# The relationship between adolescents' personality characteristics and online self-presentation

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**SUMMARY**

*Adolescents currently grow up with new media, intertwining these in their daily lives. Identity development is a main task of adolescence and new media provide possibilities for self-presentation. Recent research on personal homepages and social media show that these platforms are often used tools for adolescents to perform presentations of self. However, research on the factors that determine the specific form of self-presentation and the extent of self-disclosure online are still scarce. This paper describes how aspects of online self-presentation are influenced by adolescents' personality characteristics. The relation between narcissism, self-efficacy with regard to self-presentation, extroversion and conscientiousness and online self-presentation have been investigated with content analysis of social network profiles from 68 adolescents. Narcissists are more likely to have a visible face on their profile picture.*

Keywords: Narcissism, Self-Efficacy with regard to Self-Presentation, Extroversion, Conscientiousness, Self-Presentation, Adolescents, Social Network Sites, Content Analysis.

## INTRODUCTION

Adolescents currently grow up with new media. In Western countries, adolescents spend more time using new media than any other leisure, except for sleeping (de Haan & Huysmans, 2004). Adolescents have intertwined new media in their daily lives (Mesh, 2009), seamlessly integrating online and offline communication in order to sustain their social networks by easily switching between types of media (Livingstone, 2003). Communicating with others is the main reason for adolescents to use new media (Subrahmanyam & Greenfield, 2008) and the content of this communication is mostly about identity-management (Livingstone, 2002). Adolescents' use of new media goes beyond the internet. In a media rich environment, adolescents use several media simultaneously rather than sequentially (Livingstone, 2003). For instance they listen to the radio on the internet while texting to their friends on their mobile phone. Despite all this research, there is little known about the domestication of new media in adolescent's daily lives and how this influences their identity.

Research suggests that new media causes isolation, as adolescents are alone in their rooms staring at screens thereby limiting their psychosocial experiences. Others, mainly qualitative studies, suggest that new media provide a possibility to play, communicate, support socially, and share knowledge among adolescents, leading to psychosocial growth (de Haan & Huysmans, 2004; Tapscott, 1998). Until now only a few studies have searched for psychosocial factors in relation to adolescents' general usage of new media (Heim et al., 2007). The effect of new media on adolescents' identity is a more controversial subject than its general usage (Heim et al., 2007). On top of that, as stressed in a literature review by Livingstone (2003), most research on new media usage ignores adolescents. New media usage can contribute to adolescents' self-concept and socialization process in more than one way. A qualitative approach to interview 300 children and teenagers ranging from age four to twenty by Tapscott (1998) demonstrates how adolescents are attracted to new media. His research shows that adolescents use new media for knowledge as well as social support. Using a similar approach, several researchers show how young adolescents use the internet for role playing in the process of identity construction. Online interactions are "laboratories for the construction of identity", as Turkle (1995, p. 194) points out. Some findings suggest a relation between heavy use of computer games among adolescents to negative outcomes of self-esteem and sociability (Heim, et al., 2007). Most research on electronic games focuses on problems rather than advantages (McKenna & Bargh, 2000). A few studies on more positive aspects show that some electronic games are also used as social media. It is known that playing games can provoke fantasy expression, release of feeling, and can function as provocation in child therapy (Heim, et al. 2007).

Technology has become much more important in the last decades for adolescents, and they are heavy users of new media. The usage of new media is changing. The media landscape in today's society is more complex and has become ubiquitous. Old and new media seem to merge. This trend may influence the use and approach of new media by adolescents, which in turn may produce several psychological effects (Heim et al., 2007). Questions arise as to how such new media usage affects adolescents' social development, in particular their identity development, a core adolescent developmental task (Subrahmanyam & Greenfield, 2008). New media communication forms change rapidly (Lampe, Ellison, & Steinfield, 2008), and adolescents use them to explore their identity (Heim et al., 2007; Tapscott, 1998; Turkle, 1995). This paper will address the influence of adolescents' personality on their self-presentation through new media.

Subrahmanyam and Greenfield (2008) state that new media are an important social variable for today's youth, and that the physical and virtual worlds are psychologically connected. In that way, the virtual world serves as playground for developmental issues from the physical world such as identity construction and expression. Self-presentation is a way of dealing with identity construction and expression. Thus understanding how new media effects adolescents' identity construction and expression requires us to examine adolescents´ self-presentation through new media.

## THEORETICAL FRAMEWORK

This theoretical framework will first address adolescents' new media usage. The second paragraph provides further insight into theories about identity expression and self-presentation in new media context. The last paragraph concerns moderating variables that influence the way people self-present.

### New media usage by adolescents

In order to better understand how adolescents use new media to construct and express their identity, first the ways in which adolescents interact with new media need to describe. The distinction between communication forms becomes more obscured as technologies further develop. Despite the fact that adolescents use a lot of different new media, most studies still focus only on the computer and internet (Subrahmanyam & Greenfield, 2008). Adolescents use instant messaging and social network sites to keep in touch with peers from their offline lives. They use blogs to share details of their daily lives. In addition, adolescents' digital world is enriched by anonymous online contexts, like bulletin boards, massively multiplayer online games (MMOGs) and chat rooms where they search for information, find support, play games, role play, or participate in conversations (Subrahmanyam & Greenfield, 2008). As a consequence, adolescents find themselves in a text based culture where they play with language and even create new expressions (Oksman & Turtiainen, 2004). In fact, adolescents use all kinds of new media as a means to self-expression. Especially face-to-interface-to-face communication receives the most attention of adolescents, and this interest can be ascribed to factors such as the opportunities to create new contacts and the possibilities this type of communication provides for self-presentation (Oksman & Turtiainen, 2004). Since their introduction, social network sites have attracted millions of users, of whom many have integrated these sites in their daily lives (Boyd, 2008).

### Identity in adolescence

In psychology, identity is defined as a continual experience of individual self, of that individuals' uniqueness and authenticity as well as the identification with life roles and the experience of belonging to bigger and smaller social groups (Vybíral, Šmahel, & Divínová, 2004). However, on the internet, the individuals' presence is not physical but only a virtual representation. Virtual identity is a combination of digital information that is only partially consciously ordered in a specific way, and can never be identical to real identities (Vybíral, et al., 2004).

Identity is an important part of the self-concept (Zhao, Grasmuck, & Martin, 2008). All of an individual's thoughts and feelings in reference to oneself as an object form the self-concept. Identity is that part of the self by which we are known by others. An important way to explore identities is through peer interactions. Symbolic interactionists like Goffman (1959) have theorized that the way individuals present themselves to others through impression management is involved in the development of self (Manago, Graham, Greenfield, & Salimkhan, 2008). Goffman's theory states that individuals develop a sense of self from creating an impression they wish to give to others. The construction of identity is thus a public process that consists of the identity announcement or self-presentation made by the individual, as well as the identity placement made by others who confirm the claimed

identity. An identity is established when consistency is achieved between identity placement and announcement (Zhao et al., 2008). Identity construction in this way mostly involves the manipulation of physical environments and personal appearance in order to generate a desired impression to others (Goffman, 1959) through self-presentation.

Establishing a coherent identity is a fundamental psychological process which takes places over several decades (Erikson, 1959). Adolescents have to gain a clear image of who they are, what they believe in, and in which direction they go (Turkle, 1995). Earlier research states that the internet serves as a safe and private environment for identity experiment and role playing (Livingstone, 2003). Adolescents have always paid a lot of attention to the presentation of self (Livingstone, 2008). What are characteristics of a youthful construction of the self, when mediated through new media? It seems that for most adolescents creating networks and online content is an integral mode for the management of identity, lifestyle, and social relations. Optimists point at the opportunities for self-expression, sociability, community involvement, creativity and new literacy's (Livingstone, 2008).

There is conflicting evidence on how adolescents use new media for identity experiment and role playing, let alone if they do (Subrahmanyam & Greenfield, 2008; Vybíral, et al., 2004), but it cannot be denied that the opportunity is offered by new media as well as the possibility to practice in self-disclosure and self-presentation. Self-disclosure and self-presentation are two important skills in developing a coherent identity (Subrahmanyam & Greenfield, 2008). This might even lead to greater self-knowledge since one defines oneself through interaction with others by the social role they perform. An individual can easier change or adjust his or her identity when his or her environment also changes (McKenna & Bargh, 2000), which is more easily done online. In that way, adolescents can grow better into a coherent identity. As Turkle (1995) pointed out, the internet provides for a playground for experimenting one identity or aspects of it without risks for the individual. This could be particularly convenient for those who are still processing who they really are, like adolescents.

**Symbolic interaction and self-presentation**

The theoretical framework provided by symbolic interactionism presumes that culture and society are built on social interaction where people actively construct their everyday reality (Oksman & Turtiainen, 2004). This framework consists of three core principles: (1) Meaning: the actions of human beings towards things are based on the meanings that those things have for them, which is the central aspect of human behavior; (2) Language: an individual's identity is completed in interaction with significant others, most often with other human beings identifying meaning in speech acts with others; (3) Thought: the interaction is guided by a ‘frame’ that defines the signs and forms of interaction possible in that situation, being a mental conversation that requires different points of view. With these three elements the concept of self can be framed. The self is a function of language or interaction, without interaction there would be no self-concept and thus no identity. People are part of a social group or community, where our generalized other is the sum total of responses and expectations that we receive from the people in our social environment.

Erving Goffman (1959) has been working on a grounding framework to describe and understand the structure of face-to-face interactions and how this task is intertwined in everyday life. People have the need to present themselves as acceptable persons (Miller, 1995). In this way, our selves are presented with the aim of interacting with others, and are established, maintained and evolved in collaboration with others through the interaction (Miller, 1995). Goffman's theory states that self-presentation is the intentional and tangible component of identity (Jensen Schau & Gilly, 2003). Individuals engage in social interactions to present a desired impression. This impression is maintained through consistently presenting coherent and complementary behaviors. Goffman (1959) calls this process impression management.

**Self-presentation in new media**

Goffman (1959) explains how people negotiate and validate identities in face-to-face interactions and how people establish 'frames' as they evaluate the meaning of the interaction, in other words impression management. New media provide for a new field of interaction 'frames' and additional etiquette (Miller, 1995). Perhaps less rich than face-to-face communication, new media also produce new problems and new opportunities in the presentation of self. Self-presentation in new media differs from face-to-face communication in that information about the self is explicitly expressed and can be managed by the initiator of the communication (Miller, 1995). New media can be seen as what Goffman calls the 'social stage' (Oksman & Turtiainen, 2004). The cultural meaning adolescents attribute to new media are part of the social stage where they construct meanings of themselves and others. Not only the communication itself, but also the choice of the device and the attachment of symbolic meanings to it is a way of self-presentation (Oksman & Turtiainen, 2004). The question is what presentations of self do adolescents establish and manage, and what kind of frame does communication through new media hold?

Adolescents have always devoted attention to the presentation of self. The difference with new media is that for many creating and networking online identity through user profiles, avatars and other online content seems to become an integral means of managing one's identity, lifestyle and social relations (Livingstone, 2008). Identity construction takes place in the two-way interaction between the individual and his or her context, because the individual can co-construct his or her own environment (Manago, et al., 2008). New media change the norms of social interaction and provide for a new form of self-presentation. It is personalized and prefabricated providing in many ways to self-present. Through their profiles on social network sites, people can present themselves using direct and indirect ways. New media provide individuals the opportunity to construct digital collages using symbols and signs to represent and express their self-concepts (Jensen Schau & Gilly, 2003). In new media, people have more control over their self-presentational behavior then in face-to-face communication (Krämer & Winter, 2008), which serves as an ideal environment for impression management as described by Goffman (1959) and self-expression. In the creation of online self-presentation, people can think about the aspects of self they want to expose towards their audience. Unlike other social contexts, personal websites consist of a highly controlled context for self-expression composed completely out of identity claims. These features of personal

websites make them an ideal setting for isolated identity claims and examining their functions in interpersonal contexts while maintaining ecological validation (Vazire & Gosling, 2004).

Personal websites are not that different from self-presentations in other ways, and can be easily linked to non-electronic presentations of self (Miller, 1995). New media give adolescents new possibilities to articulate their personal space, presentation of self and define their relationships to others (Oksman & Turtiainen, 2004). Vazire & Gosling (2004) demonstrate that personal websites represent accurate messages about what the owner is like. Observers trust on the explicit symbols and can easily decipher the messages delivered by the identity claims. Looking at a person's website provides as much information as an observer would learn from that persons' bedroom, office, or a thin slice of behavior (Vazire & Gosling, 2004).

New media develop and create new possibilities for experimenting with both actual and possible selves (Manago, et al., 2008). In online profiles adolescents bridge the physical limitations which provide for new mechanisms to realize experimental aspects of their identities. Through public comments peers acknowledge virtual self-displays that might not exists in real life. In this way, possible selves can convert into actual selves. Experimental research has proven that online adolescent report more often their true selves, than they would in face-to-face encounters (Manago, et al., 2008). Personal profiles give the owner a greater freedom to express their identities through digital association rather than ownership or proximity (Jensen Schau & Gilly, 2003). Research on personal websites found that the owners' self-reported identity correlated more strongly with the observers rating of the owner's true self than with the ideal self ratings (Vazire & Gosling, 2004). A study on preadolescent interaction in a multiuser domain reveals that children stay close to real life in their roles as well as in their name and avatar gender selections when constructing an avatar (Calvert, Mahler, Zehnder, Jenkins, & Lee, 2003). Another source also states that people online are most likely to present their ideal selves (McKenna & Bargh, 2000). On the other hand, individual's ideal selves may be revealed more clearly in social network sites than in real life. Zhao, et al. (2008) even distinguish another type of self, the hope-for possible self, which are socially desired selves individuals would like to present to others. In their study on social network sites it becomes clear that these selves are mostly presented by adolescents, and are not fully established offline.

Turkle (1995) states that adolescents play with their identity using new media, but recent studies suggest that online presentations of self are rather more accurate (Krämer, et al., 2008) and that identity exploration is more subtle as adolescents only play with possible selves (Manago, et al., 2008). This might be due to the fact that earlier research, such as Turkle (1995), has investigated anonymous online environments, and that recent research is focusing on non anonymous online environments (Zhoa, et al., 2008). It might even be the case that new media forces adolescents to merge their multiple offline identities into one coherent online identity. Offline, people present different aspects of self compliant to the social group they are attending to, varying their identity for several groups. But online, people are presenting themselves to a wide audience from a best friend who shares the same value system to a distant acquaintance who does not. It that way, online self-presentation is pressuring for an integration of self-presentation into one that is appropriate to everyone (Manago, et al., 2008).

Closely related to self-presentation is the degree to which people disclose personal information through social performance of identity. Strategies of self-presentation often occur in expressions of personal information or displace it with adjusted or composed details more in accordance with our ideal self (Jensen Schau & Gilly, 2003). Digital identity construction provides for the possibility to express subcutaneous and imbedded identities or to more fully disclose aspects of the self that are difficult to self-present in real life. The absence of physical presence predicts that strategies of online self-presentation differ from those offline (Jensen Schau & Gilly, 2003).

Some studies use a content analysis of user profiles on social network sites to better understand how individuals present themselves online and what types of information they disclose. By sharing personal information people are shaping their identity, and the levels of self-disclosed information varies from releasing detailed personal information to blocking the profile as a whole (Jones, Millenmaier, Goya-Martinez, & Schuler, 2008; Lange, 2008). In their study, analyzing more than 1300 profiles on MySpace, Jones, et al. (2008) found that the users show a high level of self-disclosure of personal information and daily life events, whereby adolescents had a higher disclosure than adults. Social network sites display and mediate aspects of life which are central in adolescent's identity construction, including exploration of social and personal identities, relationships, and presentations of self. Self-presentation online is more complex then offline, because one needs to perform a coherent identity for a larger audience (Jones, et al., 2008). Adolescents expect that their profile is mostly viewed by peers, and anticipate on that audience by shaping their profiles accordingly (Lampe, et al., 2006). They assume that others behavior is similar to their own, searching information about their offline connections.

**Personality variables for self-presentation**

People differ in how they want to present themselves, differ in considering a desirable identity to present and differ on how they want to be seen. But people do have in common that they want to pursue desired self-images (Banaji & Prentice, 1994). The ways people self-present are influenced by numerous factors, including properties of the self-presenter and properties of the social context. However, research on the factors that determine the specific form of self-presentation and the extent of self-disclosure online are still scarce (Krämer & Winter, 2008). Only a small number of studies on new media have taken into account personality characteristics as a potential determinant for the specific form of self-presentation (Krämer & Winter, 2008; Marcus, Machilek, & Schütz, 2006). In this paragraph, based on recent research, demonstrated moderating personality variables on self-presentation are described.

In earlier research there are contradictory results in the effect of self-esteem on self-presentation. Some results suggest that people with low self-esteem present themselves in a self-protective way, while others found that people with low self-esteem seek for confirmation on their positive self-concepts and thus participate more in public self-enhancement through self-presentation (Banaji & Prentice, 1994). In an exploratory study on personality traits and the way of self-presentation and self-disclosure within web 2.0 platforms, Krämer and Winter (2008) found no relation between self-esteem and forms of self-presentation.

Contradictory to the general construct of self-esteem, narcissistic esteem has found to be related to self-presentation. Narcissism refers to a personality trait reflecting a grandiose and inflated self-concept (Buffardi & Campbell, 2008). Narcissists participate in dynamic self-construction via relationships in order to constantly confirm their narcissistic esteem (Buffardi & Campbell, 2008). Narcissists are initiating relationships, looking popular with having many friends, being successful, and have high status. New media offer an opportunity for self-promotion via self-descriptions, vanity via photos and large number of weak ties, each of which is proven to be related to narcissism (Buffardi & Campbell, 2008).

A general scale of self-efficacy does not point to a relation with the way adolescents use new media (Heim et al., 2007). This is not the case with a specific scale of self-efficacy with regard to self-presentation, which turns out to be strongly related to several aspects of online self-presentation (Krämer & Winter, 2008). People with high scores on this scale of self-efficacy with regard to self-presentation displayed a larger number of friends and self-disclose more in terms of completed fields and number of words on their profiles, and did this in a more informal and outgoing style. Krämer & Winter (2008) propose that self-efficacy with regard to self-presentation is of more importance in online self-presentation then in face-to-face communication, since online self-presentation is more conscious and controlled.

Numerous studies have demonstrated the relationship between extraversion and online communication (Krämer & Winter, 2008). In the context of social network sites, it is more interesting to question whether extraversion determines the style of self-presentation. Krämer and Winter (2008) have investigated the relationship between self-reported (offline) personality traits and (online) self-presentation in social network site profiles.

Extraverts did use more elaborate and riskier ways of self-presentation. Extraverts rather than introverts use more words to describe themselves on their online profiles, host more often a blog within their personal web pages and use these blogs to present aspects of their own lives or opinion on different topics (Marcus, et al., 2006). From the same study, Marcus, et al. (2006) also found that conscientiousness could easily be detected in people's self-presentation in personal web pages. People with high scores on conscientiousness tend to post their resumes more often, count their visitors, maintain a weblog, disclose their postal address and have higher numbers of family pictures.

**Research Question**

The previous section described that adolescents are great users of new media and described the importance of identity construction and expression in adolescents' lives. This theoretical background has led to the following research question: *To what extent are aspects of self-presentation influenced by factors of adolescents' personality?* The goal is to contribute to the theoretical discussion about adolescents' identity development in the digital age by providing insight into the way adolescents self-present on social network sites.

Scientific research on social network sites has been conducted from different angles. Social network sites are an important research area to study the processes of impression management and self-presentation (Boyd, 2008). The public display of relationships provides a meaningful identity signal for people to navigate through the network society. An enormous social network can serve as a validation of demonstrated information of identity. Most social network sites encourage their users to disclose personal information as much, and as honest as possible. However, people do this in different degrees (Boyd, 2008).

This study will contribute to identity and new media scholarship focusing on adolescents, the next generation that has been growing up with new media. Most existing studies have neglected to include adolescents as respondents (Hargittai, 2008; Heim, et al., 2007; Livingstone, 2003), while adolescents are known for their extensive new media use (de Haan & Huysmans, 2004; Heim et al., 2007) and would thus make adolescents the most logical population to study this subject. Moreover, because young people are more wired then adults, it is more relevant to study this group especially when assuming basic access and connectivity (Hargittai, 2008). According to Tapscott (1998), today's youth is the first generation that is actually growing up digital. There are suggestions that new media have a bigger impact on adolescents than their parents or school (Heim et al., 2007). There is a need to know more about how new media influences adolescents' identity construction and expression, and from that the way they present themselves through new media.

## METHOD

### Procedure

In this study, a content analysis approach was used to study profiles on social network sites to explore how adolescents' personality influence their self-presentation through social network sites. All sampling units need to be equally informative, which is possible since all Hyves-pages are built using the same columns and boxes of information. Hyves is the largest social network site in the Netherlands with 9 million Dutch members and 6.2 billion page views a month.

### Participants

Because the complete size of the population (in other words the total number of Hyves-pages) is unknown, the mostly used strategies for sampling (e.g. random and systematic sampling) could not be used. A name-based cluster sample was used. The four most common names were selected in the years of birth of the target group, adolescents born between 1985 and 1997 (12 to 25 years old), overlapping the age span for adolescence in different sources. This method has been tested successfully and is especially useful for phenomenon relating to online social networking itself (Ferguson, 2009). The advantage of this method is that there is no need for permission from the owner of the list to access a specific target group, that there are no other costs then the researcher's time, and that name-based sampling can be used on any size population of searchable names (Ferguson, 2009). Limitations for name-based sampling in this research context are the response rate and the prohibition of mass mailing (Ferguson, 2009). Another possible limitation is that people might not have used their

real name. In the years 1985 to 1998 the names Laura, Lisa, Stefan and Tim were the most commonly used names by birth in that order accordingly to the data from the Meertens Instituut (www.meertens.knaw.nl). From the database of Hyves four samples were selected from the number of profiles based on each name. Using a random numbers table 200 fully public Hyves-pages of each name were stored with reference number to account for low response rate and to be sure that all possible self-presentation aspects are represented in the sample size. The owners of the 800 (4x200) profiles received an email to ask if they want to participate in the research. In the email potential participants could find a link to the questionnaire containing questions about their personality and some demographics. A coupon worth €25,- was raffled among the participants to increase the response rate. After all participants had sent back their questionnaires, the content analysis was done based on the coding scheme.

The response rate was 2.8%, which means that 22 adolescents participated in the study. The age of the participants ranged between 14 and 27 with a mean age of 18.73, 31.8% was male and 68.2% was female. Due to the low response rate on the random sample, a second group of respondents was asked to participate in the research. Approximately 70 first year communication students were approached during a lecture, and 46 participated in this study. The age of the participants ranged between 16 and 25 with a mean age of 19.35, 37.0% was male and 63.0% was female.

**Measures**

Personality characteristics were the independent variables, this including narcissism, self-efficacy with regard to self-presentation, extraversion and conscientiousness. Narcissism was measured with the Narcissistic Personality Inventory DSM-IV (American Psychiatric Association, 1994). The short version of the NPI is a 16-item forced-choice format personality questionnaire designed for use on a normal population. Higher scores on the NPI indicate a more narcissistic personality (Ames, Rose, & Anderson, 2006). Self-efficacy with regard to self-presentation was measured with the equal termed scale from Mielke (1990) and assesses the expectation of being able to create a positive impression in social situations. It measures the degree to which people see themselves as competent in presenting certain self-images to others. The subscale "striving for social approval" containing 12 items was used successfully in previous research (Krämer & Winter, 2008). The items (or the statements) are presented on a 7-point Likert-scale. Extraversion and conscientiousness were measured with the two constructs from the Ten-Item Personality Inventory (Gosling, Rentfrow, & Swann Jr., 2003). The items (or the statements) were presented on a 7-point Likert-scale.

Cronbach's α was calculated to measure the scale's reliability regarding the constructs measured. For narcissism an α of .681 was calculated, which was lower than tested by Ames, et al. (2006). Cronbach's α for self-efficacy with regard to self-presentation was .660, which was slightly lower than in the study of Krämer and Winter (2008). Extraversion had a Cronbach's α of .729 and conscientiousness had a Cronbach's α of .570, which was in line with the reliability as tested by Gosling, et al. (2003).

Self-presentation on social network sites was the dependent variable and was measured with a content analysis of Hyves-pages concentrating on the parts as described in the coding scheme. The content analysis includes the following quantitative variables: number of friends, number of words, number of completed fields, number of self-created fields, number of blog posts, number of small messages, number of status updates, number of one-line messages, number of groups, number of comments, number of visitors, number of times being spotted, number of colors. In addition, the following qualitative variables were included: profile picture content, profile picture location, face visibility, facial expression, looking into the camera, blog usages, frequency of blog posts, frequency of small messages, frequency of one-line messages, frequency of status updates, screen name type, usage of a symbol in the screen name, type of background, content of background photo, type of colors. All categories are shown in Appendix A.

**Analysis**

Quantitative content was analyzed with a Least-Square-Regression to describe the relation between the content and one of the personality characteristics. For the categorized parts of the content analysis an Independent T-test was used to indicate a relation between the content and one of the personality characteristics in case there were only two categories. If there were more than two categories of content, an analysis of variance was used. In case of two categorical variables a Pearson Chi-Square was used. All statistical analysis were done using SPSS version 17.

## RESULTS

Significant results were found for narcissism and face visibility. Narcissistic adolescents had significantly more often a visible face in their profile picture ($t= 2.679$, $df= 32.647$, $p= 0.012$). Other tests did not show significant results. All the other results were analyzed to identify which personality characteristics seem to be most explanatory for that part of the content analysis. Tables and charts of the all results can be found in Appendix B.

**Descriptive statistics**

According to the sample, the average Hyves user has 291.84 (SD= 170.642) friends, uses 65.26 (SD= 52.290) words in their profile, has completed 14.88 (SD= 6.190) of the 25 potential fields of his profile, displays 59.29 (SD= 93.445) photo's, enlisted to 33.79 (SD= 40.116) groups, has had 9684.65 (SD= 9686.889) visitors, has been spotted 10.79 (SD= 12.309) times in photo's on others people's profiles, and has 134.64 (SD= 178.138) pages with small messages.

Females have significantly more pictures ($t= -2.002$, $df= 66$, $p= 0.049$) and small messages ($t= -2.150$, $df= 59$, $p= 0.036$) on their profile, and are linked to more group Hyves ($t= -2.345$, $df= 61.237$, $p= 0.022$) than males. A Pearson's Chi-Square shows that females have a higher frequency of posting status updates ($X^2= 9.161$, $df= 2$, $p= 0.010$). Females use more often cool tones, whereas males use more often black and white in their profile

($X^2$= 13.454, df= 3, p= 0.004). Males seem to be more likely to have an active blog, whereas females seem to have abandoned their blogs more often or do not even have a blog (ns). It seems to be more likely for females to use a photo or image as a background, whereas males are more likely to have a one color background (ns).

The respondents were split up in to age groups for adolescence as has been regularly acknowledged in the literature: 1) young adolescents, ranging between 12 and 18 years old; and 2) emerging adults, ranging between 19 and 25 years old. Young adolescents have more friends (t= 3.260, df= 63.939, p= 0.002), and are linked to a higher number of group Hyves (t= 2.023, df= 66, p= 0.023) than emerging adults. Young adolescents also seem to have more one-line messages (ns) on their profile. Young adolescents use more often warm tones and white on their profile, whereas emerging adults use more often cool tones and black ($X^2$= 8.277, df= 3, p= 0.041). Emerging adults seem to have a higher number of blog posts (ns).

**Self-presentation and narcissism**

As stated above, narcissism explains whether or not adolescents have a visible face in their profile picture. Narcissism also seems to be the personality characteristic that may affect the content of the profile picture (ns) and the type of colors (ns) adolescent used in their profile, and for the frequency of small messages (ns), one-line messages (ns), and status updates (ns). Narcissism seems to have a very small, but positive effect on the number of self-created fields in a profile ($R^2$= 0.016), the number of one-line messages ($R^2$= 0.041), the number of visitors ($R^2$= 0.026), and the number of times adolescents were spotted in pictures on other people's profiles ($R^2$= 0.017).

**Self-presentation and self-efficacy with regard to self-presentation**

Self-efficacy with regard to self-presentation is likely to explain something about the facial expression (ns) an adolescent has in their profile picture. Self-efficacy with regard to self-presentation appears to have a very small, but negative influence on the number of completed fields ($R^2$= 0.009) and the number of group Hyves ($R^2$= 0.015), and seems to have a very small, but positive effect on the number of comments adolescents receive on their own content ($R^2$= 0.025).

**Self-presentation and extraversion**

Extraversion may affect the profile picture location (ns) and if they were looking into the camera (ns). Extraversion may affect the fact adolescents having a blog (ns) and the frequency of blog posts (ns). Extraversion may affect the screen name type (ns), and the content of the background photo (ns). Extraversion seems to have a very small, but positive effect on the number of pictures adolescents display on their profile ($R^2$= 0.012), the number of blog posts ($R^2$= 0.106), the number of friends they have ($R^2$= 0.011), and the number of small messages adolescents have on their profile ($R^2$= 0.006). Extraversion also appears to have a very small, but negative influence on the number of used words ($R^2$= 0.012).

**Self-presentation and conscientiousness**

Conscientiousness may affect the usage of a symbol in their screen name (ns) and the type of background (ns) adolescents used. Conscientiousness also seems to have a very small, but positive effect on the number of small messages ($R^2$= 0.006), and the number of colors adolescents use in their profile ($R^2$= 0.040). Conscientiousness appears to have a very small, but negative influence on the number of status updates ($R^2$= 0.034).

## DISCUSSION

Do adolescents' personalities influence their online self-presentation on social network sites? This study has not yielded a strong evidence for this relation, since there was only one significant finding. The personality characteristic of narcissism is significant in explaining adolescents' facial visibility in their profile picture. It seems that narcissism influences online self-presentation on social network sites. The influence of other personality characteristics could not be confirmed, but does provide interesting questions for further research.

Narcissism may have an effect on the social activity of adolescents on social network sites, since this personality characteristic seems to explain the frequency of small messages, one-line messages, and status updates, and is positively related to the number of small messages, visitors and times they have been spotted. Narcissists seem to be more socially active on social network sites. However, it must be stated that these findings are not significant and the influence of narcissism was very small. Buffardi & Campbell (2008) point out that people with a high score on narcissism feed their narcissistic esteem through looking popular via vanity through pictures. This study revealed that adolescents with higher scores on narcissism have more often their face completely visible in their profile picture. One can say that this might be a case of vanity through pictures as in the study of Buffardi & Campbell (2008). To definitively prove this statement further research should be performed. Buffardi & Campbell (2008) also point to the fact that people with a high narcissistic esteem want to show that they have a high status. The results of this study seem to suggest a positive relationship between narcissism and being spotted in pictures on other people's profiles. An adolescent who has been spotted more often could be seen as having a higher status, because others want to show their friendship with that specific person by posting pictures on which they are seen together. And users can mark themselves on other peoples' picture so that the number of times they have been spotted rises, which mean they have self control over that number and can show their higher status to others. Buffardi & Campbell (2008) found that narcissists pursue self-promotion via self-descriptions on their profiles. This study revealed a similar finding. Narcissism is the most significant personality characteristic in explaining the number of self-created fields in a profile. Narcissists are more likely to have larger numbers of self-created fields, which can indicate a need to control self-descriptions.

In complete contrast to the study of Krämer and Winter (2008), who conclude that self-efficacy with regard to self-presentation is the most related personality characteristic in online self-presentation, in this study self-efficacy with regard to self-presentation is least likely to explain online self-presentation on social network sites. However, some results seem to point in the same direction. In this study self-efficacy with regard to self-

presentation is my affect facial expression and the number of completed fields which was also concluded by Krämer and Winter (2008).

Previous research studies indicate a relation between extraversion and online communication. The results of these studies, however, are not completely consistent. On one hand, they argue that introverted, socially anxious and shy people have a preference for online communication (McKenna & Bargh, 2000; Subrahmanyam & Greenfield, 2008). On the other hand they describe that such people are not more likely to host personal homepages (Marcus, et al., 2006). Moreover, if introverts have a homepage, they disclose less information and fewer options (Lee, 2009; Marcus, et al., 2006). Krämer and Winter (2008) found a positive effect between extraversion and a more 'experimental' profile picture. This is in line with the findings of this study, were extraversion seems to have the strongest relation with profile picture location and whether or not the adolescent is looking into the camera. This study also indicates that extraversion is related to the content of the background picture. This is similar to the finding of Krämer and Winter (2008), who found a relation between extraversion and the style of the profile picture. In this study, extraversion seems to explain all expects of blogging on social network sites.

Only a few studies have been performed on conscientiousness in the context of personal websites. Marcus, et al. (2006) found that owners of personal website disclose more personal information. This study indicates a positive relation between conscientiousness and the number of status updates. It seems that conscientious adolescents share more information on what they are doing at the moment, which can be seen as disclosing more personal information. On the other hand, this study shows that more conscientious adolescents have fewer small messages visible on their profile. This could be due to the fact that they receive less of this type of communication, but it can be the case that they are deleting them more often and thus sharing less personal information.

This research has some implications for the usage of social network sites and for new media usage in general. By sharing personal information people are shaping their identity (Jones, et al., 2008). Individuals engage in social interactions to present a desired impression. Within social network sites these impressions about the self are more explicitly expressed and managed (Miller, 1995). Through public comments peers acknowledge virtual self-displays, which in turn can lead to the conversion of possible selves into actual selves (Manago, et al., 2008). It might be that females, who disclose more information (photos, status updates, and small messages) than males, are more active in shaping their identities. This also applies to young adolescents, who are also more active on social network sites by having more friends, being connected to more groups and receiving more one-line messages.

Earlier research suggests that people use blogs to share details of their daily lives (Subrahmanyam & Greenfield, 2008). This study reveals that males are more likely to have an active blog, and it seems to be that extraversion explains the usage of a blog on social network sites. It could be that males as well as extraverts have a greater need to share information about their daily lives. Age is also a factor in explaining the total number of blog posts. Emerging adults have higher numbers of blog posts. It could be that they want to tell more about

their daily lives; however it could also be that they have a higher expectation of being able to create a positive impression (self-efficacy with regard to self-presentation) through their blogs. This analysis has not been performed within this study.

Narcissism may have an effect on the form of online self-presentation on social network sites. This, in combination with the higher percentage of narcissistic participants on social network sites (Buffardi & Campbell, 2008), also raises the question if self-presentation norms on social network sites will be pulled in the direction of greater self-promotion and if narcissists use social network sites as a social stage for self-promotion. Does this phenomenon contribute to rising levels of narcissism over time, if users of social network sites have or form more narcissistic personalities?

**Limitations and future research**

The main limitation of this study is the small sample size. Only 68 adolescents with a completely accessible profile have completed the questionnaire. Although most studies have around 200 participants or even more (Buffardi & Campbell, 2008; Jones, et al., 2008; Marcus, et al., 2006), successful studies with less than 100 participants do exist (Krämer & Winter, 2008, Vazire & Gosling, 2004; Zhao, et al., 2008). Another possible limitation could be a selection bias. It is possible that the adolescents who have participated in this study like to talk about themselves and thus causing the narcissistic effects found in this study. However, earlier research provides evidence that the network of individuals on social network sites contain a relatively high percentage of narcissistic individuals (Buffardi & Campbell, 2008), which negates this limitation. There were also some demographic limitations. First, almost twice as many females as males participated in this study. Earlier research provided evidence for gender differences in how people use social network sites and participate in online interactions. Female adolescents use the internet to renew their feminine identity by constructing a self- image based on new standards of beauty (Banaji & Prentice, 1994; Manago, et al., 2008). This could have had an influence on the number of pictures and especially on the type of pictures that female adolescents have on their profiles. Females are more likely to utilize the internet for communication purposes, and male adolescents are more likely to use the internet as a source of entertainment (Jones, et al., 2008). This could have had an influence on the number of different types of communication possibilities that a social network site facilitates. The second demographic limitation is the fact that this study focuses on Dutch adolescents and therefore only the largest Dutch social network site Hyves has been analyzed. This makes it harder to generalize the results of this study to other (international) social network sites like MySpace or FaceBook.

Future research should incorporate more participants in order to draw a firmer conclusion on the relation between adolescents' personality and their online self-presentation. Future research should be looking at adolescents' online self-presentations on MySpace or FaceBook because those are the largest internationally used social network sites. Another goal for future research should be an expansion of the content analysis with more qualitative data on the written part of the profile as well as more innovative ways of analyzing new media content using qualitative methods. Krämer and Winter (2008) did research on the objective, informal or humorous

nature of the style of text, however a more in-depth look using narrative studies may provide better insight in whether there are differences in how adolescents use language in their online self-presentations.

The influence of personality characteristics on online self-presentation remains unclear. However, the present study, using content analysis on the largest Dutch social network site Hyves, has shown that narcissism effects online self-presentation on social network sites. Adolescents with higher scores on narcissism more often have their face completely visible in their profile picture.

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## APPENDIX A – CODING SCHEME

| Content | Code | Discription | Example |
|---|---|---|---|
| Respondent | | respondent nummer | |
| Profile picture - content | 1 | self | |
| | 2 | with friend(s) | |
| Profile picture - location | 1 | partying | dancing, with drink |
| | 2 | portrait | location hardly visible |
| | 3 | area | lot of background visible |
| Profile picture - face completely visible | 1 | yes | |
| | 2 | no | |
| Profile picture - facial expression | 1 | pasphoto style | pasphoto style |
| | 2 | taken during action | taking during activity |
| | 3 | posing or making a face | like a model or doing funny |
| Profile picture - looking into camera | 1 | yes | |
| | 2 | no | |
| Total number of pictures | | | |
| Total number of words in profile | | | |
| Total number of completed fields | | | |
| Total number of self-created fields | | | |
| Blog usage - general | 1 | not present | |
| | 2 | active user | posted <3 months ago |
| | 3 | abandoned | posted >3 months ago |
| Blog usage - number of posts | | | |
| Blog usage - frequency | 1 | daily | |
| | 2 | weekly | |
| | 3 | once a month | |
| | 4 | less than once a month | |
| Total number of friends | | | |
| Total number of krabbels | | krabbels = small messages | |
| Frequency of krabbels | 1 | within the last 24h | |
| | 2 | this week | |
| | 3 | more than a week ago | |
| Total number of WWW's | | WWW's = status updates | |
| Frequency of WWW's | 1 | within the last 24h | |
| | 2 | this week | |
| | 3 | more than a week ago | |
| Total number of tikken | | tikken = one line messages | |
| Frequency of tikken | 1 | within the last 24h | |
| | 2 | this week | |
| | 3 | more than a week ago | |
| Total times profiles is viewed by others | | a.k.a. the number of visitors | |
| Total times user is spotted in pictures of others | | | |
| Total number of group Hyves | | | |
| Total number of comments | | | |
| Screen name - type | 1 | real name | |
| | 2 | not real name | |
| Screen name - symbol usage | 1 | yes | added a smiley or symbol |
| | 2 | no | |
| Background | 1 | photo | |
| | 2 | one collor | |
| | 3 | image | |
| | 4 | other | |
| Background - photo | 1 | no photo | |
| | 2 | self | |
| | 3 | with friend(s) | |
| | 4 | other | |
| Total number of collors in profile | | | |
| Type of collors in profile | 1 | cool tones | |
| | 2 | warm tones | |
| | 7 | white | |
| | 8 | black | |

## APPENDIX B – STATISTICAL RESULTS

### Distribution of gender

| Gender | Frequency | Percent |
|---|---|---|
| Male | 24 | 35.3 |
| Female | 44 | 64.7 |
| Total | 68 | 100.0 |

### Distribution of age

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Age | 68 | 14 | 27 | 19.15 | 2.605 |

### Distribution of content

| Content | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| # friends | 68 | 4 | 719 | 291.84 | 170.642 |
| # group Hyves | 68 | 0 | 288 | 33.79 | 40.116 |
| # words in profile | 68 | 4 | 288 | 65.26 | 52.290 |
| # completed fields | 68 | 3 | 28 | 14.88 | 6.190 |
| # pictures | 68 | 0 | 525 | 59.29 | 93.445 |
| # krabbels | 61 | 1 | 754 | 134.64 | 178.138 |
| # views | 68 | 254 | 51559 | 9684.65 | 9686.889 |
| # spotted | 68 | 0 | 61 | 10.79 | 12.309 |

### Reliability of the used constructs

| Constructs | Cronbach's Alpha | N of items |
|---|---|---|
| Extraversion | 0.729 | 2 |
| Conscientiousness | 0.570 | 2 |
| Narcissism | 0.681 | 16 |
| Self-Efficacy with regard to Self-Presentation | 0.660 | 12 |

## Results from the Independent Sample T-test for the personality characteristics

| Content | Narcissism | | Self-Efficacy | | Extraversion | | Conscientiousness | |
|---|---|---|---|---|---|---|---|---|
| Picture content | t= -1.575 | p= 0.123* | t= 0.186 | p= 0.853 | t= -0.542 | p= 0.591 | t= 1.352 | p= 0.183 |
| Face visibility | t= 2.679 | p= 0.012** | t= 0.178 | p= 0.860 | t= 1.246 | p= 0.221 | t= 0.324 | p= 0.748 |
| Looking into the camera | t= 0.550 | p= 0.587 | t= 0.657 | p= 0.516 | t= 1.050 | p= 0.303* | t= -0.059 | p= 0.954 |
| Screen name type | t= -0.348 | p= 0.738 | t= 0.279 | p= 0.787 | t= -2.193 | p= 0.058* | t= -0.999 | p= 0.343 |
| Screen name symbol | t= -1.182 | p= 0.253 | t= -0.673 | p= 0.512 | t= -0.525 | p= 0.605 | t= -1.235 | p= 0.235* |

* personality characteristics with the highest p-value for that type of content
** significant at $p < 0.05$

## Results from the Analysis of variance for the personality characteristics

| Content | Narcissism | | Self-Efficacy | | Extraversion | | Conscientiousness | |
|---|---|---|---|---|---|---|---|---|
| Picture location | F= 0.316 | p= 0.730 | F= 1.534 | p= 0.223 | F= 2.127 | p= 0.127* | F= 0.933 | p= 0.399 |
| Facial expression | F= 0.844 | p= 0.435 | F= 1.227 | p= 0.300* | F= 0.168 | p= 0.846 | F= 0.786 | p= 0.460 |
| Blog usage | F= 0.680 | p= 0.510 | F= 0.369 | p= 0.693 | F= 0.950 | p= 0.392* | F= 0.873 | p= 0.423 |
| Blog post frequency | F= 0.554 | p= 0.585 | F= 0.083 | p= 0.920 | F= 0.571 | p= 0.575 | F= 0.477 | p= 0.628 |
| Krabbel frequency | F= 1.680 | p= 0.197* | F= 0.493 | p= 0.613 | F= 1.618 | p= 0.209 | F= 0.365 | p= 0.696 |
| WWW's frequency | F= 0.972 | p= 0.395* | F= 0.262 | p= 0.772 | F= 0.277 | p= 0.761 | F= 0.378 | p= 0.690 |
| Tikken frequency | F= 0.935 | p= 0.339* | F= 0.038 | p= 0.847 | F= 0.064 | p= 0.802 | F= 0.809 | p= 0.628 |
| Background type | F= 0.219 | p= 0.804 | F= 0.841 | p= 0.436 | F= 0.960 | p= 0.388 | F= 1.183 | p= 0.235* |
| Background photo | F= 0.193 | p= 0.826 | F= 0.112 | p= 0.895 | F= 1.060 | p= 0.371* | F= 0.217 | p= 0.807 |
| Type of color used | F= 1.277 | p= 0.290* | F= 0.101 | p= 0.959 | F= 0.925 | p= 0.434 | F= 0.561 | p= 0.643 |

* personality characteristics with the highest p-value for that type of content
** significant at $p < 0.05$

## Results from the Least Square Regression Analysis for the personality characteristics

| Content | Narcissism | Self-Efficacy | Extraversion | Conscientiousness |
|---|---|---|---|---|
| # pictures | $R^2$= 0.003 | $R^2$= 0.000 | $R^2$= 0.012* | $R^2$= 0.001 |
| # words in profile | $R^2$= 0.001 | $R^2$= 0.000 | $R^2$= 0.012* | $R^2$= 0.001 |
| # completed fields | $R^2$= 0.000 | $R^2$= 0.009* | $R^2$= 0.002 | $R^2$= 0.007 |
| # self-created fields | $R^2$= 0.016* | $R^2$= 0.009 | $R^2$= 0.010 | $R^2$= 0.013 |
| # blog posts | $R^2$= 0.090 | $R^2$= 0.028 | $R^2$= 0.106* | $R^2$= 0.000 |
| # friends | $R^2$= 0.003 | $R^2$= 0.007 | $R^2$= 0.011* | $R^2$= 0.002 |
| # krabbels | $R^2$= 0.002 | $R^2$= 0.002 | $R^2$= 0.006* | $R^2$= 0.006* |
| # WWW's | $R^2$= 0.017 | $R^2$= 0.015 | $R^2$= 0.001 | $R^2$= 0.034* |
| # tikken | $R^2$= 0.041* | $R^2$= 0.030 | $R^2$= 0.001 | $R^2$= 0.017 |
| # views | $R^2$= 0.026* | $R^2$= 0.006 | $R^2$= 0.019 | $R^2$= 0.002 |
| # spotted | $R^2$= 0.017* | $R^2$= 0.000 | $R^2$= 0.009 | $R^2$= 0.011 |
| # group Hyves | $R^2$= 0.000 | $R^2$= 0.015* | $R^2$= 0.003 | $R^2$= 0.000 |
| # comments | $R^2$= 0.022 | $R^2$= 0.025* | $R^2$= 0.005 | $R^2$= 0.002 |
| # colors used | $R^2$= 0.001 | $R^2$= 0.010 | $R^2$= 0.038 | $R^2$= 0.040* |

* personality characteristics that explained the most variance for that type of content
** significance level $p < 0.05$

## Results from the Independent Sample T-test for age group

| Content | Test value | Significance |
|---|---|---|
| # friends | t= 3.260 | p= 0.002** |
| # group Hyves | t= 2.324 | p= 0.041** |
| # tikken | t= 1.951 | p= 0.057 |
| # blog posts | t= -2.039 | p= 0.056 |

** significance level $p < 0.05$

## Results from the Pearson Chi-Square test for age group

| | | Age group | | |
|---|---|---|---|---|
| Type of colors used | | 12 – 18 years | 19 – 25 years | Total |
| Cool tones | Count | 6.0 | 11.0 | 17.0 |
| | Expected count | 8.8 | 8.3 | |
| Warm tones | Count | 7.0 | 1.0 | 8.0 |
| | Expected count | 4.1 | 3.9 | |
| Black | Count | 3.0 | 7.0 | 10.0 |
| | Expected count | 5.1 | 4.9 | |
| White | Count | 19.0 | 14.0 | 33.0 |
| | Expected count | 17.0 | 16.0 | |
| Total | | 35.0 | 33.0 | 68.0 |
| Pearson Chi-Square | $X^2$= 8.277 | p= 0.041** | | |

** significance level $p < 0.05$

## Results from the Independent Sample T-test for gender

| Content | Test value | Significance |
|---|---|---|
| # pictures | t= -2.002 | p= 0.049** |
| # krabbels | t= -2.150 | p= 0.036** |
| # group Hyves | t= -2.345 | p= 0.022** |

** significance level $p < 0.05$

### Results from the Pearson Chi-Square test for gender and frequency of status updates

| WWW's Frequency | | Gender Male | Female | Total |
|---|---|---|---|---|
| Within the last 24h | Count | 1.0 | 3.0 | 4.0 |
| | Expected count | 1.3 | 2.7 | |
| This week | Count | 2.0 | 12.0 | 14.0 |
| | Expected count | 4.7 | 9.3 | |
| More than a week ago | Count | 5.0 | 1.0 | 6.0 |
| | Expected count | 2.0 | 4.0 | |
| Total | | 8.0 | 16.0 | 24.0 |
| Pearson Chi-Square | $X^2$= 9.161 | p= 0.010** | | |

** significance level p < 0.05

### Results from the Pearson Chi-Square test for gender and used profile colors

| Type of colors used | | Gender Male | Female | Total |
|---|---|---|---|---|
| Cool tones | Count | 0.0 | 17.0 | 17.0 |
| | Expected count | 6.0 | 11.0 | |
| Warm tones | Count | 3.0 | 5.0 | 8.0 |
| | Expected count | 2.8 | 5.2 | |
| Black | Count | 6.0 | 4.0 | 10.0 |
| | Expected count | 3.5 | 6.5 | |
| White | Count | 15.0 | 18.0 | 33.0 |
| | Expected count | 11.6 | 21.4 | |
| Total | | 24.0 | 44.0 | 68.0 |
| Pearson Chi-Square | $X^2$= 13.454 | p= 0.004** | | |

** significance level p < 0.05

### Results from the Pearson Chi-Square test for gender and type of background

| Background | | Gender Male | Female | Total |
|---|---|---|---|---|
| Photo | Count | 5.0 | 11.0 | 16.0 |
| | Expected count | 5.6 | 10.4 | |
| One color | Count | 16.0 | 18.0 | 34.0 |
| | Expected count | 12.0 | 22.0 | |
| Image | Count | 3.0 | 15.0 | 18.0 |
| | Expected count | 6.4 | 11.6 | |
| Total | | 24.0 | 44.0 | 68.0 |
| Pearson Chi-Square | $X^2$= 4.910 | p= 0.086 | | |

** significance level p < 0.05

### Results from the Pearson Chi-Square test for gender and general blog usage

| Blog usage | | Gender Male | Female | Total |
|---|---|---|---|---|
| Not present | Count | 20.0 | 29.0 | 49.0 |
| | Expected count | 17.3 | 31.7 | |
| Active user | Count | 2.0 | 1.0 | 3.0 |
| | Expected count | 1.1 | 1.9 | |
| Abandoned | Count | 2.0 | 14.0 | 16.0 |
| | Expected count | 5.6 | 10.4 | |
| Total | | 24.0 | 44.0 | 68.0 |
| Pearson Chi-Square | $X^2$= 5.587 | p= 0.061 | | |

** significance level p < 0.05