terms of creating a more inclusive school experience for students with disability labels, it appears that we are moving in the right direction. At the same time, however, it is important that students – especially secondary students who struggle with reading – are getting the individualized instruction they need to be able to independently access print.

In many cases, the needs of students have been conceptualized as an ‘either/or’ proposition. That is, either students are included in general education classes and receive the support (often Resource Room) to pass these classes but don’t receive literacy instruction; or they receive the majority of their instruction, including reading instruction, in a more restrictive setting.

The finite resource available in schools that seemingly creates this dichotomy is time: there are only so many hours and minutes in a school day. Is it possible to have inclusion and individualized instruction in high schools?

The emergence of Response to Intervention (RTI) in recent years (Duffy & Scala, 2012; Fisher & Frey, 2013) has been one potential solution to this issue. Depending on the design of RTI in a given school building, students (both with and without disabilities) can be provided with an opportunity (daily or several times weekly) to develop organizational, literacy, technology, or content area skills (e.g., science). Students are provided with more intensive instruction as they move through ‘tiers’ of instruction (more minutes and lower teacher-student ratios as they move from one tier to the next) as their needs dictate. Such an organizational model has the potential to maintain the spirit of principles of inclusion, while at the same time providing individualized instruction.

However, while the rhetoric of ‘individualized instruction’ is used when discussing more ‘intensive interventions’ as one moves through the tiers of instruction in RTI, in practice, many schools and districts utilize a standard protocol, which calls for pre-determined packaged programs in each tier (Ferri, 2012). Thus, individualized planning and instruction often do not occur.

A Disability Studies in Education (DSE) Lens on Literacy Instruction

Collins and Ferri (2016) advanced an alternative framework on literacy instruction, based in Disability Studies in Education. This approach recognizes the strengths of all learners and focuses on the ways in which teachers can create contexts wherein these are utilized to engage the meaningful participation of every student. They suggest three important habits of mind that teachers should develop in order to foster a DSE approach to working with students: 1) taking responsibility for all students; 2) presuming competence; and 3) understanding that “[s]truggle is not a characteristic of individual learners; a struggling reader or writer is one who is experiencing a mismatch between their preferred literate mode and the one they are being asked to communicate with in school” (p. 8).

The authors suggest ways in which teachers can create classroom environments that create a better match between students and curriculum, including differentiated instruction and using student interests to design instruction. The suggestion of a differentiated curriculum is an important one, and one that many teachers do utilize in order to ensure the participation of all students. However, in many cases, that approach does not go far enough in terms of helping to address the ‘mismatch.’ Creating opportunities to engage in literacy through various modes of expression is important, but for many students and families, so is working through the ‘mismatch’ – this mismatch is often the same one that students will experience in other areas of society once they leave school. Providing other avenues of literacy is important, but so is equipping students to be able, at a minimum, to access texts independently. This often takes more than a skilled teacher who can differentiate content: it may require additional time to help individual students learn to access texts.
In addition, for those students who have significant reading delays, is traditional reading instruction the best use of the students' time in school? Could they be taught to make use of technologies to support their access to print, while at the same time being provided with modeling that is a necessary (but not sufficient) aspect of reading instruction? Combining technology with principles of literacy instruction provides students with both skills and confidence to be successful readers (Silver-Pacullia, Ruedell, & Mistrett, 2004). However, for older students who struggle with reading, the use of technology may be used for two different reasons: 1) remediation of specific skills through individualized and repeated practice or 2) the use of technology to bypass the barriers of a disability (Edyburn, 2003; Day & Edwards, 1996).

Although technologies are available and RTI does offer a possible resolution to the either/or structure of the past, school administrators do not always take advantage of these possibilities. In this article, I present two case studies of students who had significant reading delays and the approaches used in each case to assist them in accessing print.

Method

Background
I was called by a Special Education Administrator to consult with the District about two individuals with disability labels who were several years behind their peers in terms of reading levels. Both students were freshmen, and I was called in February. The students were “fully included” into general education classes, meaning that all of their classes were with general education peers, with the exception of one hour. They had one Study Hall each, which was their Resource Room period. During that hour, students were provided with assistance to complete their homework.

Setting
The school district serves grades 9-12 and is set in a suburban community that has a population of 95% Caucasian students. The school district is in a Midwestern state, approximately 45 minutes from the most populous downtown area in the state. The school district is also a comprehensive high school. The school has two buildings, known as North and South campus. North campus houses freshmen and sophomores; South campus houses juniors and seniors. The school serves approximately 2,200 students; 7.4% have disability labels; 4.9% have Specific Learning Disability labels; 2.4% of students receive free or reduced lunch.

Participants
Andrew and Kyle are both 9th grade males with learning disabilities and significant reading delays. Andrew is 15 years old and loves technology. He does the majority of his work (note-taking, paper writing, calendar, etc.) on his laptop. He navigates the internet well. Andrew is excited about school, works hard, and resents having to take a Study Hall. He would prefer to take a full academic load. He advocates well for himself. If he doesn’t know something, he does not hesitate to ask peers or teachers. His parents report that he typically spends at least four hours a night on homework and he does not complain about it.

Kyle is also 15 and is very interested in World War II aircraft. He does not like school and his parents report that it is a struggle every day to get him to attend. They bring him to school in the morning. Approximately 40% of the time, he stays in school the entire day. The rest of the time, he leaves school grounds before lunch time and does not return. He does not have a favorite subject or teacher and very much dislikes going to the Resource Room during his Study Hall. He does not want other students to know that he needs additional help. More often than not, Kyle does not complete class work or homework. Kyle likes to work on a computer, but if he comes to a website or screen that he is unfamiliar with, he tends to become frustrated. He does not ask for assistance. Instead, he will tend to stop working and either remain seated or get up and walk out of the classroom. He does not always respond to individualized instruction. He had one or two adults who he connected with at the middle school, but now that everyone...
is new at the high school, Kyle is not really connected to any adults there or to peers. Kyle is very motivated by the possibility of getting his driver’s license, so that incentive was being used to bolster his attendance when I conducted my observations. The incentive appeared to be effective as Kyle was increasing the number of days he stayed at school the entire day.

Data Collection and Analysis
I reviewed each student’s cumulative folder, which contained records from as far back as their elementary school years (second or third grade). I met with the Special Education Administrator initially to discuss what she was hoping to accomplish. She and I also met with Kyle’s parents (mother and father); and had a phone conference with Andrew’s mother, who is the Literacy Specialist in another school district. I observed each student for a half day and spoke with their general and special education teachers. I spoke with Andrew about school, what he likes and doesn’t like; Kyle was unwilling to meet with me. In addition to the materials noted above, I was provided with a current reading assessment for Andrew, conducted by his mother.

Fifteen months after my initial evaluations, recommendations, and discussion about implementing those recommendations, I was asked to review student progress and meet with their parents. In preparation for this meeting, I visited the school campus and met with the Special Education Director, spoke with Kyle and Andrew’s special education teachers, spoke with Andrew (Kyle did not want to speak with me), reviewed work samples, and reviewed both students’ most recent IEPs.

In this section, I present information about each student, and outline the recommendations I made to the school district.

Andrew
Present Levels: According to a recent reading assessment conducted by his mother, Andrew is reading at approximately the 2nd grade level. He knows most consonants and 24 of 56 vowel sounds. He correctly read words such as “president,” “amazement,” “settlement.” He erred on the word “freshen” saying instead “freshid”; said “silent’ for “silently” and “carelessness” for “carelessly”, indicating a need for instruction on word endings. Sentence dictation was found to be at the 2nd grade level.

Observation: During an observation in English class, Andrew completed a quiz. After he turned it in, he took out his laptop and began working on his Deer Farms presentation. The teacher came over to work with him on it. She read the text aloud to him and Andrew noted the mistakes (grammatical – e.g., themselves/ theirselves) and he made the changes on his laptop.

When the teacher went to work with another student, I asked Andrew about his project. He began to explain his topic and read the headlines from two of his PowerPoint slides. The teacher returned and asked about Andrew’s suggestions regarding viable alternatives to deer farms and what the implications of those might be. The teacher was pushing Andrew to clearly define and articulate potential problems (Andrew was saying deer can’t defend themselves in the wild and the teacher was questioning this). Andrew spoke very confidently on the topic.

Kyle
Kyle’s records reveal that he has a strong interest in World War II planes. He likes to build and take things apart such as Legos, cars, and airplanes. Kyle also likes to tell stories. Math appears to be a relative strength.

Present Levels: A review of Kyle’s records indicates that he is reading at the 1st grade level. (This statement is based on scores reported in his current IEP and the fact that the most recent IEP from the middle school had a reading goal focused on reading a grade 1 passage with 90% accuracy). Therefore, his knowledge of phonics, sight words, structural analysis (word parts/syllables/prefixes/suffixes), vocabulary and comprehension are unknown. One assumption I made, based on the two data points I did have, was that Kyle likely has some
basic phonetic knowledge and some sight vocabulary (this is not uncommon for first grade reading achievement).

Observation: I observed Kyle in science class. Mrs. Fritz had a variety of activities planned for the day’s class. First, she handed back a quiz to each student. They were allowed to make corrections and receive additional credit for doing so. The teacher answered questions about the quiz. Then she gave them a few minutes to work. Many students worked on their changes and got up to hand the quiz back in. The teacher then gave the students a few minutes to finish up and they transitioned to the next activity. During this time, Kyle did not look at this paper or ask any questions. For the second activity, they looked at data they had collected for homework and commented on it. Kyle did not take out any homework.

After this discussion, students were given the task of coming up with different ideas for how to group and display the data they had collected (regarding how they produced and consumed energy over the previous 24 hours). This was a small group activity and Mrs. F. displayed small groups on the white board. They could choose where they worked. All students took a few minutes to get into groups. Kevin did not leave his seat and did not engage in discussion with any classmates.

For the next activity, Mrs. F. explained that they would be working on “Skydive” in the Computer lab. She explained that they may have to try it more than once, but their initial attempts would provide information for how to approach the task the next time. During this explanation, Kyle looked at the teacher and appeared to be listening to instructions.

Once in the Computer Lab, Kyle worked on “Skydive” on his own. He was engaged in the activity for approximately 10 minutes (1:45 – 1:55). When Mrs. F. went over to ask him how it was going, he appeared frustrated. She reminded him that the software program “gives hints” and that the program “is meant to be tried multiple times.”

Kyle said, “It didn’t give no hints. I’m not gonna do it multiple times – it’s stupid! How do I get it off of here?” His teacher tried to explain further, but Kyle talked over her. She tried to get him to work on it again. Kyle stopped work completely at 1:57.

Recommendations

Although these are very different students, traditional reading instruction recommendations would include:

1. Daily, systematic* instruction focused on:
   a. Missing phonics sounds or syllables (e.g., /tion/)
   b. Fluency
   c. Comprehension strategies, (including vocabulary)
   d. Writing

   *Systematic instruction should follow a scope and sequence and should incorporate review into each lesson. Each lesson should also include opportunities for daily reading and writing as well as an opportunity to listen to reading (read-aloud). The systematic instruction should be provided by a teacher or tutor who has experience teaching reading and planning guided reading lessons based on an analysis of student need.

2. The topics used as the basis for instruction should be determined in consultation with the student. Motivation at this age is essential.

3. The texts should then be based on the student’s interest(s) and current reading level. Students should have independent and instructional level texts for each tutoring session. This may require modification of some texts by the tutor.

   However, given the students’ ages and current levels of reading performance, I strongly recommend that the district consider technology instruction to aid students in accessing print. The recommendations in this arena are as follows:

1. The media that students will use should also be determined in conjunction with the student, the family, and the District. Given Andrew’s use of technology, a combination
of print and electronic resources would be reasonable. He should be taught to access electronic versions of textbooks, utilize the voice output/electronic features, utilize software such as Inspiration to help with organizing his thoughts for writing, and create a blog to publish his written work. These and other forms of media will make use of, and build on, Andrew’s technology skills and help him to use these in the service of accessing and creating electronic forms of print.

2. The media that Kyle will use should also be determined in conjunction with Kyle, the family, and the District. Moving forward, it would be useful for Kyle to become familiar with Kurzweil software. The device used (laptop, notebook, etc.) should be one that can be used to support Kyle’s learning in content area classes during the regular academic school year. For literacy development, a combination of print and electronic resources would be reasonable.

3. In addition, for Kyle, developing rapport with him is essential for the success of any intervention. Marie Kopp has been identified as an individual who worked well with him when she was substitute teaching. It was thought that she would be someone with whom Kyle would be likely to work with. Thus, the first recommendation is to hire Marie Kopp to work with Kyle on literacy development this summer. Working outside of school with someone he likes may lessen his resistance since he won’t be seen as “different” from his peers.

4. Given Mary K.’s background as a Speech & Language Therapist, she is likely to require some Professional Development in the components of reading and effective teaching of phonics, word study, guided reading, vocabulary and comprehension.

5. The district should consider employing a technology or computer teacher to work 1:1 with each student. This would ensure that the hardware and software contain the curriculum elements for each student’s course of study, and that the software provides support for accessing print. The technology instructor would need to collaborate with the students’ teachers.

Results
Andrew’s mother opted for the traditional reading instruction recommendations. Although Andrew utilized technology regularly, she did not want him to use it to access print. She wanted him to be able to read, for himself, what was on a website or in his textbooks, etc. In November of his sophomore year, she did agree to allowing Andrew to use Kurzweil for 10th grade (a system that reads aloud textbook information) so that he could access the information required for his content area classes. But Andrew continued to receive reading instruction during his RTI block.

A special education teacher worked with Andrew during his daily RTI block for the rest of freshman and for sophomore year. They utilized the Language! reading program. Andrew was in a group with three other students, all of whom were reading 2-3 years above Andrew. During the Spring of his sophomore year, Andrew was given the Qualitative Reading Inventory by his special education teacher, and was found to be at 3rd grade reading level.

Kyle’s parents opted for the technology instruction recommendations. They felt that Kyle would be insulted by traditional reading instruction, that it would be too “baby-ish” and would further alienate him from school. The Speech and Language teacher who Kyle felt comfortable with was not available for employment by the district in the role of Kyle’s tutor. The district, was able to hire a computer teacher the first summer to work with Kyle.

The goals of the technology instruction were to have Kyle access his textbooks independently and to advocate for himself as needed. It took two months before Kyle was willing to work with his computer teacher. The rapport and trust building were important factors in this relationship. After two months, Kyle’s teacher was able to get Kyle to follow a step-by-step
process to access his textbooks online, find the section he needed, and have the content read aloud to him. The step-by-step nature was important so that Kyle knew exactly what to do; and could start again and systematically follow the steps when he did get stuck.

Kyle’s special education teacher attempted to assess Kyle’s reading using the QRI, but Kevin was non-responsive. In his IEP for that Spring, he was listed as being at a 2nd grade reading level. However, he was passing all of his content area classes, and it was noted that his frustration level had lessened. He reported feeling better about school and that being able to access his texts and listen to the content using headphones or earbuds made him feel “cool.” His attendance – and staying for full days – improved during his sophomore year. He met with his computer teacher, one-on-one, after school at his home once per week during the school year. Kyle still did not ask for help at school and rarely participated in activities where a partner and group work were required. He handed in more assignments than he had the previous year.

Discussion

Andrew made some progress in reading, moving from 2nd to 3rd grade level, using traditional reading instruction. Kyle seems to have stayed at the same level in terms of reading, but his ability to access grade level content increased, which led to an increase in performance in content area classes. Perhaps most importantly, his confidence appeared to have increased. Feeling more confident, he was more willing to remain in school.

Increasingly, high schools are becoming more flexible and are able to provide students with individualized instruction to meet their needs. The district involved in these case studies hired a literacy consultant and a computer teacher to meet the needs of two students with regard to their unique reading needs. Though the recommendations were similar, the parents and student chose different options.

With only two years left in school (possibly more for Andrew, if he chooses to stay until he is 21), it is unlikely that Andrew and Kyle will “catch up” in terms of reading ability. If they are able to utilize technology to access print, this may be as important, if not more so, than being able to access print independently at more than a basic level.

High schools have a responsibility to ensure that students are leaving their schools with minimal levels of skills. In this day and age, for some students with significant reading disabilities, it appears that there may be a point where a decision has to be made about instruction to access print oneself or through the use of media. Many factors must be considered when making these decisions, including student motivation, family preference, and district resources.

These case studies show the ways in which one district made an effort to: 1) be responsive to students’ individual needs; and 2) tackle the same challenge in two different ways. High schools must be able to provide this level of individualization and flexibility in order to meet the needs of all learners.
Works Cited


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**Recommended Resources for District/Tutors:**


Communication in a Multicultural Virtual Learning Environment: Learning Communication Skills in Higher Education

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ABSTRACT
Higher education institutes and global, transnational work life networks have created a real need for intercultural communication skills where using a foreign language is essential for successful communication. In higher education institutes’ courses are often organized virtually in a transnational environment that has an effect on the communication process. This paper reports upon a case study focusing on dimensions of communication competence in a virtual learning environment on a pilot virtual course shared between three Finnish Universities of Applied Sciences (FUAS) and taught by the authors in spring 2012. The empirical data were gathered from learning diaries, forums, and videos from the virtual course. By investigating the perceptions, attitudes and experiences of individuals of foreign origin and their Finnish peers participating in the course, the aim was to understand the existing communication skills and the competence needed for different agents to cooperate and work side by side in environments that are becoming even more transnational. From the findings it can be argued that the whole process of e-learning needs to be rethought, since it was seen by participants as something in addition to their studies that encroaches on extra-curricular time. A third culture in the virtual learning environment needs to be created. Results also indicate that motivations and attitudinal orientation are crucial in virtual communication: this course was seemingly task-oriented, but ultimately it also enhanced personal communication skills. As expected, acquiring new IT skills was seen as challenging but rewarding and learning the other party’s native language was seen as an asset in being accepted into the surrounding community. The crucial role of time-orientation in nonverbal communication for resolving communicative conflicts was also illustrated and highlighted more in the virtual environment.

Keywords: Third Culture, Virtual Learning, Communication Competence

1 Introduction
With globalisation and increasingly transnational work environments, intercultural communication skills have become a core competence for nationally and internationally effective businesses (Väyrynen 2000: 32-33) and need thus to be taught in higher education institutes. Transnational work and learning environments make it possible to practice these skills in various ways, but virtual learning environments are also becoming more popular. Learning in a virtual environment does, however, pose novel challenges. When teachers and students do not get to meet face-to-face, there is a need to consider many special factors when planning and implementing courses. Foreign language skills, selecting a common, shared language (usually English) and cultural and technology related issues are among the key issues one needs to be aware of. In the present paper these issues are discussed from the perspectives of virtual learning courses in higher education institutes. Virtual learning environments alter communication and may even hinder students from building social relationships needed to communicate and work effectively. Linguistic and communication skills, socio-cultural knowledge and personal attitudes as well as transferring professional skills to a virtual learning and working environment are the key areas in effective co-operation. This is especially important to take notice of in virtual courses.
Virtual communication also has some benefits compared to face-to-face communication. When communicating via an e-mail or a blog, you do not have to wait your turn and you are not interrupted before you have made your point. You can take your time to read messages and think them through, and also to formulate your answer and point of view. For many it is easier to read and write a foreign language than to listen and speak it. E-mail discussions are also easily shared with others and they serve as documents or memos of discussions. Berry (2011: 189–198) claims that virtual communication is more issue-specific than face-to-face communication, and emphasises the efficiency of issue-specific communication. In issue-specific communication, ideas presented by participants and feedback given to colleagues are more direct, and evaluations of fellows are based on their work rather than their personality. Moreover, there are fewer problems caused by stereotyping, power relations, personalities, group forming and political conflicts, and learning of all participants increases when different points of views are represented.

This paper introduces a research focusing on dimensions of intercultural communication competence in a virtual learning environment. A case study approach was used to study a virtual course organised by three Finnish Universities of Applied Sciences in spring 2012. The Federation of University of Applied Sciences (FUAS) is a strategic alliance formed by HAMK, LAMK and Laurea and Universities of Applied Sciences who have agreed on a common strategic intent for 2020. This strategic intent is to be an internationally respected federation of independent Universities of Applied Sciences that strengthens the international competitiveness of the Greater Helsinki Metropolitan Area, offering higher education, research and regional development services required by the metropolitan area's business life and population.

This course (FUAS Intercultural Communication Today, 5 ECTS) was the first of three elective courses in the FUAS Intercultural Studies (15 ECTS credits) aimed at Bachelor level, to both full and part-time students. The three courses approached intercultural communication from different perspectives. The aim of this first course was to enlarge and deepen the students’ understanding of the core concepts, challenges and possibilities of intercultural communication from cultural, communication and language skills perspectives. The course also aimed at providing students with an understanding of the most popular theoretical frameworks and an understanding of the key terms of intercultural communication and cultures from various perspectives. The course was for the first time, so there was a real need to do a case study of it in order to be able to develop it further.

In the beginning of this article the conceptual dimensions of intercultural communication competence, namely cognitive dimension, skills and attitudinal orientation, are introduced and the use of common, shared foreign language is discussed. In the next chapter the case study in a virtual learning environment is introduced. The following chapter concentrates on analysing the gathered data, and based on that analysis the conceptual dimensions of intercultural communication competence in relation to virtual learning environments and their special features are discussed at the end.

2 Theoretical background

2.1 Intercultural communication

Intercultural communication in different contexts and professions will inevitably take different forms and requires different skills from individuals. Therefore, teaching the required skills for future professionals is demanding. The term *intercultural* can be defined as a situation where representatives on different cultures interact with each other. In case the communication is intercultural the interaction may include aspects of the counterpart the participants do not feel they can relate to or understand. Cai, Wildon & Drake (2000) found in their respective study of intercultural negotiation situations that contextual collectivism increases the joint profit, but that the *culture in context* perspective facilitates both the negotiation and enhances the understanding of the cultural values of others. The following definition by Spitzberg and Cupach is significant for the aims of the present paper, as they write that intercultural communication is
a symbolic, interpretative, transactional and contextual process in which the degree of difference between people is large and important enough to create dissimilar interpretations and expectations about what are regarded as competent behaviours that should be used to create shared meanings. (Spitzberg & Cupach 1993: 58)

In multicultural environments, the exchange of opinions and thoughts between individuals and groups is often uncertain: intercultural communication can be seen as communication between such social groupings whose shared images of the symbolic reality are not completely correlative to each other. When the communication is both verbal and non-verbal the risk of misinterpretations is smaller compared to virtual leaning environments (later referred to as VLE) where communication means trying to bring the different worldviews and meaning attributions closer to each other through and with the help of verbal interaction. VLEs require various communicative skills from both the lecturers and the students, and it can be considered to be an intercultural communication culture in itself. Intercultural communication has not been researched in this context a lot.

2.2 Third culture

When discussing intercultural communication competence it is important to notice that the most important factor in effective, successful, reciprocal and equal communication is that all individuals approach the communication situation from the perspective of thirdness. Kramsch (1993, 2006) and Kramsch and Whiteside (2008) have developed the concept of third culture to describe situations where people use a shared language which is not a mother tongue to either party. According to the authors, in the situations of third culture, communication ends up being of better quality than in situations where someone’s native language is being used. A cooperative orientation that supports both communication and shared goals is easier to accomplish in social situations where other aids, such as shared and commonly known rules of action, common (professional) background knowledge, clear contextual restrictions such as time constraints or other resources, can also be utilised in order to help communication. On virtual courses the teachers have a big part in providing this kind of background information so the course can run smoothly.

It is more difficult to construct a third culture in virtual work communities where less information is shared than in face-to-face communities. The tools utilized in the communication have various effects, too. First of all, people may feel more insecure when they cannot utilise and interpret facial expressions and gestures in communicating via phone, chat or e-mail. Secondly, constructing a third culture slows down when people do not learn to know each other due to a lack of face-to-face connection, resulting in difficulties in understanding others’ beliefs and practices and creating false expectations. (Berry 2011: 189-195.) In addition, members of a virtual community do not necessarily know the restrictions or advantages of technological communication tools, and are not able to utilise them in the most beneficial ways (Grosse 2002: 22).

In this paper the emphasis is on the skills needed in constructing a third culture. A third culture does not need to be equal and it may favour some participants over others. However, as Kramsch (2006), Kramsch and Whiteside (2008) point out, the perspective of thirdness is an important requisite for successful reciprocal communication. In a VLE this might be easier than in a normal classroom, since participation can be from where ever students wish to be. Thirdness is a crucial starting point in contemporary higher education: learning and innovation becomes easier with more voices and viewpoints. Working in a VLE might enhance equal intercultural communication, since all students are on their preferred locations and course parameters are the same to all participants. A prerequisite for this is that all participants know the shared rules of working in a VLE, goals of the virtual course and common rules of action. The teachers’ role in facilitating this kind of learning process is at the core, but taking part in a virtual course demands a lot from the students, too.
2.3 Intercultural communication competence

2.3.1 Cognitive dimension

The present study was based on examining third culture, intercultural communication and their components, one of them being cognitive dimension. The hypothesis was that intercultural communication in a virtual learning environment is effective only if the participating individuals share a common understanding about what communicative and professional practices are appropriate and meaningful. These practices include written and oral communication in different languages as well as virtual communication. If the participants in the communication situation are from different cultural backgrounds, this kind of shared basis may not exist or it may not be substantial. In VLEs differences in interpreting the meaningfulness of different aspects of intercultural communication are even greater, since the possibility of misinterpreting one’s behaviour and information is larger, due to lack of face-to-face contact and other factors of the virtual environment. Therefore, it is vital that participants are able to create and sustain a shared communicative basis by negotiation, and a common language is the core of this negotiation process. When this common language happens to be a foreign language to all participants, the manner in which this language is used, has to be negotiated, too. Otherwise the participating sides are not able to build a solid foundation for the communicative process.

2.3.2 Skills

In a virtual learning environment, people need various skills in communication and social interaction. This presents a challenge for higher education. It is not realistic to assume that internationalization can happen simply through foreign language education, language courses, international courses or short periods of student exchange, but it requires more thorough and long-term planning and dedication (Crawford & Bethell, 2009:189-213). The ability to jointly negotiate and develop a third culture framework upon which interaction and communication may be based may be considered as a competence consisting of many skills relevant to intercultural communication. At the core of all these aspects lies an ability to understand and process new (social) environments (Cummins 2000: 8), readiness for information transfer and acting together in social contexts (cf. Lasonen & Halonen 2009; Friedman & Antal 2005, Holden 2002; Hammar-Suutari 2005: 115; Sercu 2004). Information can be public or context-specific, subjective information. Koehn and Rosenau (2002) add the ability for listening and understanding to the previous list, whereas Fantini (1997) emphasises an ability to communicate effectively in a foreign language without changing the meaning of the message conveyed. When students cannot meet or communicate face-to-face, conveying a message effectively in a foreign language and listening to others become key skills in successful intercultural communication.

A common language is an important factor when negotiating meanings and practices of communication, i.e. constructing a third culture. People need skills in the given common language to be able to negotiate a shared set of rules, roles and expectations which guide their communication. When a common language is a foreign language for all participants of an intercultural encounter, its meanings and terms are not shared, and therefore must also be negotiated. If cultures are not shared, a variety of possible meanings exist. If participants are not aware of the existence of various meanings, and if they are not able to explore and negotiate them, there is a risk of serious misunderstandings. Misunderstandings also happen because the participants may not understand a common language perfectly, or do not speak or write it very well. Various pronunciations and intonations may also be difficult to understand and netiquette not understood in a similar manner. Moreover, people use a foreign language easily in the ways they use their native language. For example, in different cultures people express politeness in different ways, and the normal way of talking in one culture may be impolite in another. Moreover, when working in a virtual environment, one may face challenges in adapting communication style to meet the demands set by technology.

Nonverbal communication is somewhat missing in a VLE, which makes achieving intercultural communication competence challenging and emphasizes communication skills, too. According to Taft (1981: 76-77), in a VLE, it is important to communicate in a relaxed and appropriate manner and to be...
able to change the communication according to feedback if so needed. In a VLE getting feedback may be delayed and that will have an effect on communication. Further, using communication technology requires different skills from the students, since the patterns of work, decision-making processes and social networks are different than in a normal classroom—even more so, when some of the work is asynchronous (Berry 2011:186). It is also important to remember that one does not have to master all the aspects mentioned above, but to be able to compensate the weaker skills with the stronger ones.

2.2.3 Attitudinal orientation

Motivations and attitudinal factors are also crucial for successful intercultural communication. Attitudes can be said to be comprised of three components: interests, values and tendencies towards self, others and the surrounding context (İnal, Erkan & Saracaloglu 2005:38-40). Attitudes by nature consist of cognitive, affective and behavioural components. Byram (1997) points out that positive attitudes are required in order to develop the skills to relate, discover, interpret and negotiate the differences between one culture and another. Socially constructed and communicated attitudes are often related to social and ethnic identities. In the present study the focus is on attitudes towards working on a virtual course, i.e. a virtual learning environment, since this context may propose novel challenges for students as well as teachers.

Learning and using a foreign language on a course that is not a language course poses both positive and negative challenges. When students’ language skills are not evaluated as they would be during a foreign language course, they may either feel free to use it or not see any reason to use it at all. Another factor is, naturally, the attitudinal orientation towards the VLE, which will have similar effects on the outcome (Berry 2011:199). Some students will more likely be at ease with using multimedia, VLEs and social media, whereas others may feel that the absence of face-to-face contact will make learning more challenging for them. Opinions and attitudes towards VLEs somewhat depend on the available options used in a given institute. However, we might not know how our background limits our thinking and action until we encounter misunderstandings or poor results in intercultural encounters (Cunliffe 2004: 412). Difficulties in performing well technologically i.e. lack of technological know-how, will have an effect on the whole learning process.

The lack of nonverbal communication may pose challenges to some students, and creating social relationships may be more difficult than it would be on a normal course (Walther 1995 in Berry 2011: 197). Resolving misunderstandings and conflicts is at the core (Berry 2011:202) when facilitating communication. Thus, leadership and clear roles in virtual teams are essential in order for the students to be able to finish the given tasks in time (Berry 2011:199-202). A virtual learning environment requires strong leadership from the teachers as well.

Many challenges in intercultural communication are solved more easily in face-to-face encounters than via virtual communication. Moreover, solving conflicts is more difficult when there are no natural possibilities for informal discussion (Starke-Meyerring & Andrews 2006: 34). On a virtual course there are bound to be differences in used learning platforms, course registration and common study guidelines. These differences will affect students’ attitudes towards learning. Hence, in a virtual learning environment there is a large amount of conscious and unconscious cultural assumptions and expectations that are utilized in interpretation of events and behaviour of colleagues. The construction of a third culture is vital, since without it, students interpret tasks, deadlines and messages by utilising meanings present in their own, local cultures. In the absence of a third culture the probability of misunderstandings increases (Starke-Meyerring & Andrews 2006: 33; Bjørn & Ngwenyama 2009: 227).
3. Data and methods

The research questions were as follows: (1) What kind of communication skills are needed in virtual learning environments and (2) how can a third culture be built in a virtual learning environment? In this article the focus is on utilising the transnational or intercultural networks and their possibilities in a virtual learning environment. Do the students see a lack of skills in a given language to be a hindrance or a barrier or do they use language merely as a tool for positioning, or do they define their identities through native or foreign languages? What kind of skills, attitudes and knowledge are required from virtual course teachers?

A case study research method was used in describing and analysing the data gathered from the VLE, due to the small size and heterogeneity of the sample. The aim was to create a discussion between data and theory in this specific contemporary context. In case studies, such as the present study, the phenomenon being studied can contain many variables that do not require control during the research. With this method it is possible to plan, design, collect, analyse and reflect on information both during and after the case project, and the information can then be shared to develop the virtual courses in the near future. After reading and theming the data the following themes emerged as the basis of the present research: a) cognitive dimension b) skills and c) attitudinal orientation in intercultural VLEs. This paper also illustrates the important notion of creating a third culture in order to facilitate and uphold effective communication in the virtual learning environments. The contents of the course and the researchers’ personal interests have had an effect on the research and the interpretations done on the basis of the data. (Yin 2009)

The material was obtained from eleven FUAS students, who took part in the virtual course during spring 2012. They represented eight nationalities and had various national, cultural and linguistic backgrounds. Both genders were represented almost equally (six women and five men). Among the eleven participants three of them considered themselves to have dual nationalities (two were Finnish/Russian and one Japanese/Chinese) the remaining nationalities were (three Finns; three Chinese; one Nigerian; and one Vietnamese).

The research data was gathered from various multimedia sources with the primary source being reflective learning dairies (referred to later as LD) which were written by the students during the course. Some of the spelling mistakes have been corrected in the LD quotations to facilitate understanding, but most of the entries are in their original form. Other sources include written or videoed responses to individual and group assignments, question and discussion forums, and email correspondence.

Moodle and Adobe Connect were chosen as the virtual mediums to conduct the teaching. Moodle is an acronym for Modular Object-Oriented Dynamic Learning Environment often referred to as a VLE. Moodle offers many tools that support the learning process and enable students to interact and reflect on what they see, feel and learn. These tools included learning diaries, in which students could reflect in lecturer-guided diaries (only viewable by the author of the diary and the lecturers); forums that were used to facilitate discussion and were also used as places to return and discuss tasks; return folders that could be viewed by all the course participants were also used. Adobe Connect (AC) was used in this course for virtual presentations and virtual meetings with the whole group. The first and the last session in the course were synchronous sessions in which group forming and final reflection in a virtual learning café were conducted respectively. Asynchronous lectures during the course were created in AC and the links were added to Moodle on a fixed schedule. YouTube was also used as a distribution channel for the students’ videos as Moodle did not allow such large files to be uploaded. Students added their YouTube video links to the forums in Moodle, after which they were commented upon and discussed.

4 Findings

This paper focused on illustrating an intercultural virtual learning environment and the special skills it requires and discussing the notion of creating a third culture in a virtual learning environment. The main purpose was to investigate issues arising in the virtual space in which intercultural communication is
realised, as well as the language of communication. The aim was not to simply describe the interpersonal communication situations between people from different cultural backgrounds, but more to analyse the aspects of intercultural communication competence that are essential in a VLE.

Due to this course being foremost a virtual course on intercultural communication, there was a lot of reflection on the role of language and cultural identity and how language affects behaviour: language "is a mirror to reflect your culture" (LD) and that "it gives a sense of belonging" (LD) without which "I will be lost and identity-less" (LD). One of the required tasks during the course was that students had to interview someone on intercultural issues in a working environment. One of the groups, consisting of one Finn and an international student, decided to conduct the interview in Finnish because they “didn't want the foreign language (English) to affect her expression (because language really does have an impact on it)” (LD). It was mentioned in some of the LD entries that poor English language skills do cause misunderstandings especially in oral communication. One LD entry mentioned that a student had lost motivation to study and even speak English due to people finding it hard to understand his accent. There were both negative and positive feelings towards using a foreign language (here English) as a lingua franca. Some students viewed it as a hindrance and also “When communicating with English I lost part of myself” (LD) “...my self-expression suffers when I do. I'm a slower speaker, my language is more simple and I think twice (sometimes three times) before I say anything...” (LD). There were also positive feelings: “I always feel somehow more alive when I communicate in some other language than my own mother tongue.” (LD). The importance of finding a fairly equal third space between native speakers and secondary or tertiary speakers was highlighted as “native speakers have more advantage of communication or non-native speakers are quiet”. As this study was conducted in Finland some of the comments also reflected on the language and communication requirements needed in this country. Comments were made on the lack of contact with Finnish people and lack of Finnish friends is considered a barrier to accessing the society and acquiring the language. To support this there was a comment from someone who had learned Finnish to a certain degree and felt he was accepted differently and made friends more readily when he conversed in the language.

There seemed to be contrasting views on the role of mistakes in misunderstanding written communication: “Even though there are spelling mistakes, we can understand each other quite well...” and spelling or grammar mistakes rarely caused major misunderstandings, while others thought that there were often problems. This was also connected to the problem of finding the balance between informality and formality. Contextual communication and the ability to change communication style according to the recipient were also reflected on in the LD entries with plain simple, “unemotional” language being emphasised to facilitate understanding. The importance of proactive communication and opening alternative communication methods was mentioned, for instance, if an email is not responded to, then it is possible to call. The importance of reflecting on and clarifying one’s own communication intention was also mentioned and was also something teachers had to focus on when communicating with students during the course. The lack of visual cues and gestures in this virtual course also caused problems according to some of the LD entries, an example of which can be seen from:

I've been missing face to face group work during this course and I've realized how much effort it takes to successfully inter-culturally communicate online without actually meeting the person...there have been some misunderstandings and difficulties that perhaps wouldn't have been there if we had met face to face. (LD)

This was actually tested in the course: One of the recorded lectures was given without a camera recording, i.e. the lecture only consisted of an oral presentation. The lack of visual cues and how it bothered the students and made the lecture harder to follow was actually noted in the LDs. The importance of using audio, visual and written communication in virtual courses and presentations was also commented on. This was highlighted as some of the group work was analysed by other groups from a multimedia learning perspective – how had the groups utilised sound, pictures and text. The importance of finding a balance between these three aspects was highlighted in the discussion forums and LD entries.
All the information was disseminated electronically (videos, online lectures, files, messages etc.) and all of the communication between students and lecturers was through the course forums, social media or email. This, as mentioned earlier in this paper, has an influence on communication and was reflected upon and commented on in many LD entries. These comments included problems and misunderstandings encountered during the course, as well as positive experiences in regards to communication. The negative aspects were important to experience, but were, at the same time, a challenge for the lecturers as it was necessary to ensure that student motivation did not suffer because of these negative aspects. The problem of establishing and maintaining the “virtual culture” learning environment was particularly a challenge for the teachers. Communication in the form of problems and questions flowed in from many directions. Channelling the discussion to the course forums helped communication to become open and visible, and it also saved time (as most of the questions were similar). Sometimes the teachers had to copy/paste email messages received from students into the forum to strengthen this communication culture.

Differences in responding to e-communications were evident “our communication style is not effective enough because ever since I sent him a mail, I never got a reply back and that frustrated me and left me confused...” (LD). This was evident in many LD entries and it seems as if some students left communication and assignments to the last minute. One positive aspect of using Moodle was that any messages in the course forums also went to the students’ email. Therefore, there was a constant reminder what was happening in the course. However, it has also been generally observed by us that some students did not check their educational email that often and “…it is hard to catch the person, if he doesn’t want to answer. He or she just doesn't mind to answer for your e-mail and that’s it.” (LD). Some of the students reflected on the ‘less-committed’ attitude towards the VLE: “…virtual courses are easy to forget (you don't see your group mates who would remind you)” (LD). Therefore, it was important that the communication process was facilitated as much as possible and student queries were quickly responded to ensure that their motivation did not deteriorate. This facilitation was actually noticed and remarked on in the student feedback as some students reflected very deeply on how their communication had improved during the course.

As mentioned earlier in the paper, this course was approached with the assumption that the virtual course and e-tools would be treated as a culture themselves. It was anticipated that the majority of the students would not have the technical knowledge to fulfil all of the tasks during the course. This meant that new technical situations and experiences would be faced and hopefully overcome either individually or as a team. As expected there were a lot of comments on the e-tools. Many of the students had never made videos, shared them on YouTube, communicated through various channels such as Skype, Messenger, Facebook etc. or knew how to use some applications such as Prezi or Google Docs. This was also reflected upon in the course feedback, where students wished for a more thorough introduction to the available ICT tools. During this period of acquiring the required IT skills, many negative feelings were encountered including shame at not being able to do something. However, students also mentioned that they were proud of their achievements once they had mastered certain IT skills and had actually shared them with others afterwards. One extremely interesting comment was on time usage while studying in a virtual course: “…the special challenge for this course is that we need to do the work during our spare time (weekends, evenings) after the actual school day.” (LD)

Research has shown that email and other e-communication allow for response time, which facilitates the possibility to reread and reflect on the content of messages and students “feel more comfortable and confident” having “enough time to think about what [to]say in most suitable way” (LD). The fact that this was a virtual course and the majority of communication was conducted either through social media or email with no ‘physical’ face-to-face communication was viewed as both positive and negative. Even when video or speech functions were available, i.e. in Skype, some students still preferred to use written communication: “…my partner’s English is not so fluent that talking may be more difficult for us to communicate. However, when we use writing, she would have enough time to think.” (LD)

Another problem in this virtual implementation was group formation. Teachers decided to facilitate the group forming process by initially splitting the enrollees into ten groups with three members per group.
These groups were divided so that different UASs were represented in each group and also different nationalities. However, this did not materialize as hoped as there were students who did not show and there were many dropouts during the course. The initial idea was to get the groups to interact and exchange contact details in the initial synchronous session which proved very challenging as some of the enrolled students did not attend. This required emergency group forming while paying attention to the original group forming criteria. In the end it proved easier to encourage students to be active in the group forming process themselves by writing in the course forums if they were having trouble. The high dropout was actually discussed in one of the LD entries: “I think it is because students thought, that it will be just an easy course to have points. And they didn’t ‘t understand, that it will be the real school course with real tasks” (LD). It also became apparent that the following sociological differences were mentioned as reasons for group forming problems: studying in different UASs; age differences; marital and family differences; geographical location. This was interesting as intercultural differences were not really mentioned (only in one LD entry) as a hindrance to the process. More general competences, such as the need for open communication and listening, were highlighted for improving group work. Some of the LD entries reflected on the problems and misunderstandings encountered in the group work and how they were resolved: Group work caused feelings of frustration and anger and students actually reflected on what they did to alleviate and correct the situations. The final aspect that was interesting from a group perspective was the formation of roles in groups. For group work to succeed, it seemed as if one or two members needed to take on a leader’s role. In some groups this did not happen and they found it difficult to agree on deadlines and resolve differences: “I found also our weak point in a group…we don’t have any leader or the person who eager to lead the group” (LD).

5 Discussion

The results indicate that students understood the importance of choosing a shared language, both to themselves and for the others, i.e. the concept of creating a linguistic third culture was seen as the core skill in communicating this intercultural VLE. Using a foreign language was seen as important, but also challenging, as some students felt their identity was partly lost when communicating in a foreign language. So a language was not merely seen as a tool, but also a part of one’s identity. English was chosen as the language of communication, even if it did not have to be English – no one questioned its position. In addition, native speakers of a given language were seen as having an advantage. However, there were positive feelings towards foreign language use, too, since students were e.g. able to separate personal feelings from grammatical aspects to their own advantage. Learning the other party’s native language was seen as an asset in being accepted to the surrounding community. Teachers can aid in this part of the process a lot, since they can decide the language, modes of communication, team formation etc. Teaching virtual courses demands a lot more background work and a keen eye on individual, pair and team communication, too.

Results indicate that attitudinal orientation in successful intercultural communication is crucial. This virtual course was based on individual work that had to be negotiated within a small group and in groups that submitted their tasks the attitude towards either virtual work or communication or both was positive. Leaving the course or leaving tasks undone might have resulted, as LD entries indicate, on realising that virtual courses actually demand a lot of work in both the substance and in communication. Virtual courses seem to require a very active orientation and a communicative attitude towards course work. Additionally, it appears the course was seen as something extra, because the tasks were done “after school hours”. This is important as now when e-learning is being marketed as learning that can be done ‘anytime and anywhere’, it is still evident that the boundaries of ‘own’ and ‘study’ time are difficult to draw. If this is so, it is interesting because it means the whole culture of e-learning needs to be rethought – some people view it as something in addition to their studies that encroaches on extra-curricular time. This is an aspect that is also extremely relevant from the lecturers’ point of view, too, as they often found themselves responding to queries outside ‘normal’ working times to ensure that the course ran smoothly. Both teachers and students need to understand that working on virtual courses requires an active orientation towards individual and teamwork and that the workload is not consistent, nor is it restricted to office hours.
Resolving communicative conflicts was also seen as a challenge with delays in answering a message, and not meeting face-to-face being the key issues. Communicative conflicts also illustrate the crucial role of time-orientation in nonverbal communication, which is highlighted more in a virtual environment. Even if the students were from diverse backgrounds, intercultural differences were not really mentioned (only in one LD entry) as a hindrance to the process. More general competences, such as the need for open communication and listening, were highlighted for improving group work. Group formation was challenging for the lecturers due to the various challenges of VLEs compared to contact lessons. The groups themselves commented on the difficulties in establishing suitable roles and group leaders, resulting in difficulties in doing given group tasks. In this aspect of the course, the teachers ought to take an active role in guiding students to ensure effective and appropriate communication.

There were special challenges, however, in the VLE. Research has shown that email and other e-communication allow for response time, which facilitates the possibility to reread and reflect on the content of messages, and ultimately lets communication occur in such a manner that is both acceptable to others and comfortable to oneself. However, e-communication can also result in somewhat special communication challenges in the virtual classroom. Firstly, special attention needs to be paid to communicative competence in self-disclosure. On the present course it was either left out or delayed, resulting in formal communication instead of informal, more relaxed communication. Self-disclosure was reported to be either very easy or very difficult, so clearly it divided opinions. All participants had to put a lot of effort into creating neutral and clear messages, which became easier after the initial culture shock. Finding a balance between one’s preferred method of communication and general course requirements or peer pressure was crucial for success and creating a working group with suitable roles for all was reported to be demanding. Students seemed to learn a lot about themselves as communicators, but they did not see that virtual communication took much more effort and time than face-to-face communication in order to be effective. This course was (seemingly) task-oriented, but ultimately it also enhanced personal communication skills. This was highlighted in one of the LD entries which we feel was the best feedback we could ever receive on the course:

This study unit gave me an opportunity to realize communication’s role in my life. As each adult person, I understood its importance before, but now I can say that I know much more about communication, it’s methods, it’s history and especially about intercultural communication. With knowledge, gained during this study unit, I understand better how communication works and what methods or tools people are using to keep information flowing. Maybe I will take a topic “communication in organizations” for the final thesis, and it will definitely contain a section “intercultural communication”.

As expected, acquiring new IT skills was seen as challenging but rewarding. It is important to notice that in the present research the aspects of intercultural communication competence were overshadowed by the challenges in IT skills. Feelings of frustration and anger were mentioned by a few people in regards to the teamwork and technological tools. These feelings were important to experience and the students actually reflected on what they did to alleviate and correct the situations. These feelings were also important as they reflect similarities to culture shock and support our premise that a VLE can be considered to be a culture per se.

Development suggestions fall into two categories. Firstly, virtual communication and the development of VLEs need to be facilitated and the necessary competences need to be taught in higher educational institutions as well as work places to ensure that conflicts are minimised and ‘culture shock’ experiences are alleviated. This would ensure that virtual intercultural communication when transferred to the workplace, is as efficient and understanding as possible. To reach these goals a broader use of e-tools should be encouraged during studies in higher education institutes. Secondly, the concept of a ‘virtual, third culture’ needs to be researched further from both team work and e-communication perspectives. Both teachers and students need to be aware of the different skills dimensions required in virtual working teams and understand that they will have to adjust their communication to suit the virtual world. Building a third culture in a virtual learning environment is challenging, but it can be done if there are enough resources for the teachers to plan, evaluate and facilitate communication throughout the course and enough understanding for all participants of information, skills and communication
processes needed on the course. This kind of information would, perhaps, aid in fostering positive attitudes towards using various languages, e-tools and working methods.

The final comment from a student sums up the positive aspect of working in an intercultural team:

“There are always communication problems between different people from different cultures. But do not be afraid of communication. When people from different cultures work together, something new or surprising may appear.” (LD)

Bibliography


Good Governance: A Prerequisite for Food Security

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Abstract

The global governance of organizations working towards food security remains a challenge as there exists no single international institution that can lead the field and hence the ubiquitous collective action problem generates inefficiencies in terms of cost and time overruns for projects. First, the multiplicity of independent organizations causes an overlap of rules and norms, which enhances the lack of governance inefficiency. Second, since multiple institutions are normally responsible for various aspects of food security, an effective governance mechanism has to deal with a collective action mechanism where organizations that deliver similar projects have to be coordinated for horizontal aggregation of their services whereas organizations delivering different services have to be coordinated for vertical aggregation. Third, country actions have to be coordinated not only within countries but also between countries and international organizations.

This research note suggests a leadership and coordination architecture where the three problems are addressed by a more effective governance regime where national and international hierarchies are explicitly recognized as building blocks towards an effective mechanism. Thus, the mechanism has to take into account the fact that national organizations are constrained in their actions by governmental and other domestic concerns while acting internationally. Moreover, it has to incorporate criteria by which projects have at times to trade-off immediate help for long-term self-help measures through developing indigenous capabilities. Finally, it must explicitly integrate socio-political constraints arising from corruption, cultural divides, international spheres of influence and existence of violence.

Key words: Governance, human rights, politics

1. Introduction

Achieving world food security has long been a major objective of many international organizations, from governmental to industrial and agricultural, and civil society organizations. Empowerment of the international institutional capacity beyond intergovernmental organizations to address food insecurity has been a major hurdle.

This has involved the introduction of new mechanisms to address food insecurity, spurred by improved knowledge about the complex drivers of food insecurity however governments often fail to respond to crises because of poor decision making, limited coordination, weak institutions and scarce resources. It is thus of utmost importance to include governance concerns when developing food security programs.

Although often overlooked, well-developed governance arrangements that are able to respond effectively to both crisis situations and structural concerns constitute a key to eradicating hunger. This article aims to identify pitfalls in current global governance and suggest directions towards improvements.

The growing literature\(^1\) provides insights into food security governance. Some articles use an explicit governance lens (Marzeda- Mlynarska 2011; Duncan and Barling 2012; Edwards 2012; Pereira and Ruysemaar 2012) on existing governance arrangements. Applying such a perspective to similar issues would prevent re-inventing the wheel, because a lot can be learned from comparable issues and

\(^1\)References are below in footnotes.
associated communities, such as climate change adaptation (e.g., Biesbroek et al. 2013; Termee et al. 2013b).

In particular, the governance literature could contribute to furthering the thinking about how to design governance arrangements that can effectively address an issue as complex and unpredictable like food insecurity. For example, both highly complex and contested, food security has all the characteristics of a “wicked problem” (Rittel and Webber 1973), a category of policy problems that are “ill-defined, ambiguous, and contested, and feature multilayered interdependencies and complex social dynamics” and which “are highly resistant to solutions because today’s problems emerge as a result of trying to understand and solve yesterday’s problems,” (Termee et al. 2013a) These types of policy problems cause serious challenges and frustrations to policy-makers and stakeholders because there does not appear to exist an ultimate solution to the problem. One might argue that this does not apply to food insecurity, because there is a simple solution, i.e. making sure that everyone has enough to eat. However, as the review suggests, food security is a multidimensional issue that does not only involve the quantity of food that people have access to, but also involves aspects as broad as sustainability, human health, nutritional quality, and human rights. Taken together with conflicts about the avenues to follow, this multidimensionality implies that an ultimate solution is very hard, if not impossible, to reach due to multiple objectives and multiple stakeholders. This does, however, not mean that the problem is unsolvable. Rather, as Termee et al. (2013a) argue, ‘small wins’ can be achieved through designing and using governance arrangements that are responsive, reflexive, resilient, and able to revitalize deadlocks.

Governance of food security is complex. This complexity derives from multidimensionality of issues and multiplicity of organizations involved. Unaligned incentives, divergent scales, seemingly unrelated sectors and contested policy spaces complicate the process of policy-making. Food security is not so much a domain in itself but, instead, an issue that is being affected by a wide array of domains, such as agriculture, trade, animal farming, fisheries, environment, development cooperation, and energy, as a result of which many actors and organizations are inevitably implicated in global food

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This complexity creates constituencies and interest groups at national and international levels, adding to hurdles to be overcome in policy development as well as implementation. Another complication arises from conjunctural versus structural drivers of food insecurity. The former appears swiftly as hunger related to sudden food price spikes or shortages due crop failures where local conditions matter. The latter, however, is due to structural factors that generate latent vulnerabilities with potential to surface upon perturbations such as sudden climactic variations and biological infestations.

The spatial dimension of food security can be considered on a global, regional, or national level, but has also increasingly come to be studied and addressed at the local, community, household, or individual level over the last decades. Recent food crises have shown that ongoing globalization and associated entanglement of world food systems have led to a situation in which food insecurity drivers have increasingly spilled outside the scope of or even despite national governance. The multi-levelness of food security therefore requires an integrated, multi-level governance approach, including both national and global governance.

Current governance architecture is fragmented and ineffective due to diverging interests and perspectives, lack of pooled resources, unconnected power levels, and non-overlapping paradigms that generate dispersed policies, which make an integrated response even more complex. The reviewed literature is highly critical about the current architecture and practices of food security governance, and offers recommendations for a more effective and democratic future regime.

Most criticism is focused on global governance or lack thereof. This can be attributed to the lack of national and sub-national governance arrangements, especially in developing countries. No truly authoritative and encompassing body or institution with a mandate to address food security concerns across sectors and levels. That is, no mandated “task force” with teeth exists.

Instead, responsibilities and jurisdictions are spread across a broad range of international organizations and forums, which all have their own core business, but none of which deals with food insecurity in a holistic and inclusive manner have termed this the shift from an international food security regime towards a regime complex for food security, in which food security is affected by a wide array of governance regimes that all have their own actors, forums, discourses and interests. Within the same country, coordination between departments lacked, sub-programs were weakly integrated, and supportive legislation was lagging behind. Thus, fragmented responses can occur at various governance levels.

As a result, considerable overlap of mandates and actions exists, in the best scenario resulting in duplicate actions, but in the worst in a conflict between interests, visions, and actions. The worst case scenario also results in large numbers of projects that lack the scale to make a real difference.

2. Towards improvements

Taking stock of existing conditions suggests that there are two complementary avenues towards improving global governance: Building institutional capacity and facilitating cooperation and coordination amongst existing organizations at subnational, national and international levels. Whereas the latter leads towards policies and programs that mutually reinforce each other, thereby contributing to shared goals and outcomes, the former either strengthens the existing field of players or generates players where none existed before. The individual actions of organizations of all levels, countries, donors, corporations, and other private actors can address various aspects of food insecurity but would, if coordinated,
achieve coherence, whereby trade-offs may be avoided, duplicated efforts minimized and mutually impairing actions eliminated.\textsuperscript{14}15\textsuperscript{16}

**Optimal Governance**

Food insecurity is a public bad. Revealed charitable actions of members of society other than those afflicted by the insecurity demonstrate it. In fact, collective action in a government-less international arena is a further demonstration. Since any collective action necessitates organization, cooperation and coordination of actors involved, governance becomes a necessary but costly input. Thus, alongside other costs of providing food security, the cost of generating good governance enters the calculus of optimal provision of food security. Given limited financial and time resources society, the optimal provision of food security may be less than a complete elimination of the problem. Intuitively speaking, if every last person afflicted by food insecurity were to be relieved of the suffering, the alternative benefits accruing to resources expended to achieve it would far exceed the social benefit of running food insecurity down to zero.

The analysis of the optimal governance goes to the heart of the problem by looking at the supply of food security because governance can be interpreted as a derived demand whereas its supply depends on the triplet of problems related to organization, cooperation and coordination of actors involved and is the subject of our analysis in this paper. That is, governance is not the objective but rather the input into a serious policy problem with inherent multidimensionality.

Perhaps an analogy can highlight the fundamental issues arising with global governance. Unlike in a democratic country where the final arbiter is the electorate and the elected government is the temporary but legitimate decision-maker, the international arena has no final arbiter and, consequently, there is no legitimate decision-maker. This leads to legitimacy and hence decision-making deficiencies and, consequently, to time overruns both in terms of decisions that have to be based on compromises as well as implementation delays.

**Subsidiarity and devolution of governance**

A critical question that arises is “global governance of what?” When some problems as well as their solutions are local, an involvement by international organizations will generate costs without benefits. Since empire-building is in the nature of any organization, this delineation of subsidiarity, i.e. the requirement that locally solvable problems should indeed fall under the governance of local governments, must be imposed as a constraint on global governance architecture. For example, where a particular food item is produced in a country and reasonable conditions exist for locally generated solutions including financing and technical solutions, the subsidiarity principle implies that the national government assume responsibility to address the problem.

Organizational diseconomies might foster entanglements if not paralysis and higher organizational costs if large enough numbers of devolvable projects end up on the agendas of Committee on World Food Security\textsuperscript{17} (CFS) and other international organizations. For example, if state and institutional capacities


\textsuperscript{17} The Committee on World Food Security (CFS) is the intergovernmental platform inclusive of all stakeholders (Non-governmental Organizations, Civil Society Organizations, food and nutrition charities, international financial institutions like World Bank, World Trade Organization, farmers, agricultural research institutions) to work together to ensure food security and nutrition for all. The Committee reports to the UN General Assembly
exist to solve a local food insecurity problem but it lingers due to wrong political choices or to deeply entrenched corruption then the problem belongs to that country’s or region’s government or, in other words, it must be devolved by the global governance institutions towards national and subnational governments.

Beyond this spatial and, of course, organizational dimension along the political scale, the subsidiarity principle also applies to other domains and organizations of the food insecurity paradigm.

Realizing that every devolution would require some coordination in order to avoid duplications and enhance scale economies in production, coordination would be essential, both horizontally (i.e. across bodies at the same governance level) and vertically (between governance levels). Moreover, despite political and spatial devolution, other policy domains and actors have to be coordinated. This would imply that on each of the governance levels, related production sectors and policy domains, and associated actors and institutions would have to be brought into line for active coordination alongside devolved initiatives.

The necessity for coordination at sector and governance levels is invigorated by boundary organizations that can also play an important role in sustaining and promoting cooperation. As the term indicates, these organizations operate on the boundaries between sectors or governance levels, and as such have the potential to stimulate coordination. Regional organizations, such as the European Union or ASEAN, or their divisions, provide promising opportunities in this regard at both sector and governance levels but also spatially.18

**CFS as intellectual platform**

Food security governance is not immune to a wide variety of conflicting ideas, as in any other policy-oriented platform. This multitude of ideas about how food insecurity could most effectively be addressed is a result of the variety of sectors, countries, governance levels, and associated actors and interests that have participated in food security governance.

Besides an increased pluralism of ideas, which find an inclusive platform at the very top of international organizations with the reformed CFS19, food security governance has witnessed an increase in the number of actors that are involved in designing food security approaches or that have a direct or indirect impact on food security worldwide. This increase included international organizations particularly in the aftermath of the 2007-2008 world food crisis. After the crisis, the CFS was thoroughly reformed, the UN installed a High-Level Task Force, the World Bank renewed its focus on agriculture and food security, and the G8/G20 got more and more involved.

The presence of a large number of diverse organizations with different backgrounds and, at times, conflicting agendas, though sharing the ultimate objective of reducing food insecurity, would normally be expected to produce a diversity of ideas. Consequently, the best would prevail and be taken up for implementation through mobilization of organizations participating.

Looking forward, CFS may be perceived as evolving towards an authoritative centre for policy development and implementation at the global level through cumulative successes. It has started as an intergovernmental platform open to all stakeholders.

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However, this increase in the number of organizations participating has not been without criticism. For, the downside to wider than optimal diversity consists of disagreeing and alienated organizations running their own programs and projects potentially conflicting with the CFS programs and projects or, surely, duplicating parts of them.

Cultural obstacles

Global governance of food security cannot be considered without its major pillar, the national governments. However, governance failure within a country takes a strong toll on achieving the objectives of increasing food security. The question hereby raised is whether improvements in global governance are even possible without within-country victories over failure in governance and, in particular, corruption. The evidence\(^{20}\) suggests that no matter how global governance may be organized, the within-country basic pillars will ultimately erect obstacles unless better governance takes hold. Of course, this latter usage of better governance does not necessarily refer to democracy and human rights but precisely to an abatement of corruption. The recent histories of countries with autocratic regimes, such as in Ethiopia and Rwanda, are cases in point.

Cultural divides beyond corruption are also common reality. They can arise on the production or consumption sides of the food equation. On the production side, history weighs. Nations and ethnic groups have been producing certain crops over time and it might be politically and socially insensitive to suggest that the switch to more resistant and more productive ones but globalization provides an opportunity to continue with similar diets or same consumption bundles yet obtain some through trade without having to produce them.\(^{21}\) Although this transition can be disruptive, it is inevitable if trade allows not only an increase in resources but also an enrichment of diets. The political economy of this transition will exhibit frictions and conflicts generated by various interest groups opposing change and by other more ideologically motivated groups. The CFS platform will have to broker disagreements and harmonize towards feasible policies.

(Ottawa, 1982) - I was once asked my opinion of a Canadian development agency’s aid program for rural Mali. They proposed to supply steam-pumps for irrigated rice production, even though dry upland rice is the norm there. I asked why they didn’t imitate Western agricultural policies and give the money to the government to subsidize farm-gate prices for rice without raising food prices in the city. Malian farmers would gain an incentive to produce more commercial rice and the risks of urban riots would be averted. The officials thought a bit and eventually agreed that this was the most direct way of stimulating rural development in Mali. Then one of them said, “Wait a minute! If the farmers in Saskatchewan hear that we are using taxpayers’ money to help Third World producers compete with them in the world market, they will raise hell and get us closed down. (Coordination becomes critical: Canada doesn't stimulate crops competing against Canadian identical crops but can other ones.)\(^{22}\)

The cultural divides discussed here act against the economic efficiency argument pointing out to the net benefits of trade based on specialization. Countering cultural factors will hence be working from the demand side, i.e. social and cultural urges of being opposed to changes in traditional diets despite the fact that nutrient intake might at worst be the same, and from the supply side through traditional farming and crops grown. The success of CFS will depend on whether the platform can reconcile these divergent preferences.

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Externalities internalized

Food security can perhaps be, somewhat simplistically, expressed as current spells of hunger from unexpected natural and human-made factors and from future all human-made factors. The future hunger can indeed arguably be qualified as human-made simply because if vulnerable populations are unable to access existing food and nutrients and, also, resilience and redundancy are not adequately built into agricultural production and distribution systems, food insecurity will persist. Thus tradeoffs between short and long term measures are current realities threatening future food insecurity. In this sense, lack of global governance can be said to be inflicting negative externalities on future generations by not providing the governance input into future food security. This is, in fact, a current collective action problem or, in other words, a failure in collective decision-making.

This problem is distinct from the human-made factors behind current hunger. The cumulative past failures in collective provision of efficient governance make current hunger episodes due perhaps to natural factors worse by not having built resilience into food production and distribution systems. The urgent current problems, when tackled as emergencies and without financial gaps, inflict higher costs than if such systems had existed. This failure is thus characterized by cost inefficiencies.

The second set of negative externalities arises from the demographic implications of food insecurity in developing countries. Population movements from food insecure to food secure regions, for no other reason but food insecurity, may well be partially attributed to global governance of food security, partially because specific country governance problems naturally share the blame. Where this migration exists, food insecurity in the developing world generates negative externalities on developed world by creating erratic refugee flows. A suggested solution is also rooted in improving food security in regions where migration originates and such improvements require not only improved local governance but also global governance. We note that, at the receiving end of erratic refugee immigration, developed countries have a strong incentive to allocate more resources into improving global food security governance.

Another externality relates to trade flows, in food-related goods and services from developed to developing countries facing food insecurity. In globalized market place for foodstuffs, international knowhow aid towards developing local agricultural systems in regions facing food insecurity may, subsequently, generate competition against the same foodstuffs produced in the exporting country. This does generate a self-inflicted negative externality and, hence, exporting such knowhow is not in the best interest of exporting countries. This phenomenon thus reduces capacity building in developing countries. The CFS platform must broker divergences and coordinate country comparative advantages with developing country needs.

Country governments as obstacles to solutions

Arguably, the most damaging factor to the improvement of global food security governance, more so than the inherent collective action problem, is the presence of autocratic regimes in most of the countries where food insecurity is entrenched. Most countries with such regimes are also the ones that are most corrupt. First, such regimes have a say at the CFS platform or any other international platform whereas they are the major obstacle to progress in their countries. For, autocracies reduce voices and discussion in general and, in particular, repress representatives of the most food insecure. Second, the same regimes not only constrain actions by national and subnational organizations that work to alleviate food insecurity problems but also constrain the counterparty international organizations and charities. This observation does not necessarily imply that food insecurity can only be reduced upon improvements in the general governance in the country. On the contrary, sustained national and international pressure for improvements in food security governance within the country in question will, as a by-product, improve the general governance by opening the country up to world public opinion. In this regard, exposing the particular country in question to international scrutiny at a platform like CFS is bound to generate positive externalities by influencing the public opinion in that country.
The international dimension of countries with food insecurity problem coexisting with lack of good governance is often their dependence on sponsoring countries where governance leaves a lot to be desired and hence the change in the former is not forthcoming. In practice, both types of countries would be autocratic or, at best, imperfect democracies. Since the sponsoring country, typically strongly influential, would have a vested interest in the continuation of the less than open governance in the developing country, such influence would easily help reproducing the existing conditions in the developing country and delay improvements in food security as a consequence. This factor is not one that can be dealt with at the CFS platform as it is beyond intergovernmental forums in specific areas like food insecurity. However, as emphasized above, any improvement in governance, however narrow an area where it might be achieved, would influence other areas of governance through its eye-opening effects on public opinions in such countries.

3. Discussion

Attention to food security governance is rising among academic scholars and international organizations. A common view held is that food security presents a complex issue to govern. This complexity is largely a result of the globalization processes, which have resulted in flows of food and resources across the world and in an increasing interconnectedness and integration of food systems, governance regimes, and spatial scales. Consequently, identifying the structural and conjectural drivers of food insecurity has increased in complexity. Moreover, approaches to improving food security have become highly contested. Food security governance involves a wide array of stakeholders, who have different and sometimes incompatible interests and ideas. The global governance of food security thus requires reconciliation of many approaches and formulation of fine-tuned policies in order to bring on board various stakeholders and improve food security effectively. In other words, such a governance regime should succeed in holistically aligning the plurality of sectors, policy domains, governance levels, ideas, and actors representing protagonists in society.

Several remaining gaps or points of discussion can be identified. Here are four of them.

First, the absence of an agreed-on definition of food security governance is noticeable. For example, the definition of the High Level Task Force (HLTS) emphasizes the role of national governments whereas global governance involves many layers of organizations and many kinds of organizations. The following is perhaps somewhat complicated but a comprehensive definition: “The complex of alternative ways of steering and managing both fundamental and suppositional (conjectural) food security, in which all stakeholders are involved, which spans across spatial scales, and which includes both formal and informal rules and processes.” Of course, since the process with HLTS as well as with CFS only recently started it will, over time, formulate a more practical and accurate a definition.

Second, in spite of rising attention on food security governance, the review of the literature suggests that most writings are more of a conceptual or normative nature than applied and practical. It seems that not many empirical studies have been conducted. This refers to empirical studies on governance arrangements on a more meta-level and not on particular food security solutions, projects, or programs. Our knowledge of food security governance hence does to a large extent depend on narratives. Although these narratives have contributed to the rise of attention to governance in food security approaches, the lack of empirical evidence begs for more and, beyond its effect on a sound academic understanding of the governance issues at hand, it weakens the strength of recommendations that are made to policy-makers and stakeholders involved in designing food security governance arrangements. Food security governance is therefore in need of further empirical investigation for which this review could serve as a starting point.

Third, and related to the previous point, a large proportion of the current literature focuses on what food security governance should optimally look like, instead of how the governance system is functioning at

present. Such an argument based on presumed achievability of an optimum ignores two critical constraints: Path dependence and the effect of factors and the mechanisms identified in the general public choice discussions. Food security governance is often used as a synonym for good food security governance, meeting particular efficiency and democracy criteria without explicitly stating the governance specifics these two criteria would imply. Notwithstanding the importance of good governance, more information must be accumulated about current governance best practices. In particular, more research should be done on sub-national governance levels and initiatives, as these have been largely neglected in the literature so far. It is not clear whether this is due to a lack of sub-national governance initiatives or to a blind spot in the literature on global food security governance.

Although reflections on governance modes proved largely absent from the food security governance literature, some articles made suggestions that come close to the recommendations of Termeer et al., most notably the articles of Misselhorn et al. (2012), Pereira and Ruysenaar (2012), and Edwards (2012). The first two both underlined the importance of adaptive governance. Adaptive governance refers to the development of “new governance concepts that can handle the inherent complexity and unpredictability of dynamic social-ecological systems.” (Termeer et al. 2010) In addition, Misselhorn et al. mentioned the role that boundary organizations could play in these innovative governance arrangements. Edwards emphasized the potential of collaborative governance, which is defined as “a governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus oriented and deliberative and that aims to make or implement public policy or manage public programs or assets.” (Ansell and Gash 2008) Although it goes beyond the scope of this article to examine how these governance approaches could contribute to understanding food security governance, I believe much can be gained by further applying and combining them in future food security research.

4. Conclusions

Even though the importance of governance for effectively tackling food insecurity has increasingly been recognized, not much is known yet about what food security governance entails and what its key characteristics and challenges are. This paper aims to fill this gap by presenting some observations.

We identify six main observations.

1. The nature of governance can affect food security in different ways. Bad governance may be the principal or a contributive driver of hunger whereas good governance is a necessary condition for effective solutions to food security improvements.

2. There seems to be no agreed-on definition of food security governance. Existing definitions differ regarding the elements they consider crucial in food security governance. Ideas about what food security governance is and how food security could most effectively be addressed vary and often conflict with each other. These ideational conflicts increase the complexity of designing holistic governance solutions. As discussed above the new mechanism to harmonize divergent views may well be CFS.

3. Food security is a complex issue to ‘govern’. Academically speaking is multidisciplinary. Moreover, it involves multiple objectives and multiple stakeholders differentiated at different political levels as well as geographic positions.

4. The current governance architecture seems to have largely failed. At the global scale, too much overlap and too many conflicts exist, whereas at national and sub-national levels good governance arrangements are often absent in the sense that the multidisciplinary approaches require “task forces”. Effective food security governance requires a holistic approach with a focus on coherency, integration and coordination at all levels.
5. Food security governance involves a broad range of actors, at multiple levels and from both public and private sectors. The inclusion of ‘new’ stakeholders offers the potential to enhance the effectiveness of governance systems, but also leads to new challenges.

6. ‘Good’ food security governance includes notions of good governance and democratic values, as well as the provision of adequate resources.

The current global reality is that no single international institution can lead the field as hegemonically as a well-functioning national government does in a country. Thus arises an ubiquitous collective action problem that generates inefficiencies in terms of cost and time overruns for projects to be undertaken.

The multiplicity of independent organizations causes an overlap of rules and norms. This enhances the inefficiencies due to weak governance. Since multiple institutions are normally responsible for various aspects of food security, an effective governance mechanism has to deal with a collective action mechanism where organizations that deliver similar projects have to be coordinated for horizontal aggregation of their services whereas organizations delivering different services have to be coordinated for vertical aggregation. Country actions also must be coordinated not only within countries but also between countries and international organizations. On a related note, national organizations are constrained in their actions by governmental and other domestic concerns while acting internationally.

Governance arrangements must incorporate criteria by which projects have at times to trade-off immediate help for long-term self-help measures through developing indigenous capabilities. Moreover, while indigenous agriculture or agro-industries must be developed, a prerequisite is necessarily a lawful investment environment that takes into account the socio-political constraints arising from corruption, cultural divides, international spheres of influence and existence of violence.

This synthesis aims to provide a starting point for further research on the governance of food security. More empirical studies should be conducted, because the current state of knowledge, and consequential governance recommendations, largely lack a sound empirical basis.

REFERENCES


16. The Committee on World Food Security (CFS) is the intergovernmental platform inclusive of all stakeholders (Non-governmental Organizations, Civil Society Organizations, food and nutrition charities, international financial institutions like World Bank, World Trade Organization, farmers, agricultural research institutions) to work together to ensure food security and nutrition for all. The Committee reports to the UN General Assembly through the Economic and Social Council (ECOSOC) and to FAO (UN’s Food and Agriculture Organization) Conference.


