universität wien

MASTERARBEIT / MASTER'S THESIS

Titel der Masterarbeit / Title of the Master's Thesis

„The Transformation of Online Friendships into a Real Life Context in Individuals with Social Anxiety – Development and Application of the Need to Transfer Scale"

verfasst von / submitted by

Nina van Aken, BSc.

angestrebter akademischer Grad / in partial fulfilment of the requirements of the degree of

Master of Science (MSc)

Wien / Vienna, 2015

Abstract

Socially anxious people often prefer online social interaction (POSI) over face-to-face interaction and are motivated to use the internet to compensate for a lack of close real life relationships, which are an important supportive factor for people with anxieties. Occasionally, they form high quality friendships online. Those are showing a lot of similarities to traditional offline friendships. However, offline friendships still yield a higher quality and sometimes people transform a modality-switch. The current paper explores the modality-switching process of socially anxious people with two different studies. The first study establishes a new scale to measure the need to transfer (NTT) and the second study investigates the further application of the scale within a structural regression model. Additionally, aspects of friendships within different acquaintanceship contexts of online friends are examined. For the NTT scale three subscales emerged which measure the substantial motivation to invest resources into a friendship and weight possible risks and benefits. A sample of 760 internet users who reported to have an online friend participated at the following survey. Results revealed that online friends who meet on a regular basis displayed the highest friendship quality for the different acquaintanceship contexts. The structural regression model did confirm most of the hypotheses. Social anxiety had a direct negative influence on the NTT. High friendship quality did account for less social anxiety and a higher NTT. POSI only had a mediating influence on the NTT, but not a direct effect as hypothesized. Additional results and further implications are discussed.

Keywords: social interaction anxiety, online friendship, friendship quality, preference for online social interaction, modality-switching, structural equation modelling, factor analysis, need to transfer

Zusammenfassung

Menschen mit Sozialphobie präferieren häufig soziale Online-Interaktion (POSI) gegenüber face-to-face-Interaktion und sind motiviert das Internet als Kompensation für fehlende enge Sozialkontakte im echten Leben zu benutzen, welche ein wichtiger unterstützender Faktor für Menschen mit Ängsten sind. Gelegentlich formen sie hochqualitative Freundschaften online. Diese zeigen viele Gemeinsamkeiten mit traditionellen Offline-Freundschaften. Wie auch immer, Offline-Freundschaften zeigen trotzdem eine höhere Qualität und manchmal führen Menschen einen Modalitätenwechsel durch. Die aktuelle Arbeit untersucht den Prozess des Modalitätenwechsels von Menschen mit Sozialphobie mit zwei verschiedenen Studien. Die erste Studie etabliert eine neue Skala, die das Transformationsbedürfnis (NTT) untersucht und die zweite Studie wendet diese Skala dann in einem Strukturgleichungsmodell an. Zusätzlich untersucht die zweite Studie Aspekte von Freundschaften in verschiedenen Bekanntschaftsgraden von Online-Freunden. In der NTT-Skala entstanden drei Subskalen, die die substantielle Motivation Ressourcen in eine Freundschaft zu investieren, mögliche Risiken und Vorteile, messen. In einer Stichprobe von 760 Internet-Nutzern, die berichteten einen Online-Freund zu besitzen, nahmen an der folgenden Studie teil. Die Ergebnisse zeigten, dass Online-Freunde, die sich regelmäßig sehen, die höchste Freundschafts-Qualität in den verschiedenen Bekanntschaftsgraden aufweisen. Das Strukturgleichungsmodell konnte die meisten Hypothesen bestätigen. Sozialphobie hatte einen direkten negativen Einfluss auf den NTT. Hohe Freundschafts-Qualität war für weniger Sozialphobie und einen höheren NTT verantwortlich. POSI hatte nur einen mediierenden Effekt auf den NTT, aber keinen direkten Effekt wie angenommen. Weitere Ergebnisse und Implikationen der Studie werden diskutiert.

The Transformation of Online Friendships into a Real Life Context in Individuals with Social Anxiety – Development and Application of the Need to Transfer Scale

Since the Internet is an inherent part of most people's life, more and more scientists are engaged in the research of human behavior in virtual spaces like social media, professional networks and online games. Like in other areas of life, people in online spaces often get involved in social interactions. Especially people who show social interaction anxiety tend to prefer social online interaction over conventional face-to-face interaction. With increased time spent communicating online, friendships develop between two individuals. Sometimes those friendships even get transformed into a real life context. The aim of the current study is to investigate people's need to transfer a friendship established online into a real life context and how social interaction anxiety is involved in this feeling. To understand the concept of the need to transfer, one must know the underlying mechanisms of social online interaction.

Computer Mediated Communication

Social online interaction between two individuals differs from conventional face-to-face (FtF) interaction. In an early article from McKenna and Bargh (2000) four major differences are pointed out: Accessibility of other people, asynchronicity, reduced physical cues and anonymity.

One of the big differences of computer mediated communication (CMC) and FtF interaction is the accessibility of other people. In CMC, contact can emerge without the necessity of being at the same time at the same place (McKenna & Bargh, 2000; Valkenburg & Peter, 2011). People are free to choose in which online spaces they want to communicate (like social media platforms, games, discussion boards), which form of communication they prefer (such as instant messaging, e-mails, voice-chat) and in which topics they like to engage (for example leisure activities, society, self-help). Those conditions make it easier to find like-minded people and build contact with greater reciprocity. In FtF interaction, those spacial and temporal barriers often hinder people to embrace new conversational partners.

Especially the temporal factor of asynchronicity in written CMC describes a huge difference from conventional FtF interaction. Whereas FtF interaction is always direct in terms of physical cues and the content of the message disclosed to the other person, CMC does offer the participants the possibility to deliver their message whenever they like (McKenna & Bargh, 2000). Even fast communication, like instant messaging, can be used

without the necessity to reply immediately. Asynchronicity therefor offers time to reflect on the message a person wants to deliver. The increased time to engage into introspection results also in higher controllability over the situation as a whole and the self-representation of each participant in CMC (Walther, 2007). It is therefore easier to shape the individual self-representation in contrast to FtF interaction. The hyperpersonal CMC theory goes a step further in claiming a resulting idealization of the disclosing person by the conversational partner, who only is provided by the self-selected information (Walther, 1996). Idealization leads to a greater subjective feeling of intimacy and people tend to disclose more to their idealized counterpart.

In general, CMC offers reduced visual and auditory cues during conversation compared to FtF interaction, as long as the participants use written communication. According to the reduced cues theory (RCT), non-verbal cues, like gestures and facial expressions, and verbal cues, such as intonation, influence people's behavior in FtF interaction (Kiesler, 1986). In CMC, conversations are not inhibited through those social feedback cues and a greater frequency of self-disclosure can result. The social information processing (SIP) theory shows a similar approach. SIP theory states, that social feedback cues are used to gather more information about the conversational partner in FtF interaction, but the use of cues also needs more cognitive processing (Walther, 1992). In CMC, participants can focus solely on the pure text-based interaction, which requires less attention on social feedback cues but depends on more self-disclosure to get to know each other and provides more anonymity for each individual involved in the conversation.

With greater anonymity physical appearance, demographic characteristics and personality features can be masked or even falsified easily, but anonymity also offers the possibility to explore new parts of ones' own identity without major consequences (McKenna & Bargh, 2000; Suler, 2004). Again, more controllability over self-representation and self-disclosure emerges. Individuals that may be constraint in FtF interaction can use their anonymity and the high degree of controllability in CMC to overcome their own inhibitions.

Nevertheless, disclosing behavior in CMC is highly dependent on contextual and personal factors and a clear statement about whether disclosure is greater in an online or an offline context is not possible (Nguyen, Bin, & Campbell, 2012). The question derives what kind of people use CMC in which ways.

Beneficial Factors of CMC

CMC in general depends highly on the attitude towards this kind of communication. It is often used to get the feeling of connectedness and to build new and more relationships, which can result in more self-disclosure (Ahn & Shin, 2013). Especially adolescents spend a greater amount of time communicating online and are showing a higher degree of self-disclosure for personal information compared to adults (Best, Manktelow, & Taylor, 2014; Thayer & Ray, 2006). There are some differences between online communication behavior of female and male adolescents. Females are more likely to use CMC to maintain existing offline friendships. They disclose a great variety of topics, like their interests, their feelings, plans and actions or other people. In comparison, males talk mainly about their interests but also seek the contact of people they have never met in person before (Bonetti, Campbell, & Gilmore, 2010). Still, they seem to show a greater amount of self-disclosure in CMC compared to FtF interaction (Wang, Jackson, & Zhang, 2011). In a survey study of Peter and Valkenburg (2006), results suggested that not only younger males but also females perceived CMC as more reciprocal, broader and deeper than FtF interaction.

These findings may not be surprising, considering the relationship of the distinct features of CMC and the tasks adolescents have to achieve in their psychological development. They have to learn how to form new relationships and how to maintain existing ones, find their own identity, develop self-esteem and explore their sexuality. Valkenburg and Peter (2011) investigated these psychological tasks and how CMC can contribute in a positive way. The high controllability of the internet can help adolescents to experiment with their self-representation. They do not have to worry too much about direct negative evaluation and feedback of others, because the reduced physical cues lead to a greater effect of deindividuation. The internet is therefore a safe place to seek for the acceptance of peers and experience control over an environment, which in turn are two factors that predict the successful achievement of self-esteem (Valkenburg & Peter, 2011). Nonetheless, adolescents can be confronted with negative aspects like cyberbullying, harassment and sexual pressure. But in general, CMC offers a great opportunity to establish social skills online, which are used in offline communication afterwards (Valkenburg, Sumter, & Peter, 2011). In addition, engagement into CMC also often results into new acquaintances and friendships.

Friendship Formation

Friendships are an important factor in people's social life. Fehr (2012) names four categories that initiate friendship formation: situational, environmental, individual and dyadic

factors. Upon the environmental factors especially proximity is important. The less the spacial distance between two people, the higher the probability that those two form a friendship. The amount of proximity can range between spaces like neighborhoods or workplaces or even simple things like sitting next to each other frequently (Nahemow & Lawton, 1975; Preciado, Snijders, Burk, Stattin, & Kerr, 2012). In addition, it is more likely to form friendships within preexisting social networks of own friends and family, because they are closer in their availableness than other people. Furthermore, Fehr (2012) gives information about two situational factors, which are frequency of interaction and availability. The first situational factor, frequency of interaction, refers to the amount of time people are spending together. Engagement into shared activity such as sports or playing together, talking to each other or even just being together without any purpose facilitates closer friendships. Availability concerns the amount of capacities one has available to invest into a friendship. Often people have a limited amount of resources which they have to arrange between different parts of their life. Having sufficient time or money to invest into a friendship is necessary to develop it (Hjalmarsson & Mood, 2015; Cherng, McCrory Calarco, & Kao, 2012). With a lack of such resources it is hard to establish a closer friendship.

Whereas the situational and environmental factors seem to be the general requirement of starting a friendship, there are further factors that are helpful to establish a new friendship and facilitate the formation of close friendships. These involve individual factors and dyadic factors between two people. In terms of individual characteristics for friendship formation, social skills are especially important at the beginning of a friendship (Fehr, 2012; Man Chow, Ruhl, & Buhrmester, 2013). People who show adequate behavior in social interactions can engage into new friendships more easily (Zhang et al., 2014). Upon social skills, responsiveness during interaction can help facilitate friendships. Those who show interest and concern for another person are liked more (Miller, Berg, & Archer, 1983). What hinders successful friendship formation to a certain degree is shyness. Shy people, as well as the socially anxious, often show a lack of social skills, are less responsive and do not interact with other people in the same amount as extraverted people do. Potential friends often get the feeling that the shy or socially anxious individual does not want to be friends with them (Fehr, 2012; Scharfstein & Beidel, 2015). A last individual factor is physical attractiveness. Most people desire the friendship of attractive people, or people who are similar attractive like themselves, independent of romantic or sexual attraction (Clark & Ayers, 1988).

Especially the dyadic factors are important for the formation and maintenance of close friendships. They generally develop over time and are characterized by reciprocity, such as

the reciprocity of liking each other (Clark & Ayers, 1988; Fehr, 2012). In addition, the amount of self-disclosure can be described as reciprocal and similar as well (Oswald, Clark, & Kelly, 2004; Legerski, Biggs, Folmer Greenhoot, & Sampilo, 2015). Whereas disclosed information are more superficial in the beginning of a relationship, they get more and more intimate over time. By revealing personal information, one is more vulnerable and the taken risk has to be rewarded with personal information from the other side before oneself is willing to disclose more (Fehr, 2012). Over time the amount of self-disclosure grows in *breath*, the number of topics discussed, and *depth*, the degree of intimacy. With increased self-disclosure, more trust emerges between the two conversational partners. Self-disclosure does not only account for higher friendship quality but also influences the knowledge about similarities between two people. At the beginning of a relationship, only superficial information about the other person is known. These involve often demographic characteristics such as gender, age, religion and education. People prefer others who are similar and therefor they often select new companions based on those superficial characteristics (Fehr, 2012; Walting Neal, Neal, & Cappella, 2014). With increased self-disclosure, they might discover that others yield similar attitudes, leisure activities, preferences, values and social and communicational skills as themselves. A similar sense of humor is added to the list of similarities (Campbell, Holderness, & Riggs 2015; Hunter, Fox, & Jones, 2016). The more similarities, the higher the probability that the friendship gets intensified. Communication and self-disclosure gets easier when both persons are similar. Finally, the feeling of exclusiveness supports the formation of friendships (Amichai-Hamburger, Kingsbury, & Schneider, 2013). Spending time exclusively on a friend facilitates the feeling of being important to that person.

To maintain existing friendships the mentioned self-disclosure is necessary. It sustains trust and serves as social support (Scharf, 2013). The latter is especially important in stressful situations where one needs aid and comfort. Other kinds of support are tangible support and protection (Amichai-Hamburger et al., 2013; Berndt & Perry, 1986). In times of need, monetary or material support can grant relief. Helping each other out with small actions like grocery shopping or lending something can give the feeling of safety. Sometimes, people need support in social situations, for example if they are insecure or attacked in any way. Friends can encourage and protect them in such situations (Pontari & Glenn, 2012). As mentioned above, spending time together, either exclusively or in a group, not only strengthen friendships, but is also a factor that is important for the maintenance of a good

friendship. In fact, some people make new acquaintances and friendships on the internet, but there are some differences regarding friendship formation.

General Differences Between Online and Offline Friendships

Amichai-Hamburger et al. (2013) pointed out the main differences between online and offline friendship formation. On the internet, it is easier to find likeminded people. The possibility to search specifically for people who are interested in the same topics without the hindrance of spacial barriers makes it simpler to access such people (McKenna & Bargh, 2000). Through the anonymity of the internet, superficial characteristics, such as demographics, are no hindrance to engage into interaction (McKenna & Bargh, 2000). Normative implicit rules, which, for example, influence cross-sex friendships in real life contexts have been identified to be less present in online contexts, resulting in better friendship quality in cross-sex friendships between online friends than offline friends (Cheng, Phil, Chan, & Tong, 2006). Through the reduction of physical cues conversation can be directed to more intimate topics, which can result in a feeling of closeness and liking each other better (McKenna, Green, & Gleason, 2002). Nevertheless, through the reduced cues it is harder to establish emotional and social contexts.

Furthermore, Amichai-Hamburger et al. (2013) engage in the topic of communication frequency and shared activity. Most people who use the internet are available through different communication channels and mobile use of the internet facilitates the availability further. In line with the social presence theory (Short, Williams, & Christie, 1976) the availability of more communication channels can facilitate more frequent interpersonal involvement that is not entirely dependent on mere FtF interaction anymore but can be initiated at any point of time. The more time people spent together, the more a friendship develops. In online contexts, shared activities are most of the time limited to disclosing behavior. In real life contexts, the range of activities is broader in general. However, on the internet, people are not solely restricted to discussions. When people have more knowledge about the possibilities the internet allows, they can broaden their shared activities, for example with the engagement into online-games (Cole & Griffiths, 2007; Amichai-Hamburger et al., 2013).

Finally, supportive behavior online and offline is compared in the paper of Amichai-Hamburger et al. (2013). Through the instant availability of social support through friends or support groups with people who have similar problems, the internet offers a fast source for support (Barack & Gluck-Ofri, 2007). In offline friendships, people often need to develop a

certain intimacy before they seek for social support (Amichai-Hamburger et al., 2013). On the other hand, offline support can be stronger in terms of emotional and physical social support. In addition, tangible support in an online context is hard to establish. Through the close proximity of offline friendships, it is easier to provide tangible aid. A similar matter is the provision of protection in social situations. Situations that require social help and protection are not as numerous on the internet as in real life, for contact often emerges only between two people. Difficult situations are faced offline more often (Amichai-Hamburger et al., 2013).

Empirical studies, which compared different kinds of friendship factors and friendship quality as a whole, did find mixed results regarding the question, what type of friendship, online or offline, can be described as "the better one". A cross-sectional study of Chan and Cheng (2004) examined friendship quality with the Friendship Quality Scale (Parks & Floyd, 1996) for seven different factors of friendships. On all subscales, offline friendships showed a higher quality in general. Offline friends showed more interdependence, understanding and commitment to each other. In addition, they developed an own set of symbols and words, used in their relationship, referred to as code change, and had a higher overlapping social network. Finally, their disclosing behavior showed more breath, thus a wider variety of topics, and depth, disclosing of more intimate topics. It is important to note, that those differences between online and offline friendship quality diminished after one year of friendship (Chan & Cheng, 2004). In another study of Chan and Lo (2014), the same measurement tool was used. They compared the friendship quality and intimacy between online and offline friendships for different types of friendships: acquaintances, friends, close friends and best friends. For both, online and offline friendships, quality increased over the different types. Overall, Chan and Lo (2014) found that friendship intimacy was higher in online friendships, but that friendship quality was slightly higher in offline friendships. In examining the subscales, they found better code change, network convergence and commitment for offline friendships but more breadth and depth of disclosure between online friends (Chan & Lo, 2014). These findings are not surprising, considering the inviting characteristics of CMC for self-disclosure. However, in general findings about self-disclosure in online and offline context are mixed and seem to depend on a huge variety of factors (Nguyen, Bin, & Campell, 2012). In addition, it seems harder to establish a high network convergence online, when relationships are mainly based on conversations. Therefore, different factors of friendships seems to be supported online and offline.

In general, offline friendship quality seems to be better than online friendship quality (Buote, Wood, & Pratt, 2009; Chan & Cheng, 2004; Chan & Lo, 2014). Nevertheless, one has to be cautious in generalizing this overall trend. On the one hand, online and offline friendships differ in their individual factors and show unique strengths (Chan & Lo, 2014), on the other hand, both types of friendships get more and more equal over time (Chan & Cheng, 2004; Cheng et al., 2006).

Shared Activity and Modality-Switching: The Example of Online Gaming

As noted before, shared activities and companionship are factors that are important to maintain an existing friendship (Fehr, 2012). In online spaces, especially gaming is a popular leisure activity which can be shared with friends and strangers. Besides achievement and immersion, social reasons are one of the motivational factors to engage into online games (Yee, 2006). But there are differences between certain types of game genres (Hainey, Connolly, Stansfield, & Boyle, 2011; Nagygyörgy et al., 2013) and some games appear to be more social than others. Cooperative gameplay increases cooperative behavior and trust in players compared to competitive gameplay (Waddell & Peng, 2014). A subgenre of online games are massively multiplayer online role-playing games (MMORPG). This genre has proven to be highly social and cooperative in its particular game-features (Cole & Griffiths, 2007). In MMORPGs, players are led into a large fictional world, where other people are acting at the same time. Often they have to form alliances with other players to achieve goals within the game. Frequent social online-gaming raised the probability of making new online friends (Domahidi, Festl, & Quandt, 2014). In a survey study from Cole & Griffiths (2007), about 75% of gamers made good friends in the game and roughly 40% self-disclosed about intimate topics with those online-friends.

It is not uncommon that people who originally met online, meet face-to-face or transform their friendship into a real life context. Within their sample, different studies reported percentages of 5%-7% (Williams, 2006; Wolak, Mitchell, & Finkelhor, 2002) up to 33% (Parks & Floyd, 1996) or even 43% (Cole & Griffiths, 2007) for people who reported having met an online friend in person. Cole and Griffiths (2007) even found that 10% of their participants did engage in a romantic relationship with people they met online in a game. But playing social online games or being engaged into online social activity alone does not automatically accounts for switching modalities from an online to an offline context (Domahidi et al., 2014). Instead, the motivation to gain new social capital did account for a higher probability for modality-switching.

Individual Factors for Online Friendship Formation

Whether a friendship can emerge in online spaces also depends on individual characteristics. An individuals' attachment style influences how friendship quality is perceived. Attachment styles can be described as four different types of relationship-style, depending on the view of oneself and other people (Bartholomew & Horowitz, 1991). People with a positive view of themselves and others are characterized as secure in attachment. People who display a positive view of themselves but not of others are dismissing. On the other hand, people who yield a negative view of themselves and of others are fearful, if they view others as positive, they can be described as preoccupied. Buote et al. (2009) reported that their participants were more satisfied with their offline friendships in general, except from persons with preoccupied attachment style. They were satisfied with online and offline friendships in the same amount. For people with a fearful attachment style, self-disclosure was similarly high for online and offline friendships, which leads to slightly more self-disclosure in general for fearful people compared to the other three groups (Buote et al., 2009). It seems that people who have a more negative view of themselves value online friendships in a different way than people with a positive view.

Socially anxious people often have a negative view of themselves, underestimate their social skills (Miers, Blöte, Bokhorst, & Westenberg, 2009) and report being lonelier (Segrin & Kinney, 1995; La Greca & Lopez, 1998). Social anxiety is characterized by severe fears of social situations, in which the affected person can come in contact with other people. Fears of being judged in a negative way or to embarrass oneself leads to avoidance of social situations. Being in a fearful situation or just thinking about it often comes with physiological reactions of agitation. Social anxiety typically has its onset during adolescents or early adulthood and can last over decades. Therefore, most of the results of studies examining adolescents can be applied to adults as well. Withdrawal from family and possible friends and partners is a consequence of avoiding social situations (Fehm & Knappe, 2011).

Persons with social anxiety have the feeling they can better express their true-self online (McKenna et al., 2002). The term "true-self" refers to the self-perceived character traits which one yields. But sometimes those traits can't or are not wanted to be displayed in front of others. People with social anxiety often are more restricted in real life situations and therefore feel free to display their true-self in a more secure online environment. In the study of McKenna et al. (2002) it was more likely for those individuals to have established an online friendship. In addition, those close relationships were more likely to get transformed

into an offline context. The relationships they formed were meaningful to them and were stable over time. CMC did help them to engage into new friendships.

Preference for Online Social Interaction and its Underlying Factors

There are people who value CMC in an amount that leads to a clear preference for online social interaction (POSI) over conventional FtF interaction. Caplan (2003) describes POSI as a "… construct characterized by beliefs that one is safer, more efficacious, more confident, and more comfortable with online interpersonal interactions and relationships than with traditional FtF social activities". This concept is closely linked to the feeling of high controllability for social situations in online spaces and the perceived social benefits described above (Caplan, 2002; Casale, Fiovaranti, & Caplan, 2015). In the past, social control and social benefits have been used as two separate factors that describe POSI (Caplan, 2002), but now have been combined to serve as a single concept (Caplan, 2010). The concept of POSI has been used in different studies since then (Casale et al., 2015; Casale, Tella, & Fioravanti, 2013; Lee & Stapinski, 2012; Gamez-Guadix, Villa-George, & Calvete, 2012).

There are different factors associated with POSI. While it was previously assumed that the distinct characteristics of CMC can account for enhanced disinhibition in online spaces (Schouten, Valkenburg, & Peter, 2007) a study from Casale et al. (2015) investigated upon the connections between these characteristics and POSI just recently. They examined three features of CMC, reduced verbal cues, controllability and disinhibition and also their direct and indirect predictive power on POSI. Results showed that the features non-verbal cues and controllability accounted for 28% of the variance for disinhibition. These findings are in line with the study from Schouten et al. (2007). On top of this, online disinhibition was a positive direct predictor of POSI. However, reduced non-verbal cues did not significantly predicted POSI on a direct pathway. Also, controllability showed only a small direct effect on POSI. Considering the indirect paths, with disinhibition as mediator, those two characteristics of CMC have proven to increase POSI (Casale et al., 2015). The findings of Casale et al. (2015) only strengthen the assumed predictive power of the features of CMC on POSI.

While some people use CMC to train social skills for offline purposes (Valkenburg et al., 2011), other people with high POSI perceive their own social skills as low in general (Caplan, 2005). Still, they think about their social skills to be much better online than in their real life (Caplan, 2003). In addition, those who show a lack social skills in terms of their own self-representational skills, display a higher degree of POSI (Caplan, 2005). Individuals with

low social skills often feel lonely or have psychological problems, like depression or anxieties (Caplan, 2003; Segrin & Flora, 2000).

Kim, LaRose and Peng (2009) examined two different path models which predicted the relations between POSI, loneliness and social skills. Whereas in their first model, low social skills could account for a higher degree of POSI, POSI itself predicted more loneliness. The second model proposed that higher loneliness resulted in less social skills, both accounting for higher POSI (Kim et al., 2009). These findings implicate a reciprocal connection between POSI and psychological factors. Findings regarding the link between POSI and depression are mixed. Ceyhan and Ceyhan (2008) found depression, among loneliness and computer self-efficacy to be predictors, but depression was less important than the factor of loneliness. In contrast, depression was neither a direct nor an indirect significant predictor for POSI in a study of Caplan (2003).

Especially interesting is the connection between POSI, loneliness and social anxiety. A lot of different studies have taken loneliness as a predictor of POSI into account (Caplan, 2003; Ceyhan & Ceyhan, 2008; Engelberg & Sjöberg, 2004; Kim et al., 2009) but not the construct of social anxiety which lies beneath. Socially anxious people report feeling more lonely than non-anxious people and perceive their own social skills as low (Segrin & Kinney, 1995). Caplan (2007) revealed that the effect of loneliness on POSI could be completely explained by social anxiety. Furthermore, social anxiety did explain additional variance on POSI that loneliness could not account for. The factors that account most likely for high POSI, namely loneliness and low social skills, are closely linked to social anxiety at the same time.

Together, the features of CMC, such as reduced verbal cues, more controllability, and disinhibition, as well as interpersonal skills and psychological factors of anxiety and loneliness have proven to lead to greater POSI. As shown before, CMC yields a lot of beneficial factors, but with increased POSI also negative outcomes can be expected as well.

Predictors of Problematic Internet Use

The concept of POSI derived from the attempt to create a measurement for problematic internet use (PIU) as defined by the cognitive-behavioral approach of Davis (2001). Originally termed as *pathological internet use*, PIU can be seen as a set of distinct behaviors and cognitions that result in negative outcomes for the affected person. Davis distinguishes between two different approaches: Specific PIU, which is linked to a particular content such as gambling or consumption of sexual material that is available online and may

lead to overuse of the internet or even compulsive and addictive behavior. General PIU is relatively independent of contextual factors and underlies a more cognitive approach. The features of CMC and underlying psychopathological factors of individuals are predictors for general PIU. As a cognitive-behavioral theory, the theory of PIU involves maladaptive cognitions such as the feeling of guilt and having a hard time controlling the own impulses while using the internet. Furthermore, thoughts about the internet may be obsessive and the personal feeling derives, that one experience more positive emotions online than offline. Behavioral aspects may start with lying or denying about the usage of the internet, through actions of escapism, and social isolation, right up to compulsive use in which affected persons suffer of problems in other domains of their lives through their internet usage (Davis, 2001).

In a systematic review, Kuss, Griffiths, Karila, and Billieux (2013) detail a variety of interpersonal factors associated with PIU. Low social adaption, social skill and support, insecure attachment style (Boute et al., 2009) and family conflict as well as low academic achievement correlate with PIU. But also low peer acceptance and maltreatment in childhood account for higher PIU (Yates, Gregor, & Haviland, 2012). Especially the interplay of low peer acceptance and the lack of social skills places the individual in an unfavourable situation. Both are associated with social anxiety (Greco & Morris, 2005) which in turn predicts a higher danger for being victimized and bullied by peers (Crawford & Manassis, 2011; McCabe, Miller, Laugesen, Antony, & Young, 2010). Even on the internet those people experience victimization, cyberbullying (Wegge, Vandebosch, Eggermont, & Walrave, 2015), and social exclusion. Virtual social exclusion has been shown to cause the same decrease of satisfaction of social needs as FtF exclusion (Zadro, Williams, & Richardson, 2004; Kothgassner et al., 2014). It is therefore important to consider interpersonal factors such as peer acceptance when talking about PIU.

While direct effects from loneliness and depression (Caplan, Williams, & Yee, 2009; Ceyhan & Ceyhan, 2008), as well as introversion und low self-esteem (Caplan et al., 2009; Cole & Hooley, 2013; Kim & Davis, 2009; Smahel, Brown, & Blinka, 2012) on PIU were found, POSI has not only been identified as predictor for PIU (Caplan, 2002, 2010) but also as mediator between PIU and the psychological factors mentioned above (Caplan, 2003, 2005, 2007; Casale et al., 2015; Kim et al., 2009). Negative outcomes are usually associated with PIU (Caplan, 2002, 2005, 2010), whereas the compulsive cognitions about internet usage are rather responsible for negative outcomes than the amount of time someone is involved into internet activities (Caplan, 2002, 2003).

The Association Between PIU, POSI and Social Anxiety

To sum up, POSI is a positive predictor for compulsive internet use and PIU, followed by negative outcomes (Caplan, 2002, 2003, 2005, 2007, 2010; Casale et al., 2015; Kim et al., 2009). As stated before, Caplan (2007) did find that the influence of loneliness on POSI could be accounted for by social anxiety. Taking together findings about the direct predictive power of loneliness and social anxiety on PIU (Caplan, 2002, 2007; Caplan et al., 2009; Ceyhan & Ceyhan, 2008; Cole & Hooley, 2013; Kim & Davis, 2009), it can be reasoned that social anxiety is a predictor for POSI which in turn predicts PIU and negative outcomes. The connection stated here has been demonstrated by Caplan (2007).

Despite the notion that POSI seems to be caused by underlying psychological problems and can lead to PIU, it is also influenced by the features of CMC, which can be used by people with social anxiety for compensational purposes. CMC yields positive as well as negative outcomes for different individuals. Whereas adolescents mainly use it to acquire and train social skills and enhance their existing offline friendships, socially anxious people try to compensate for missing FtF interaction including the formation of new online friendships. The latter also are at a higher risk to engage into compulsive internet use.

Compensational Usage of CMC

The internet is often used to compensate for the inhibition people perceive in real life interaction. This particular topic is often referred to as social compensation hypothesis (McKenna & Bargh, 2000; Schouten et al., 2007; Selfhout, Branje, Delsing, ter Bogt, & Meeus, 2009; Walther, 1996). People who spent a lot of time online, report feeling more comfortable in CMC and try to satisfy their social needs online (Kraut et al., 2002). In examining the well-being of adolescents, Gross, Juvonen and Gable (2002) found out, that the communication features of the internet are used by socially anxious adolescents to avoid being alone. In general, they communicate less than non-anxious peers but they turn to the internet for communication (Valkenburg & Peter, 2007) which results in more disclosure through CMC (Bonetti et al., 2010; Wang et al., 2011) They value the controllability and reduced non-verbal cues more compared to healthy adolescents (J. Peter & Valkenburg, 2006; Schouten et al., 2007). Playing social online games did provide people with an insecure attachment style with a sense of belonging, security and closeness to other people (Kowert & Oldmeadow, 2014). Erwin, Turk, Heimberg, Fresco, and Hantula (2004) surveyed 434 individuals from whom one third were actual social anxiety patients. The patients who spent more time online reported different positive effects: they perceived being supported and

encouraged socially, they developed more confidence and finally made new friends in FtF settings. However, the authors remarked, that it might be possible that the severest patients did not complete their survey, for it was advertised on a website with information about social anxiety (Erwin, et al., 2004) and patients need personal motivation to search for information about their condition.

The features of CMC does not automatically facilitate more self-disclosure or communication. The individual motives have to be taken into account. Peter et al. (2005) examined friendship formation on the internet in extraverted and introverted individuals. Introverts who had a high motivation for social compensation engaged more into online self-disclosure and communicated more frequently, which in turn facilitated the formation of friendships. It is therefore important that people are motivated to engage into CMC.

Still, another important factor is offline social support that derives from online interaction. In online interactions, it is difficult to aid with tangible support when one is not present in an offline context. In a sample of social online gamers, Trepte, Reinecke, and Juechems (2012) examined the influence of online activities on offline social support. They found a mediating role of online social capital. Social capital is a term which defines a reciprocal concept of investing in social relationships and receiving social support as a result (Williams, 2006). There are two aspects of social capital: bridging and bonding. In bridging, people are broadening their social network and getting in touch with different persons, receiving new information and different views. Bonding however, refers to more intimate relationships with well-known individuals who provide emotional and tangible support. Participants who showed more online social capital were more likely to receive more offline social support (Trepte et al., 2012). Especially physical proximity, meeting other player offline, was relevant for higher online bonding in participants. These findings implicate that it is important for people to get also direct offline support. People who switch modalities and meet in person can benefit from a transformation. Nevertheless, people with social anxiety might not easily engage into voluntary modality-switching. As studies suggest, high quality friendships, both online and offline, are positive factors influencing social anxiety.

Friendship and Social Anxiety

Findings about social anxiety and friendship show a complex connection. On the one hand, social anxiety displays a negative effect on friendship formation, on the other hand, high friendship quality reduces social anxiety (LaGreca & Lopez, 1998). Friends yield a high influence upon socially anxious people. In a recent study from

Baker and Hudson (2014), socially anxious children were analyzed in regard of their social information processing (SIP) and friendship quality. Social information processing is a cognitive approach to face social situations (Crick & Dodge, 1994). First, information about a situation gets encoded and interpreted, then strategies for appropriate behaviors are selected. People with social anxiety display more negative SIP in general and are influenced by their friends (Salemik, van den Hout, & Kindt, 2010). Children with low friendship quality showed more negative SIP, those with high friendship quality positive SIP (Baker & Hudson, 2014). Furthermore, the direct aid of a close friend in social situations can help socially anxious people. The simple presence of a friend in a social situation does make the socially anxious more competent (Pontari, 2009; Pontari & Glenn, 2012).

Anxious children who started cognitive behavioral therapy and reported good friendship quality were more likely to recover from their anxiety at the end of the therapy and even six month afterwards (Baker & Hudson, 2013). Children who did not perceive their friendship as high in quality were less likely to show the same success. Biggs, Vernberg, and Wu (2012) followed anxious and non-anxious adolescents during one school year and looked at the differences in friendship quality. Adolescents with social anxiety had developed less good friendships than non-anxious children at the end of the school year. This was true for both children who were new in class and children for whom the social context was not new. Friendship quality was indirectly mediated through social withdrawal, which is a behavior of people with social interaction anxiety (Biggs et al., 2012) and results into a feeling of loneliness (Segrin & Flora, 2000; Segrin & Kinney, 1995).

Ando and Sakamoto (2007) found out, that loneliness and social anxiety could be reduced through online friendships. People who thought about themselves as not physical attractive displayed less social anxiety when having a large number of same-sex online friends and a large number of online friends in general decreased loneliness (Ando & Sakamoto, 2007). To conclude, close friendships, either offline or online, can help socially anxious people to feel less lonely and more competent in social situations. But for those with high social anxiety it is harder to establish friendships offline, which leads them to the internet to compensate for a lack of close relationships and seek out new ones, if they are motivated to do so. In transforming online friendships into an offline context, additional support for those with social anxiety can be expected.

The Current Study

The aim of the current paper is to shed light on the complex relationship between social anxiety, online friendships and modality-switching. Prior research has shown that while socially anxious people have difficulties in establishing new friendships in an offline context (Biggs et al., 2012; Segrin & Kinney, 1995), they seem more competent and can build new friendships online (Ando & Sakamoto, 2007; Bonetti et al., 2010; Kowert & Oldmeadow, 2014; McKenna & Bargh, 2000; Schouten et al., 2007; Wang et al., 2011). However, offline friendships seem to be more supportive in general (Amichai-Hamburger et al., 2013; Baker & Hudson, 2013; Pontari, 2009; Trepte et al., 2012) and a transformation of an established and trusted online friendship could aid socially anxious people in overcoming their problems. As in the formation of online friendships (Domahidi et al., 2014; Peter, Valkenburg, & Schouten, 2005), it is hypothesized that especially motivational factors play an important role in the process of modality-switching.

The focus lies on the investigation of people's need to transfer (NTT) a friendship established online into a real life context. Two different studies were therefore conducted. Study 1 designed a new measure for the need to transfer an online-friendship into an offline context. The aim of the second study was to embed the resulting NTT scale into the research of modality-switching and friendships within people with social interaction anxiety. Two research questions were addressed: The first research question addresses online-friendships in different modalities, namely the status of acquaintanceship between two online-friends and how their self-disclosure, perceived social support and degree of their NTT differs in these modalities. The second research question tries to find a general integration of the NTT concept into existing evidence of online-friendship formation, preference for online social interaction and the role of social interaction anxiety by using a structural equation modelling approach.

Study 1.

The aim of study 1 was to create a measurement tool which can capture the subjective feeling of the need to transfer an online-friendship into a real life context. Past research of modality-switching has often focused on the individual motives for switching from an online to an offline context or people's characteristics that facilitate the likelihood of switching modalities, but, as to my current knowledge, the subjective willingness to transfer has been neglected so far. On the one hand, it is important to know to which extent people are willing to invest their social capital and resources to meet an online friend in person. On the other

hand, the potential gain of the transformation process has to be considered as well. A measure of that kind would be especially helpful when examining the relationship between two online-friends and if a transformation of the friendship is likely. In addition, it might yield predictive power for the modality-switching process itself. These theoretical implications have to be investigated in the future.

Study 2.

Research question 1.

The first research question follows the assumption that individuals differ in their self-disclosure to their online friends, self-perceived social support and NTT depending on the level of acquaintanceship they have made with an online friend. Amichai-Hamburger et al. (2013) note that there are different kinds of online friendships, such as friendships that are solely online, have been transformed from an online to an offline context or were originally offline friendships but "got lost" on the internet. Therefor research question 1 investigates three different contexts of acquaintanceship between online friends who originally met online. The following situations are examined: Online friends who have not met in person yet, online friends who have met in person, but not regularly, and online friends who meet each other regularly in person, thus having transformed their friendship from an online to an offline context. In general, there should be differences between all three contexts of acquaintanceship for the three dependent variables.

> *H1.1: Self-disclosure to an online friend will differ between all three contexts of acquaintanceship.*
> *H1.2: Self-perceived social support will differ between all three contexts of acquaintanceship.*
> *H1.3: The need to transfer will differ between all three contexts of acquaintanceship.*

In this study, I focus on two factors that are important for friendship maintenance: self-disclosure and social support (Fehr, 2012). Friendship quality was shown to be higher in offline, than in online contexts (Buote et al., 2009; Chan & Cheng, 2004; Chan & Lo, 2014). This assumption is supported by the social presence theory. Social presence theory states that communication gets more personal the more different channels are available (Short, Williams, & Christie, 1976). In CMC such channels are less rich than in FtF interaction (Kiesler, 1986; Sproull & Kiesler, 1986). CMC often is reduced to written communication,

voice or video chat. In FtF interaction a lot of different channels are available, for example body language and physical closeness. Therefore, both self-disclosure and social support for online friends who have met in person should be higher compared to those who never have met, because they had the possibility to enhance their friendship trough more communication channels.

H1.1.1: Having met an online friend in person at least once, results in more self-disclosure compared to never having met an online friend in person.

H1.2.1: Having met an online friend in person at least once, results in more self-perceived social support compared to never having met an online friend in person.

Further, I argue that meeting an online friend on a regular basis, should result in more self-disclosure and self-perceived social support than not meeting an online friend regularly. Frequency of interaction is a factor that facilitates better friendships (Amichai-Hamburger et al., 2013; Fehr, 2012). People who can meet on a regular basis are as well more likely to be in physical proximity, which is another factor of friendship facilitation. They can therefor enhance and strengthen their friendship in a greater amount.

H1.1.2: Meeting an online friend in person on a regular basis, results in more self-disclosure compared to not meeting an online friend regularly.

H1.2.2: Meeting an online friend in person on a regular basis, results in more self-perceived social support compared to not meeting an online friend regularly.

Having met an online friend at least once, independently of having met just once, several times or on a regular basis, should result in a greater NTT than never having met an online friend in person. The features of friendship quality seem to be better in an offline context compared to an online context (Buote et al., 2009; Chan & Cheng, 2004; Chan & Lo, 2014) and therefor the experience made in a FtF acquaintanceship should account for a higher need to maintain these positive experiences, by meeting one another more often. People who never met their online friends before have not experienced the benefits of a FtF friendship with this particular person and should display a lower NTT. The hypothesis therefor can be formulated as:

H1.3.1: Having met an online friend in person at least once, results in a higher NTT compared to never having met an online friend in person.

The last hypothesis of research question 1 predicts a higher NTT for online friends that met at least once but not on a regular basis (more than once in a month). Because online friends who meet offline on a regular basis can be considered as online friends that have been successfully transferred into an offline context, the resulting NTT should be lower compared to online friends who not meet that often but wish to do so. This hypothesis can be described as followed:

H1.3.2: Having met an online friend in person at least once but not on a regular basis, results in a higher NTT compared to meeting an online friend in person regularly.

Research question 2.

In establishing a structural regression model of the influence of online friendship quality, POSI and social interaction anxiety on the general NTT, different hypothesis are tested. A first set of hypothesis addresses the replication of the relationships between friendship quality, social interaction anxiety and POSI as stated in several studies before (Ando & Sakamoto, 2007; Bonetti et al., 2010; Caplan, 2007; Casale et al., 2015; Lee & Stapinski, 2012; Pierce, 2009):

H2.1: Social interaction anxiety is a positive direct predictor for POSI.
H2.2: Online friendship quality is a negative direct predictor for social interaction anxiety.
H2.3: POSI is a positive direct predictor for online friendship quality.
H2.4: POSI mediates the relationship between social interaction anxiety and online friendship quality.

Furthermore, the model hypothesizes different effects of the exogenous variables on the NTT. As stated in detail above, friendships seem to be better offline than online, therefor the need to transfer should increase when online friendship quality is high, for a modality-switch would result in even higher friendship quality. Social interaction anxiety however, is proposed to be a direct negative predictor. Socially anxious people are often restricted in social situations and may fear a direct encounter with their online friends, which could lead to

an decreased NTT (Biggs et al., 2012; McKenna et al., 2002). Nonetheless, high friendship quality also leads to decreased social anxiety (Ando & Sakamoto, 2007; Baker & Hudson, 2013), which implicates that social interaction anxiety might be an mediator between online friendship quality and the NTT. Finally, POSI should be a negative direct predictor for the NTT. One who prefers online over offline interaction may not wish to engage into a transformation from an online to an offline context. Further, POSI might mediate the relationship between online friendship quality and the NTT.

> *H2.5: Online friendship quality is a positive direct predictor for the NTT.*
> *H2.6: Social interaction anxiety is a negative direct predictor for the NTT.*
> *H2.7: POSI is a negative direct predictor for the NTT.*
> *H2.8: Online friendship quality mediates the relationship between POSI and the NTT.*
> *H2.9: Social interaction anxiety mediates the relationship between online friendship quality and the NTT.*

Study 1: Creation of the Need to Transfer Scale

Methods

Procedures.

To measure the need to transfer a new scale was created. A pool of 56 items containing statements about feelings, actions and cognitions regarding meeting an online-friend in person was developed with the expertise of people who already have met online-friends or successfully transferred online-friendships into a real life context. The items were placed in a questionnaire with a seven-point (1 not agree at all – 7 totally agree) Likert scale, asking "Please imagine, you would consider meeting an online-friend (a friend you met in the internet, for example in an online-game, a discussion board or via social media) in person you haven't met face-to-face yet. How much do you agree with the following statements?" Sample items were "Even if I had not met an online-friend in person, I would visit him at his home.", "When I think about meeting an online-friend in person, I am looking forward to it." or "I don't think I would get along with an online friend in person as well as on the internet."

Participants.

Participants were recruited via social media and two different discussion boards. They filled in the questionnaire voluntarily and anonymously. From 100 complete datasets, three were excluded because of implausible age (e.g. two years), resulting in 97 complete datasets.

Participants were German-speaking (from Germany: 84.5%, Austria: 13.4%, Switzerland: 1% and other countries 1%) and their gender was divided into 61 (62.9%) males and 36 (37.1%) females. Their age ranged from 14 years to 32 years (mean age = 22.88 years, SD = 4.15). Participants were also asked about whether they have online-friends and if they ever met them in person. A number of 85 people (87.6%) reported having online-friends and 70 people (72.2%) have met an online-friend in person.

Statistical Analysis.

To spot redundant items or items with low correlations, an item-analysis of the correlation matrix was conducted. A number of 40 items was excluded from further analysis, leaving 16 items. The resulting NTT score was normally distributed according to the Kolmogorov-Smirnov-Test for normality, $D(97)$ = .064, p = .200.

A principal component analysis with varimax rotation was used to identify the underlying structure of the 16 items. Sample size was adequate, as shown by the Kaiser-Meyer-Olkin measure, KMO = .890. According to Cattell's scree plot and Kaiser's criterion three factors emerged. They explained 67.44% of the variance. The first factor contained items regarding negative feelings about meeting an online-friend in person and was therefore labeled "Avoidance". In interpersonal relationships, one often has to take certain risks to intensify the relationship. This first factor reflects the negative feelings associated with taking risks in meeting with an online friend. The second factor included the potential gains that oneself might obtain in meeting an online-friend and was labeled "Closure". The last factor was labeled "Distance" and involved items which showed the willingness to invest resources to acquire a higher physical proximity to an online-friend. Because the NTT-scale should be a short measurement tool, for each factor the three items with the highest factor loadings were included into the final NTT. The summary of the initial 16 item scale can be viewed in Appendix D.

Results

Table 1 shows a summary of the principal component analysis for the resulting scale, including the eigenvalues, explained variance and reliabilities. Correspondent correlations between the items can be found in Table 2. For the subscale "Avoidance" high factor loadings between .829 and .867 resulted, with respectively low factor loadings on the factors for "Closure" and "Distance". Together, the subscale Avoidance could account for 54.17% of the variance. Cronbach's Alpha was .88. Items on that subscale has to be revers in calculating

the overall score. Factor loadings for the subscale "Closure" ranged from .746 to .847. All other factor loadings were low, except a factor loading of .435 on the item C-3 "Even if it would be just once in a year, I would like to meet an online-friend." This second factor did account for additional 15.40% of the variance and displayed a Cronbach's Alpha of .79. The subscale "Distance" displayed factor loadings between .765 and .905 for its corresponding factor. The remaining factor loadings were low again. 10,75% of the variance was explained by this third factor. Again, with .88 Chronbach's alpha displayed a good reliability. Item 1 of this subscale has to be revers in calculating the overall score, as well.

Table 1

Factor Loadings for Principal Component Analysis With Varimax Rotation of the Short Form of the NTT (N = 97, KMO = .846, D(97) = .071, p = .200).

	Rotated Factor Loadings		
Item	Avoidance	Closure	Distance
A-1: For me, it would be unpleasant to meet a friend in person, whom I got to know online. (R)	**.867**	.231	.103
A-2: It frightens me if I think about meeting an online-friend in person. (R)	**.856**	.109	.197
A-3: It would make me uncomfortable to meet an online-friend in person. (R)	**.829**	.285	.241
C-1: I think, I would make a lot of valuable experiences, if I met an online-friend in person.	.073	**.847**	.222
C-2: I would like to meet online-friends more frequently.	.302	**.773**	.299
C-3: Even if it would be just once in a year, I would like to meet an online-friend.	**.435**	.746	.203
D-1: It would be too costly to visit an online-friend who lives far away. (R)	.199	.086	**.905**
D-2: I would visit an online-friend even if I would have to undertake a long journey for it.	.167	.348	**.857**
D-3: It would excite me to visit an online-friend, even if he lives in another country.	.176	.323	**.765**
Eigenvalues	4.88	0.97	1.39
% of variance	54,17	15,40	10,75
Cronbach's Alpha (standardized)	.88	.79	.88

Note: Factor loadings over .40 appear in bold
(R) = Reversed item

Table 2

Zero-Order Pearson Correlation Coefficients for the Items of the NTT Scale.

Item	A-1	A-2	A-3	C-1	C-2	C-3	D-1	D-2	D-3
Avoidance 1									
Avoidance 2	.70*								
Avoidance 3	.75*	.68*							
Closure 1	.33*	.28*	.31*						
Closure 2	.58*	.38*	.43*	.60*					
Closure 3	.59*	.47*	.54*	.60*	.72*				
Distance 1	.40*	.35*	.28*	.31*	.39*	.38*			
Distance 2	.44*	.37*	.31*	.49*	.56*	.51*	.81*		
Distance 3	.42*	.31*	.36*	.43*	. 52*	.43*	.62*	.71*	

Note. * $p < .01$, two-tailed significance

Study 2: The Embeddedness of the NTT into the Context of Online Friendships and Social Anxiety

Methods

Sampling and procedure.

To answer the research questions of this study, an online-survey was sent to 27 different MMO-related discussion boards and 52 MMO-specific social media groups. The sample of MMO-players was chosen for the purpose to gain participants who shared a lot of time with their online friends. Shared activity is one factor of friendship maintenance (Fehr, 2012) and MMOs are known to be highly social online games (Cole & Griffiths, 2007). All data was collected and handled anonymously. Participants took part voluntarily and no monetary or other compensations were offered. The survey took about 20 to 35 minutes to be completed, depending on the individual working time of the participants. A whole of 949 participants finished the questionnaire, which contained three separate parts. Those parts could be completed independently from each other. The first part asked about measures of online-friendships and CMC, the second part about the general well-being and social anxiety and the third part about social skills and online video game behavior. Further analysis focuses on the 760 participants who finished at least the first and second part and passed the plausibility check, which will be described in detail later on. Those participants were German-speaking (Germany: 89.1%, Austria: 8.0%, Switzerland: 2.2% and other countries:

0.7%), their age ranged from 13 to 60 years (mean age = 26.3 years, *SD* = 7.87), 481 (63.3%) were male and 279 (36.7%) were female.

Measures.

Since the survey was part of a larger research project, the following descriptions of measures will focus solely on the measures used to answer the research questions addressed in this paper. The survey first asked about participants' demographic data, including age, gender, current country of residence and highest level of education.

Online- and offline-friendships.

First of all, participants were provided with the following definition of friendships in general: "A friendship defines itself through reciprocal affection and sympathy for each other, which is not of a romantic nature. Often friendships last for several years, sometimes even a whole life. Normally, friends self-disclose intimate details about their lives, have common interests and attitudes and spend time with each other." Furthermore a definition of online-friendships were given: "Sometimes friendships develop through the internet (for example in online-games, communities or in social media). An online-friend features the same characteristics like a friend, who was originally met in an offline-context, with the difference that the communication with an online-friend originally derived through the internet and is maintained through it." Participants had to answer the question whether they had an online-friend as defined above or not. If not, they were redirected to the second part of the questionnaire. If they had an online-friend, they were asked to quantify how many offline- and online-friends they had, how many online-friends they have met in person and how many online-friends they meet in person on a regular basis. Thereafter, they were asked to think about two specific friends, an online-friend and an offline-friend. They were provided with a concrete definition of an online- and an offline-friend, whereas an online-friend was defined as "a friend you originally met on the internet and also manly communicate with on the internet." In contrast, an offline-friend was defined as "a friend you originally met face-to-face and also manly communicate to face-to-face." In addition, they were asked to type in a personal code for each of their friends into an input field of the survey, as well as the duration of the friendship. The personal code of their friends was displayed whenever the survey asked questions regarding these persons. This imputation was used to make sure that participants thought about the friend they have selected in the beginning while answering the questions, to ensure consistency in the data.

Four additional questions for each friend were asked. Participants had to answer on a five-point Likert-scale how satisfied they are in general with their friendship (1 not at all satisfied – 5 totally satisfied). The remaining three questions had to be answered in a dichotomous way ("Yes" or "No"). They asked the participants if their communication was mainly due to the internet, if they have met their friend in person and if they are meeting their friend in person on a regular basis (at least once in a month). These questions were used for the plausibility check. Participants who reported to communicate with their offline-friends mainly on the internet and haven't met their offline-friends in person, were omitted from further analysis (n = 20). A second plausibility check was conducted using the differences of participants' age and duration of friendship for each friend. A negative value indicated implausible data. These cases were omitted as well (n = 9).

Friendship quality.

To access friendship quality, two different measures were used: The self-disclosure index (SDI), which asks about the degree of disclosure to a specific person (Miller, Berg, & Archer, 1983) and the Social Support Questionnaire (F-SozU), measuring the perceived social support of the surrounding environment (Sommer & Fydrich, 1989). Both scales were presented twice, once for the selected online-friend and once for the selected offline-friend.

The SDI is a short measure of the willingness to disclose intimate information to other people (Miller et al., 1983). Participants were asked to rate in which extent they disclosed personal information on 10 different topics (e.g. "What I like and dislike about myself") on a five-point Likert-type scale to each of their selected friends. With $\alpha = .89$ for disclosure to an online-friend and $\alpha = .90$ for disclosure to an offline-friend, Cronbach's Alpha was high for both types of friendships.

The original F-SozU is a German self-report measurement containing 54 items which are rated on a five-point Likert-scale (Sommer & Fydrich, 1989). The items contain statements about perceived emotional and practical support, as well as the level of social integration. In this survey, the short-version F-SozU K-14 was used (Fydrich, Sommer, Tydecks, & Brähler, 2009). Two items of the practical support scale were omitted, because they would not be applicable to the supportive capabilities of an online-friend (Item 1 "I would easily find someone who would look after my flat, if I was not at home." and item 5 "If required, I could borrow something from my friends or neighbors without any problem."). The personal code of the online-friend was inserted into the questions, if possible, to remind the participants of their selected friend. Likewise, the code for the selected offline-friend was

inserted for the second measurement. Cronbach's Alpha showed good reliability for both scales, α = .89 for online-friends and α = .92 for offline-friends.

Need to transfer.

As described in detail above, the need to transfer scale (NTT) contains nine items regarding the question, whether a person has the wish to transform an online-friendship into a real life context. Participants rate the statements for the three subscales "avoidance", "closure" and "distance" on a seven-point Likert-scale. Cronbach's Alpha was with α = .84 reliable for the present sample (α = .81 for avoidance, α = .73 for closure and α = .77 for distance).

Preference for online social interaction.

The generalized problematic internet use scale 2 (GPIUS2) measures five different factors of compulsive internet behavior (Caplan, 2010). Alongside mood regulation, cognitive preoccupation, compulsive internet use and negative outcomes, preference for online social interaction (POSI) is a subscale of the GPIUS2. The study used the three items of the POSI subscale. They had to be answered on a five-point Likert-type scale ("Online social interaction is more comfortable for me than face-to-face interaction."). Cronbach's Alpha was α = .73.

Social interaction anxiety scale.

The social interaction anxiety scale (SIAS) is a 20-items measurement, containing statements about the fear of engaging into social interactions, like talking to strangers, and the fear of behaving inappropriate in social interactions (Mattick & Clarke, 1998). Items are answered on a five-point Likert-scale. The survey used the German version of the SIAS (Stangier, Heidenreich, Berardi, Golbs, & Hoyer, 1999). Reliability was high in the current sample (α = .91).

Statistical analysis.

To examine research question one, an one-way analysis of variance (ANOVA) with planned contrasts was used. Estimation of the effect size of the results of the ANOVA was calculated with robust omega-squared and effect sizes for the contrasts with Pearson's correlation coefficient. The analysis was conducted with the IBM SPSS Statistics software (version 20).

Research question two was addressed with a structural regression model (SR model) to predict the influence of social interaction anxiety, online friendship quality and POSI on the NTT scale. An one-step modeling approach was chosen for the analysis, because only two indicators for the online friendship quality factor were present. Maximum Likelihood estimation with robust standard errors and a Satorra-Bentler scaled test statistic was applied as estimator (Bentler, 1983; Satorra & Bentler, 1988, 1994). Model fit was evaluated using the model chi-square and the following approximate fit indexes: Root mean square error of approximation (RMSEA, Steiger, 1990), comparative fit index (CFI, Bentler, 1990), standardized root mean square residual (SRMR) and the goodness of fit index (GFI, Jöreskog & Sörbom, 1982). Models were compared with the scaled chi-squared difference test (Satorra & Bentler, 2001). Structural equation modeling was performed with the open source software R (version 3.1.2) and the software package lavaan 0.5-17 (Rosseel, 2012).

Results

RQ1: The influence of status of acquaintanceship on self-disclosure, social support and the NTT scale.

The first research question addresses three main hypothesis. H1.1 predicts differences in self-disclosure to an online-friend (dependent variable) depending on their status of acquaintanceship (independent variable). H1.2 predicts similar findings for perceived social support of the online-friend (dependent variable). H1.3, respectively, hypothesized differences in participants' NTT (dependent variable) depending whether they have never met an online-friend in person, having met an online-friend in person at least once or meeting an online-friend on a regular basis. All three main hypothesis were tested with ANOVAs. The underlying minor hypothesis with planned contrasts.

The status of acquaintanceship was measured in three groups. They were built by the answers participants gave to the questions whether they have met their online-friends and if they meet their online-friends on a regular basis, resulting in the groups "never met", "already met" and "meeting regularly". Statistical values for each group are given in Table 3. The Kolmogorov-Smirnov test (K-S test) for normality showed significant non-normality for all three groups of self-disclosure and all three groups of social support (see Table 3). The K-S test tends to overestimate small deviations from normality within large samples which can result in a significant outcome for non-normality (Field, 2013, p. 184). However, according to the central limit theorem, data will be normally distributed with increasing sample size (Bortz & Schuster, 2010, p. 86-87). Considering the sample sizes (see Table 3), normality within

each group can be expected. Leven's F test showed for all three dependent variables, that the assumption of homogeneity of variances was not met within groups, namely $F(2, 757) =$ 8.076, $p = .000$ for self-disclosure, $F(2, 757) = 6.619$, $p = .001$ for social support and $F(2, 757) = 8.491$, $p = .000$ for the NTT. Therefore, Welch's F-ratio was used in the two following ANOVAs.

Table 3
Group Sizes, Means, Standard Deviations and K-S Tests for Self-Disclosure, Social Support and Need to Transfer by Status of Acquaintanceship.

	n	mean	SD	K-S-Test
Self-Disclosure				
Never Met	295	33.27	10.092	$D(295) = .054, p = .038$
Already Met	350	37.20	8.494	$D(350) = .067, p = .001$
Meeting Regularly	115	40.75	7.829	$D(115) = .119, p = .000$
Total	760	36.21	9.422	
Social Support				
Never Met	295	42.82	10.081	$D(295) = .095, p = .000$
Already Met	350	47.40	8.435	$D(350) = .087, p = .000$
Meeting Regularly	115	51.22	8.773	$D(115) = .189, p = .000$
Total	760	46.20	9.620	
Need To Transfer				
Never Met	295	48.17	10.37	$D(295) = .090, p = .000$
Already Met	350	53.45	8.46	$D(350) = .130, p = .000$
Meeting Regularly	115	54.73	8.36	$D(115) = .161, p = .000$
Total	760	51.48	9.63	

Note. Two-tailed significance with $\alpha = 0.05$ was used for the K-S Test.

The results of the ANOVA for H1.1 showed a significant effect of acquaintanceship status on self-disclosure, Welch's $F(2, 331.189) = 32.909$, $p = .000$, est. $\omega^2 = .08$. Planned contrasts could confirm H1.1.1, having met an online-friend in person at least once did account for higher self-disclosure than never having met an online-friend in person, $t(493.919) = 7.833$, $p = .000$, r = .33, and also H1.1.2, meeting an online-friend on a regular basis accounts for higher self-disclosure than not meeting on a regular basis, $t(209.022) =$ 4.113, $p = .000$, r = .27.

The second ANOVA tested the assumption of group differences for social support. Results confirm this assumption, Welch's $F(2, 336.180) = 38.109$, $p = .000$, est. $\omega^2 = .09$. Planned contrasts for this analysis again lead to the acceptance of H1.2.1 and H1.2.2, namely having met an online-friend in person at least once accounted for more perceived social support than not having met this friend, $t(482.090) = 8.644$, $p = .000$, r = .37 and meeting an

online-friend regularly accounted for higher perceived social support compared to not meeting an online-friend regularly, $t(188.102) = 4.090$, $p = .000$, r = .29.

Finally, the results of the third ANOVA showed a significant effect of acquaintance status on the NTT, Welch's $F(2, 322.624) = 31.682$, $p = .000$, est. $\omega^2 = .07$. Planned contrasts revealed that having met an online-friend in person at least once resulted in a significantly higher NTT compared to never having met an online-friend, $t(486.663) = 7.909$, $p = .000$, r = .34. However, there was no significant difference between the group of people who meet their online-friends on a regular basis and those who do not, $t(196.342) = -1.419$, $p = .158$, $r = .10$. The first contrast confirmed hypothesis 1.3.1, the second contrast however accounted for the rejection of hypothesis 1.3.2.

RQ2: Application of an SR model to test the influence of social interaction anxiety, online friendship quality and POSI on the NTT scale.

To examine the influence of social interaction anxiety, online friendship quality and POSI on the NTT scale, a recursive structural regression model was constructed based on empirical findings of the relationships of the three predictors and a theory based approach of their predictive power for the NTT scale.

For the data showed deviations from multivariate normality, robust Maximum Likelihood (ML) estimation was used. Robust ML estimation includes the calculation of robust standard errors, which are based on a sandwich-type covariance matrix (Bentler, 1983). In addition, Satorra-Bentler scaled test statistics, which corrects the chi-squared test statistics by the amount of kurtosis, is a component of the robust ML estimator.

The input data consisted of the measures of the SIAS, POSI, NTT, SDI and F-SozU, the last two for online friends. For each measure, the individual items were parceled by adding them up. This practice was used to not only reduce the number of variables, but also to create a finer grading of the data to ensure a more stabilized parameter estimation (Kline, 2011; Bandalos, 2008). Input data for the model are provided in Appendix A.

F-SozU and SDI measures were indicators for the latent factor online friendship quality. With standardized factor loadings of .849 for the F-SozU and .793 for the SDI both measures showed a good convergent validity and a statistically significant zero-order Pearson correlation of r = .673 indicated good discriminant validity. The model predicts that higher online friendship quality results in a higher NTT and that higher POSI and social interaction anxiety predicts a lower NTT. High friendship quality accounts for less social interaction anxiety and the latter predicts higher POSI. POSI also accounts for higher friendship quality.

In addition, there are indirect effects between POSI and the NTT with online friendship quality as mediator, as well as online friendship quality and the NTT with social interaction anxiety as mediator. The full model can be found in Figure 1.

This structural regression model was tested with the robust chi-squared test and passed the exact-fit hypothesis, implying differences between population covariance and model covariance, $X^2_M(2) = 0.542$, $p = .763$. Approximate fit indexes, such as RMSEA and its 90% confidence interval (.000 (.000 - .043) $p = .969$), GFI (1.000), CFI (1.000) and the SRMS (.004), supported the assumption of an excellent model fit (Hu & Bentler, 1999). Parameter estimates for the latent variable, variances and covariances are provided in Table 4.

Table 4
Robust Maximum Likelihood Estimates of Factor Loadings, Regressions and Variances for the Structural Regression Model (n = 760).

Parameter	Unstandardized	*SE*	Standardized
Latent variable			
Online friendship quality (ONFQ)			
F-SozU	1.000 [a]		.849
SDI	0.916*	0.075	.793
Regressions			
SIAS ← ONFQ	-0.254*	0.084	-.144
ONFQ ← POSI	0.680*	0.134	.234
NTT ← ONFQ	0.441*	0.050	.373
NTT ← SIAS	-0.112*	0.027	-.167
NTT ← POSI	-0.015	0.141	-.004
POSI ← SIAS	0.063*	0.007	.323
Variances			
F-SozU	25.875 [a]	5.505	.280
SDI	32.867 [a]	4.598	.371
NTT	76.456 [a]	5.306	.825
POSI	7.061 [a]	0.359	.897
ONFQ	64.415 [a]	6.728	.968
SIAS	206.884 [a]	10.727	1.003

Note. [a] Not tested for statistical significance.
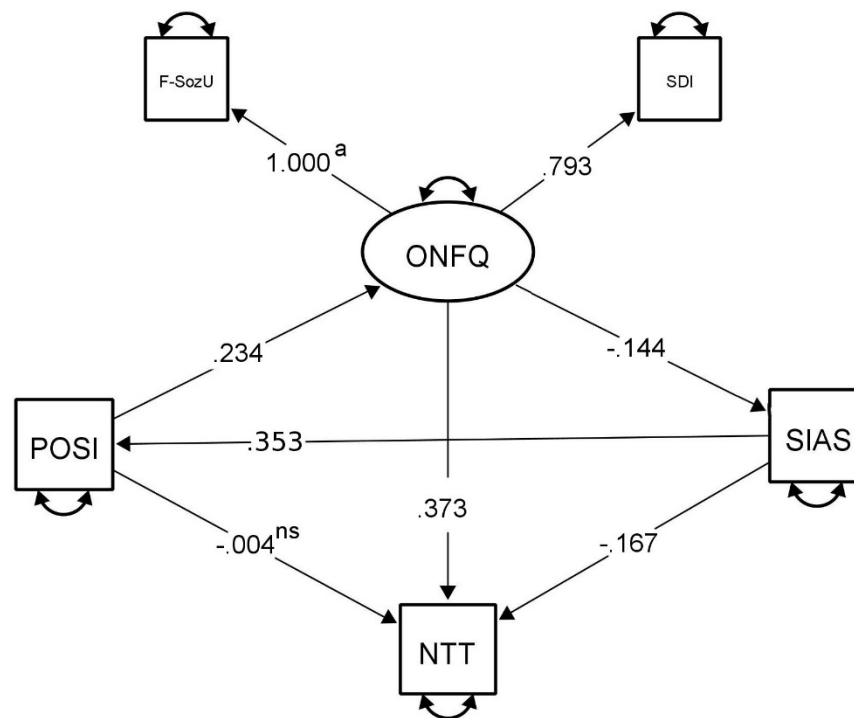* $p < .001$

All direct pathways reached statistical significance except of the path between POSI and NTT (standardized path coefficient = -.004). A trimmed model, excluding the non-significant path was applied thereafter to test whether it would describe the data better or not. The chi-squared model test was still non-significant, $X^2_M(3) = 0.536$, $p = .911$. Approximate fit indexes (RMSEA (.000 (.000 - .015) $p = .997$)), GFI (1.000), CFI (1.000) and SRMS

(.004)) were just slightly better. However, the chi-squared difference test did not show an significant difference between the two models, $X^2_D(1) = 0.018$, $p = .917$, so the former, theory based model was retained. A table with the covariance matrix and means of the final model, as well as correlation residuals can be found in Appendix B and Appendix C.

Figure 1 yield the standardized path coefficients of relevant paths for the SR model. With a standardized path coefficient of .353 social interaction anxiety was a positive predictor for POSI, which in turn was a positive predictor for online friendship quality (.234). The latter with a standardized path coefficient of -.144 on social interaction anxiety. Indirect effects were tested with the Sobel test (Sobel, 1982; MacKinnon, Lockwood, Hoffman, West & Sheets, 2002). POSI mediated the relationship between social interaction anxiety and online friendship quality with $\beta = .082$, $t = 4.420$, $SE = 0.009$, $p = .000$. So the first set of hypothesis (H2.1 – H2.4) could be confirmed.

The relationships between the exogenous variables and the NTT were considered next. The model showed two of three statistically significant direct effects on the NTT: Social interaction anxiety (-.167) and online friendship quality (.373) confirmed hypothesis H2.5 and H2.6, whether H2.7, with a non-significant direct effect of -.004 from POSI to the NTT, could not be endorsed. The indirect effect of $\beta = .087$ of online friendship quality between POSI and the NTT proved to be significant in the current model, t = 4.398, SE = 0.068, p = .000. Social interaction anxiety however, did not mediated the relationship between online friendship quality and the NTT, $\beta = .024$, t = 0.106, SD = 0.035, p = .915. The indirect effect hypothesis H2.8 could be confirmed, H2.9 on the contrary was rejected.

Figure 1
Structural Regression Model with Standardized Path Coefficients (n = 760).

Note. All unstandardized path coefficients for the standardized path coefficients are statistically significant (p > .001) except paths marked with [ns]
[a] path was fixed to 1.000
Model was partially created with Ωnyx (von Oertzen, Brandmaier & Tsang, 2015)

Four equivalent models with exactly the same chi-squared test statistics and approximate fit indexes, which were generated according to the Lee-Hershberger replacing rules, were considered next (Hershberger, 1994). The first equivalent model proposing a direct effect from NTT to POSI instead of the original path from POSI to NTT. This path did not reach significance (-0.001 (0.013) -.005) (estimates are reported as "unstandardized (standard error) standardized") neither, indicating that the connection between both variables is still not present. The second equivalent model reversed the path direction between POSI and social interaction anxiety, so that POSI predicted social anxiety. The standardized path coefficient displayed a difference from the original path direction (1.772 (0.178) .346) and the path coefficients from POSI to online friendship quality (0.539 (0.128) .185) and from online friendship quality to SIAS (-0.223 (0.072) -0.127) changed respectively. All three unstandardized path coefficients were statistically significant. A path model by Kim, La Rose and Peng (2009) displayed similar findings, except that in their model, POSI predicted loneliness, which can be explained through social anxiety (Caplan, 2007). However, the

original model was still preferred, because empirical evidence of the prediction of POSI through SIAS was found in earlier studies (Caplan, 2007; Lee & Stapinski, 2012). The third equivalent model interchanged the paths between social interaction anxiety and online friendship quality, so that the latter was predicted by the former. Three significant unstandardized path coefficients did change. The former described relationship (-0.078 (0.024) -.136), the path predicting POSI through social interaction anxiety (0.063 (0.007) .323) and the path from POSI to online friendship quality (0.667 (0.130) .229). Especially this equivalent model does not only seem plausible, but can be undermined by existing studies (Baker & Hudson, 2014; Biggs et al., 2012). Lastly, a fourth equivalent model changing the path direction between POSI and online friendship quality was determined. In this model, online friendship quality predicted POSI. Two path coefficients changed in this model. While online friendship quality significantly predicted POSI (0.071 (0.014) .206), online friendship quality could not hold its significant predictive power for social interaction anxiety anymore (-0.110 (0.075) -.062). The findings of this last equivalent model seems to support other assumptions, like how high friendship quality can predict higher POSI, which is not addressed in this study in the first place. Summarizing, it was decided to favor the original model because this particular study tries to investigate upon the positive outcomes of online friendships. The existing equivalent models may be addressed in later studies.

Discussion

Socially anxious people are oftentimes drawn to the internet to compensate for their lack of social skills and to seek out for new relationships. High quality friendships can derive from engagement into computer-mediated communication, when people are motivated to make friends. Some people even transform their existing online friendships into an offline context. But to do so, the motivation to invest certain resources into the modality-switching process is important. In investigating about the need to transfer an online relationship into a real life context and its embeddedness into the research of modality-switching of online friendships and its connection to social anxiety, the current paper was able to give some additional insight into the topic.

The creation of a new measurement tool, the need to transfer scale, was important to further examine the topic of modality-switching. Therefor in study 1, a measure that quantifies the willingness to invest into a transformation was build. The resulting NTT scale consists of three subscales, named avoidance, closure and distance. Avoidance reflects the individuals need to avoid an encounter with an online friend. Meeting a person FtF yields

risks, especially when this person is only known through the internet and can mask and falsify personal information (Amichai-Hamburger et al., 2013). On the other hand, the subscale closure reflects the individuals need for more temporal closeness and the possible gain one wishes to achieve by transforming an online friendship into a real life context. Friendships are an important resource of social capital and in intensifying them, on a personal basis as well as in more frequent physical interaction, they yield positive outcomes and more social capital (Fehr, 2012; Williams, 2006). Between weighting risks and opportunities, the availability of resources is important as well when considering a modality-switch. The third factor, distance, is concerned with those resources when one reflects about investing into seeing one another. Physical proximity facilitates friendship formation (Fehr, 2012; Trepte et al., 2012), but it is often not easy to establish proximity between online friends. Especially when two people live far away from each other, it might be very costly in time and money to see each other. Therefore, the available resources in reaching physical proximity are considered in the subscale distance. Together, these three subscales contain risks, opportunities and available resources, three important factors that have to be considered when switching-modalities. The NTT therefore measures rather the general willingness to invest into a transformation of an online friendship than the individual factors of persons' motivation to perform a modality switch.

The second study examined two different questions regarding the NTT. Research question 1 addressed situations of acquaintanceship between two online friends and their friendship quality and need to transfer. Friendship quality was quantified with self-disclosure and self-perceived social support. As expected, both increased significantly with acquaintanceship status. Never having met an online friend in person before resulted in the lowest self-disclosure and social support. Having met an online friend in person, but not on a regular basis accounted for more self-disclosure and perceived social support. These findings are in line with the social presence theory (Short, Williams, & Christie, 1976), which claims that the availability of more communication channels facilitate more personal communication. Having met a friend in person, therefor might have intensified their relationship. For the self-perceived social support, a similar explanation can be found. In addition, people who can meet offline, have the benefit to gain not only social but also tangible support (Amichai-Hamburger et al., 2013), which might have increased perceived social support in the second acquaintanceship situation. Further, for both, self-disclosure and social support, the highest scores were found in a context, where two online friends could see each other on a regular basis. Spending time together is an important factor to facilitate and

maintain close friendships (Fehr, 2012). People who meet on a regular basis are therefore more likely to engage into more self-disclosure and aid social support, compared to people who can't see each other that often.

As hypothesized, people who have met an online friend in person showed a higher NTT than people who never met their online friend in person. The current findings revealed that online friendship quality was better when people did meet offline. This might have lead them to the need to intensify their friendship with the increased willingness to provide more personal resources, thus showing a higher NTT. In addition, they might show less avoidance behavior, which would result in a higher NTT again. In the future, the subscales of the NTT should be investigated more intensely to verify such assumptions. Validation with external measures could be a good starting point.

The last hypothesis of research question 1 however failed to reach significance. It was assumed that online friends who meet on a regular basis would display a lower NTT than online friends who does not see each other regularly. The idea, that meeting regularly can be considered as a successful transformation from an online to an offline context, and therefore no further weighting and investing into a transformation process would be necessary, seemed plausible, but results displayed no difference between the two levels of acquaintanceship. There are several possible explanations for this result. First, the NTT measures three different constructs: avoidance behavior and risk-taking in the transformation process, potential benefits of closure and willingness to invest into the friendship transformation. It might be possible that a single meeting with an online friend would have be sufficient for people to make up their mind about these three aspects. People often decide within the first encounter with an unknown person what kind of relationship they want to have with them (Berg & Clark, 1986) and those attitudes stay relatively stable over time (Berg 1984). For the NTT, participant might have decided by the first meeting to which degree the transformation of an online friend is risky or beneficial for them and what amount of resources they are able and willing to spend on the friendship. Thus, no difference results between meeting regularly or just from time to time.

Furthermore, it is highly possible that there have been several confounding factors that could have influenced the results. The study only asked about one particular online friend. The friendship quality of that friendship was not taken into account when comparing the status of acquaintanceship for the NTT. It is possible, that low friendship quality could have inhibited a need to transfer in general, independently of how much people see each other. Preexisting offline friendships could have had an influence, too. If a person is well

embedded into a social circle, it might be not very important whether one can see their online friend regularly or infrequently. Additionally, the broader the social circle, the less social resources are available to invest into a full modality-switch, because those resources are needed for other parts of ones' social life or are only available in a certain amount for different people. Therefor it might be possible that people do not display a difference in acquaintanceship status, because they are simply not able to further invest into the transformation. Finally, the factor of available resources could have a great influence on the NTT. It is easier to intensify a friendship when both persons live nearby (Fehr, 2012). If people are able to see each other regularly, they either have a lot of resources, like money and time, to do so or they are already living nearby, so they do not need to spend more for seeing each other. People in those situations simply do not need to weight their capacities, but people who must invest a lot might lower their need to transfer because they do not have the available resources, thus a lower NTT results. To sum up, there are different variables that could have confounded the results. Online friendship quality, social embeddedness and availability of resources should be taken into account when examining the influence of acquaintanceship status on the NTT.

The second research question was answered with the help of a recursive structural regression model. The current model could confirm past research about the connections between social anxiety, friendships and preference for online social interaction, as well as it did show new connections between those variables and the need to transfer. Friendship quality was quantified with self-disclosure and perceived social support through an online friend. Both factors are important to maintain close friendships (Amichai-Hamburger et al., 2013; Fehr, 2012). High online friendship quality showed a significant negative direct effect on social interaction anxiety, confirming that close online friendships lead to less social interaction anxiety (Ando & Sakamoto, 2007). In addition, the better the online friendship was, the higher the NTT. In turn, social interaction anxiety accounted for a decreased NTT. This finding was in line with hypothesis H2.6. People with social interaction anxiety feel less comfortable within real life social situations and in transforming an online friendship into a real life context they would expose themselves to an uncomfortable situation (Segrin & Flora, 2000; Segrin & Kinney, 1995). Therefor the higher the degree of social anxiety, the less a transformation is wished. Work from Caplan (2007) suggests a direct positive effect from social anxiety to POSI. The current model was able to replicate this findings. In addition, a higher degree of POSI predicted significantly better online friendships and mediated the relationship between social interaction anxiety and online friendship quality. These

relationships speak for the social compensation hypothesis (McKenna & Bargh, 2000; Peter et al., 2005). People who display a high amount of social anxiety prefer online over offline social interaction and therefor engage into more contact with people over the internet. The current model displayed significant paths for this hypothesis. Peter et al. (2005) found out, that motivation played a crucial role when people used the internet for social compensation. As suggested, motivational factors were relevant for the NTT as well. POSI itself did not significantly predicted an influence on the NTT, but when friendship quality did mediate the relationship, a significant indirect path derived. The current model was able to predict some relationships between social interaction anxiety, online friendship quality, POSI and the NTT. But there is still a lot of unexplained variance left.

Limitations and Further Directions

The current study was able to provide some further knowledge on the body of research on social anxiety and online friendship formation. Nevertheless, there are some limitations.

First of all, a problem survey studies often have to face is the nature of the data. All measurement tools used were self-report measures. These tools provide highly subjective answers and it is possible that they are therefore biased without the researcher knowing about it. Second, the sample consisted of self-selected participants. It was not possible to reach a representative sample, therefor results of the current study may only be applicable to a distinct population. Furthermore, through the nature of the online study, a variety of confounding variables could have affected the data. Participants might have been distracted while filling out the questionnaires or giving untruthful answers on purpose. Finally the cross-sectional design of the study does not allow us to conclude causal directions from the current data.

In the investigation of research question 1, specifically if the NTT differs by the status of acquaintanceship, a lot of different factors were neglected. Future research, which is engaged into the study of modality-switching, should consider confounding factors like online and offline friendship quality, the available resources and the social embeddedness of participants. In addition, the structural regression model of research question 2 did provide interesting findings. However, additional factors should be considered in the future. For social interaction anxiety oftentimes is linked to a lack of social skills and perceived loneliness of the affected people (Caplan, 2007; Segrin & Kinney, 1995), their influence on the NTT should be examined. In the current study, friendship quality was quantified through

self-disclosure and social support. There are, however, other factors that are important for friendship formation and maintenance that have not been included in this particular study (Amichai-Hamburger et al., 2013; Fehr, 2012). Finally, the connection between modality-switching and problematic internet use would be interesting to investigate further. The current study did not find direct effects between POSI, which is a predictor of PIU (Caplan, 2010) and the NTT. However, an indirect effect of POSI through friendship quality could be found. It might be possible, that successful modality-switches could have an indirect influences on PIU and POSI through the friendship quality and the NTT. Especially for people who suffer from PIU the formation of online friendships and further transformation of those friendships into a real life context could turn out to be a supportive factor. Spending time together in a socially rich virtual environment that provides opportunities for experiencing achievement and cooperation with other players such as social online games can facilitate an increase in social skills and fulfill social needs. While online games can be a medium which is closely connected to PIU and are used for need satisfaction and escapism, they are also a tool to learn new interpersonal skills and make new friends, who are in turn an important support factor. When talking about PIU and online games, one should always consider the beneficial factors of this engagement.

There are some implications for the further use of the need to transfer scale. An external validation of the subscales and the measure as a whole would be advisable. Further, the usage within different groups of people who display distinct demographic or psychological characteristics could prove useful, especially when a practical approach is chosen. The scale could be used to screen whether people with online friendships are willing to transform their friendships into a real life context, both for a particular friendship or for friendships in general. Therefor an appropriate cutoff score or interval has to be identified. People who show a sufficiently high NTT could be encouraged through their family, friends or educators to engage into a modality-switching process and gain personal benefits from this process.

References

Ahn, D., & Shin, D.-H. (2013). Is the social use of media for seeking connectedness or for avoiding social isolation? Mechanisms underlying media use and subjective well-being. *Computers in Human Behavior*, *29*(6), 2453–2462. doi:10.1016/j.chb.2012.12.022

Amichai-Hamburger, Y., Kingsbury, M., & Schneider, B. H. (2013). Friendship: An old concept with a new meaning? *Computers in Human Behavior*, *29*(1), 33–39. doi:10.1016/j.chb.2012.05.025

Ando, R., & Sakamoto, A. (2007). The effect of cyber-friends on loneliness and social anxiety : Differences between high and low self-evaluated physical attractiveness groups. *Computer in Human Behavior*, *24*, 993–1009. doi:10.1016/j.chb.2007.03.003

Baker, J. R., & Hudson, J. L. (2013). Friendship quality predicts treatment outcome in children with anxiety disorders. *Behaviour Research and Therapy*, *51*(1), 31–36. doi:10.1016/j.brat.2012.10.005

Baker, J. R., & Hudson, J. L. (2014). Friendship quality and social information processing in clinically anxious children. *Child Psychiatry and Human Development*, *45*(1), 12–23. doi:10.1007/s10578-013-0374-x

Bandalos, D. L. (2008). Is parceling really necessary? A comparison of results from item parceling and categorical variable methodology. *Structural Equation Modeling: A Multidisciplinary Journal*, 15, 211-240.

Barack, A., & Gluck-Ofri, o. (2007) Dregree and reciprocity of self-disclosure in online forums. *Cyberpsychology & Behavior*, 10(3), 407-417.

Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: a test of a four-category model. *Journal of Personality and Social Psychology*, *61*(2), 226–244. doi:10.1037/0022-3514.61.2.226

Bentler P. M. (1983). Some Contributions to Efficient Statistics in Structural Models: Specification and Estimation of Moment Structures. *Psychometrika*, 48, 493-517.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, 107, 238–246.

Berg, J. H. (1984). The development of friendship between roommates. *Journal of Personality and Social Psychology,* 46, 346–356.

Berg, J. H., & Clark, M. S. (1986). Differences in social exchange between intimate and other relationships: Gradually evolving or quickly apparent? In V. Derlega, & B. Winstead

(Eds.), *Friendship and social interaction* (pp. 101–128). New York, NY: Springer-Verlag, New York Inc.

Berndt, T. J., & Perry, T. B. (1986). Children's Perceptions of Friendships as Supportive Relationships. *Developmental Psychology*, *22*(5), 640–648.

Best, P., Manktelow, R., & Taylor, B. (2014). Online communication, social media and adolescent wellbeing: A systematic narrative review. *Children and Youth Services Review*, *41*, 27–36. doi:10.1016/j.childyouth.2014.03.001

Biggs, B. K., Vernberg, E. M., & Wu, Y. P. (2012). Social Anxiety and Adolescents' Friendships: The Role of Social Withdrawal. *The Journal of Early Adolescence*, *32*(6), 802–823. doi:10.1177/0272431611426145

Bonetti, L., Campbell, M. A., & Gilmore, L. (2010). The Relationship of Loneliness and Social Anxiety with Children's and Adolescents' Online Communication. *Cyberpsychology, Behavior, and Social Networking*, *13*(3), 279–285. doi:10.1089/cyber.2009.0215

Bortz, J., & Schuster, C. (2010). *Statistik für Human- und Sozialwissenschaftler* (7. Aufl.). Berlin Heidelberg, Germany: Springer-Verlag.

Buote, V. M., Wood, E., & Pratt, M. (2009). Exploring similarities and differences between online and offline friendships: The role of attachment style. *Computers in Human Behavior*, *25*(2), 560–567. doi:10.1016/j.chb.2008.12.022

Campbell, K., Holderness, N., & Riggs, M. (2015). Friendship chemistry: An examination of underlying factors. *The Social Science Journal*. doi:10.1016/j.soscij.2015.01.005

Caplan, S. E. (2002). Problematic Internet use and psychosocial well-being: Development of a theory based cognitive-behavioural measurement instrument. *Computers in Human Behavior*, *18*, 553–575.

Caplan, S. E. (2003). Preference for Online Social Interaction: A Theory of Problematic Internet Use and Psychosocial Well-Being. *Communication Research*, *30*(6), 625–648. doi:10.1177/0093650203257842

Caplan, S. E. (2005). A social skill account of problematic internet use. *Journal of Communication*, 721–736.

Caplan, S. E. (2007). Relations among loneliness, social anxiety, and problematic Internet use. *Cyberpsychology & Behavior : The Impact of the Internet, Multimedia and Virtual Reality on Behavior and Society*, *10*(2), 234–242. doi:10.1089/cpb.2006.9963

Caplan, S. E. (2010). Theory and measurement of generalized problematic Internet use: A two-step approach. *Computers in Human Behavior*, *26*(5), 1089–1097.

doi:10.1016/j.chb.2010.03.012

Caplan, S., Williams, D., & Yee, N. (2009). Problematic Internet use and psychosocial well-being among MMO players. *Computers in Human Behavior*, *25*(6), 1312–1319. doi:10.1016/j.chb.2009.06.006

Casale, S., Fiovaranti, G., & Caplan, S. (2015). Online Disinhibition Precursors and Outcomes. *Journal of Media Psycology*, *27*(4), 170–177. doi:10.1027/1864-1105/a000136

Casale, S., Tella, L., & Fioravanti, G. (2013). Preference for online social interactions among young people: Direct and indirect effects of emotional intelligence. *Personality and Individual Differences*, *54*(4), 524–529. doi:10.1016/j.paid.2012.10.023

Ceyhan, a A., & Ceyhan, E. (2008). Loneliness, depression, and computer self-efficacy as predictors of problematic internet use. *Cyberpsychology & Behavior : The Impact of the Internet, Multimedia and Virtual Reality on Behavior and Society*, *11*(6), 699–701. doi:10.1089/cpb.2007.0255

Chan, D. K.-S., & Cheng, G. H.-L. (2004). A Comparison of Offline and Online Friendship Qualities at Different Stages of Relationship Development. *Journal of Social and Personal Relationships*, *21*(3), 305–320. doi:10.1177/0265407504042834

Chan, G. H.-Y., & Lo, T. W. (2014). Do Friendship and Intimacy in Virtual Communications Exist? An Investigaion of Online Friendship and Intimacy in the Context of Hidden Youth in Hong. *Review of Research and Social Intervention*, (47), 117–136.

Cheng, G. H. L., Phil, M., Chan, D. K. S., & Tong, P. Y. (2006). Qualities of Online Friendships with Different Gender Compositions and Durations. *Cyberpsychology & Behavior*, *9*(1), 14–21.

Cherng, H.-Y. S., McCrory Calarco, J., & Kao, G. (2012). Along for the Ride: Best Friends' Resources and Adolescents' College Completion. *American Educational Research Journal*, 1–30. doi:10.3102/0002831212466689

Cole, H., & Griffiths, M. D. (2007). Social interactions in massively multiplayer online role-playing gamers. *Cyberpsychology & Behavior : The Impact of the Internet, Multimedia and Virtual Reality on Behavior and Society*, *10*(4), 575–583. doi:10.1089/cpb.2007.9988

Cole, S. H., & Hooley, J. M. (2013). Clinical and personality correlates of MMO gaming: Anxiety and absorption in problematic internet use. *Social Science Computer Review*, *31*(4), 424–436. doi:10.1177/0894439312475280

Clark, M. L., & Ayers, M. (1988). The Role of Reciprocity and Proximity in Junior High School Friendships. *Journal of Youth and Adolescence*, *17*(5).

Crawford, A. M., & Manassis, K. (2011). Anxiety, social skills, friendship quality, and peer victimization: An integrated model. *Journal of Anxiety Disorders*, *25*, 924–931. doi:10.1016/j.janxdis.2011.05.005

Crick, N., & Dodge, K. (1994). A review and reformulation of social information processing mechanisms in children's social adjustment. *Psychological Bulletin*, 115, 74−101.

Davis, R. A. (2001). A cognitive-behavioral model of pathological Internet use. *Computers in Human Behavior*, *17*, 187–195.

Domahidi, E., Festl, R., & Quandt, T. (2014). To dwell among gamers: Investigating the relationship between social online game use and gaming-related friendships. *Computers in Human Behavior*, *35*, 107–115. doi:10.1016/j.chb.2014.02.023

Engelberg, E., & Sjöberg, L. (2004). Internet Use, Social Skills, and Adjustment. *Cyberpsychology & Behavior*, *7*(1), 41–47.

Erwin, B. a., Turk, C. L., Heimberg, R. G., Fresco, D. M., & Hantula, D. a. (2004). The Internet: Home to a severe population of individuals with social anxiety disorder? *Journal of Anxiety Disorders*, *18*, 629–646. doi:10.1016/j.janxdis.2003.08.002

Fehm, L., & Knappe, S. (2011). Soziale Phobie. In Wittchen, H. U., & Hoyer, J. (Eds.) *Klinische Psychologie & Psychotherapie* (2nd ed., pp. 953-969). Berlin Heidelberg, Germany: Springer-Verlag GmbH.

Fehr, B. (2012). Friendship. In V. S. Ramachandran (Ed.), *Enceclopedia of Human Behavior* (2nd ed., pp. 205–213). San Diego: Academic Press. doi:10.1016/B978-0-12-375000-6.00174-9

Field, A. (2013). Discovering Statistics Using IBM SPSS Statistics. *SAGE Publication Ltd, London*.

Fydrich, T., Sommer, G., Tydecks, S., & Brähler, E. (2009). Fragebogen zur sozialen Unterstützung (F- SozU): Normierung der Kurzform (K-14) Social Support Questionnaire (F-SozU): Standardization of short form (K-14). *Zeitschrift Für Medizinische Psychologie*, *18*, 43 – 48.

Gamez-Guadix M., Villa-George F. I., & Calvete E. (2012). Measurement and analysis of the cognitive-behavioral model of generalized problematic Internet use among Mexican adolescents. *Journal of Adolescence*, 35, 1581-91.

Greco, L. A., & Morris, T. L. (2005). Factors Influencing the Link Between Social Anxiety and Peer Acceptance: Contributions of Social Skills and Close Friendships During Middle Childhood. *Behavior Therapy*, *36*, 197–205.

Gross E. F., Juvonen J., & Gable S. L. (2002) Internet use and well-being in adolescence. *Journal of Social Issues*, 58, 75–90.

Hainey, T., Connolly, T., Stansfield, M., & Boyle, E. (2011). The differences in motivations of online game players and offline game players: A combined analysis of three studies at higher education level. *Computers & Education*, *57*, 2197–2211. doi:10.1016/j.compedu.2011.06.001

Hershberger, S. L. (1994). The specification of equivalent models before the collection of data. In A. von Eye & C. C. Clogg (Eds.), *Latent variables analysis* (pp. 68-105). Thousand Oaks, CA: Sage.

Hjalmarsson, S., & Mood, C. (2015). Do poorer youth have fewer friends? The role of household and child economic resources in adolescent school-class friendships. *Children and Youth Services Review*, *57*, 201–211. doi:10.1016/j.childyouth.2015.08.013

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1–55.

Hunter, S. C., Fox, C. L., & Jones, S. E. (2016). Humor style similarity and difference in friendship dyads. *Journal of Adolescence*, *46*, 30–37. doi:10.1016/j.adolescence.2015.10.015

Jöreskog, K. G., & Sörbom, D. (1982). Recent developments in structural equation modeling. *Journal of Marketing Research*, 19, 404–416.

Kiesler, S. (1986). Thinking ahead: The hidden messages in computer networks. *Harvard Business Review, 46-59.*

Kim, H. K., & Davis, K. E. (2009). Toward a comprehensive theory of problematic Internet use: Evaluating the role of self-esteem, anxiety, flow, and the self-rated importance of Internet activities. *Computers in Human Behavior*, *25*(2), 490–500. doi:10.1016/j.chb.2008.11.001

Kim, J., LaRose, R., & Peng, W. (2009). Loneliness as the cause and the effect of problematic Internet use: the relationship between Internet use and psychological well-being. *Cyberpsychology & Behavior : The Impact of the Internet, Multimedia and Virtual Reality on Behavior and Society*, *12*(4), 451–455. doi:10.1089/cpb.2008.0327

Kothgassner, O. D., Kafka, J. X., Rudyk, J., Beutl, L., Hlavacs, H., & Felnhofer, A. (2014). Does social exclusion hurt virtually like it hurts in real-life? The role of agency and social presence in the perception and experience of social exclusion. *Proceedings of the International Society for Presence Research*, 45–56.

Kowert, R., & Oldmeadow, J. a. (2014). Playing for social comfort: Online video game play as a social accommodator for the insecurely attached. *Computers in Human Behavior*. doi:10.1016/j.chb.2014.05.004

Kraut, R., Kiesler, S., Boneva, B., Cummings, J., Helgeson, V., & Crawford, A. (2002). Internet Paradox Revisited. *Journal of Social Issues*, (58), 49–74.

Kuss, D. J., Griffiths, M. D., Karila, L., & Billieux, J. (2013). Internet Addiction: A Systematic Review of Epidemiological Research for the Last Decade. *Current Pharmaceutical Design*, *1*(4), 397–413. doi:10.2174/13816128113199990617

La Greca, A. M., & Lopez, N. (1998). Social anxiety among adolescents: Linkages with peer relations and friendships. *Journal of Abnormal Child Psychology*, 26, 83-94.

Lee, B. W., & Stapinski, L. a. (2012). Seeking safety on the internet: Relationship between social anxiety and problematic internet use. *Journal of Anxiety Disorders*, *26*(1), 197–205. doi:10.1016/j.janxdis.2011.11.001

Legerski, J., Biggs, B. K., Greenhoot, A. F., & Sampilo, M. L. (2015). Emotion Talk and Friend Responses Among Early Adolescent Same-sex Friend Dyads. *Social Development*, *24*(1), 20–38. doi:10.1111/sode.12079

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test Mediation and other intervening variable effects. *Psychological Methods*, *7*, 83-104.

Man, C., Ruhl, H., & Buhrmester, D. (2013). The mediating role of interpersonal competence between adolescents' empathy and friendship quality: A dyadic approach. *Journal of Adolescence*, *36*, 191–200. doi:10.1016/j.adolescence.2012.10.004

Mattick, R. P., & Clarke, J. C. (1998). Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. *Behaviour Research and Therapy*, *36*(4), 455–470. doi:10.1016/S0005-7967(97)10031-6

McCabe, R. E., Miller, J. L., Laugesen, N., Antony, M. M., & Young, L. (2010). The relationship between anxiety disorders in adults and recalled childhood teasing. *Journal of Anxiety Disorders*, *24*, 238–243. doi:10.1016/j.janxdis.2009.11.002

McKenna, K. Y. A., & Bargh, J. A. (2000). Plan 9 From Cyberspace: The Implications of the Internet for Personality and Social Psychology. *Personality and Social Psychology Review*, *4*(1), 57–75. doi:10.1207/S15327957PSPR0401_6

McKenna, K. Y. A., Green, A. S., & Gleason, M. E. J. (2002). Relationship Formation on the Internet: What's the Big Attraction? *Journal of Social Issues*, *58*(1), 9–31. doi:10.1111/1540-4560.00246

Miers, A. C., Blöte, A. W., Bokhorst, C. L., & Westenberg, P. M. (2009). Negative self-evaluations and the relation to performance level in socially anxious children and adolescents. *Behaviour Research and Therapy*, *47*, 1043–1049. doi:10.1016/j.brat.2009.07.017

Miller, L. C., Berg, J. H., & Archer, R. L. (1983). Openers: Individuals who elicit intimate self-disclosure. *Journal of Personality and Social Psychology*, *44*(6), 1234–1244. doi:10.1037/0022-3514.44.6.1234

Nahemow, L., & Lawton, M. P. (1975). Similarity and Propinquity in Friendship Formation. *Journal of Personality and Social Psychology*, *32*(2), 205–213.

Nagygyörgy, K., Urbán, R., Farkas, J., Griffiths, M. D., Zilahy, D., Kökönyei, G., … Demetrovics, Z. (2013). Typology and Sociodemographic Characteristics of Massively Multiplayer Online Game Players. *Intl. Journal of Human–Computer Interaction*, *29*, 192–200. doi:10.1080/10447318.2012.702636

Nguyen, M., Bin, Y. S., & Campbell, A. (2012). Comparing Online and Offline Self-Disclosure: A Systematic Review. *Cyberpsychology, Behavior, and Social Networking*, *15*(2), 103–111. doi:10.1089/cyber.2011.0277

Oswald, D. L., Clark, E. M., & Kelly, C. M. (2004). Friendship Maintenance: An Analysis of Individual and Dyad Behaviors. *Journal of Social and Clinical Psychology*, *23*(3), 413–441.

Parks, M. R., & Floyd, K. (1996). Making Friends in Cyberspace. *Journal of Computer-Mediated Communication*, *1*(4). doi:10.1111/j.1083-6101.1996.tb00176.x

Peter, J., & Valkenburg, P. M. (2006). Research Note: Individual Differences in Perceptions of Internet Communication. *European Journal of Communication*, *21*(2), 213–226. doi:10.1177/0267323105064046

Peter, J., Valkenburg, P. M., & Schouten, A. P. (2005). Developing a model of adolescent friendship formation on the internet. *Cyberpsychology & Behavior*, *8*(5), 423–430. doi:10.1089/cpb.2005.8.423

Pierce, T. (2009). Social anxiety and technology: Face-to-face communication versus technological communication among teens. *Computers in Human Behavior*, *25*(6), 1367–1372. doi:10.1016/j.chb.2009.06.003

Pontari, B. A. (2009). Appearing Socially Competent : The Effects of a Friend ' s Presence on the Socially Anxious. *Peronality and Social Psychology Bulletin*, *35*(3), 283–294. doi:10.1177/0146167208328063

Pontari, B. A., & Glenn, E. J. (2012). Engaging in Less Protective Self-Presentation: The Effects of a Friend's Presence on the Socially Anxious. *Basic and Applied Social Psychology*, *34*(6).

Preciado, P., Snijders, T. A. B., Burk, W. J., Stattin, H., & Kerr, M. (2012). Does proximity matter? Distance dependence of adolescent friendships. *Social Networks*, *34*(1), 18–31. doi:10.1016/j.socnet.2011.01.002

Rosseel, Y. (2012). lavaan: An R Package for Structural Equation Modeling. *Journal of Statistical Software*, 48(2), 1-36. URL http://www.jstatsoft.org/v48/i02/

Salemink, E., van den Hout, M., & Kindt, M. (2010) How does cognitive bias modification affect anxiety? Mediation analyses and experimental data. *Behavioral and Cognitive Psychotherapy*, 38(1), 59–66. doi: 10.1017/S1352465809990543

Satorra, A., & Bentler, P. M. (1988). Scaling Corrections for Chi-Square Statistics in Covariance Structure Analysis. In ASA *Proceedings of the Business and Economic Statistics* (pp. 308-313). American Statistical Association, Alexandria.

Satorra, A., & Bentler, P. M. (1994). Corrections to Test Statistics and Standard Errors in Covariance Structure Analysis. In A. von Eye, C. C. Clogg (eds.), *Latent Variables Analysis: Applications for Developmental Research*, pp. 399-419. Sage, Thousands Oaks.

Satorra, A., & Bentler, P. M. (2001). A Scaled Difference Chi-Square Test Statistic for Moment Structure Analysis. *Psychometrika*, 66, 507-514.

Scharfstein, L. A., & Beidel, D. C. (2015). Social Skills and Social Acceptance in Children with Anxiety Disorders. *Journal of Clinical Child & Adolescent Psychology*, *44*(5), 826–838. doi:10.1080/15374416.2014.895938

Schouten, A. P., Valkenburg, P. M., & Peter, J. (2007). Precursors and Underlying Processes of Adolescents ' Online Self-Disclosure : Developing and Testing an " Internet-Attribute-Perception " Model Precursors and Underlying Processes of Adolescents ' Online Self-Disclosure : Developing and Testing an. *Media Psychology*, *10*, 292–315. doi:10.1080/15213260701375686

Segrin, C., & Flora, J. (2000). Poor Social Skills Are a Vulnerability Factor in the
    Development of Psychosocial Problems. *Human Communication Research*, *26*(3),
    489–514.

Segrin, C., & Kinney, T. (1995). Social Skills Deficits Among the Socially Anxious :
    Rejection from Others and Loneliness I Chris Segrin. *Motivation and Emotion*, *19*(1).

Selfhout, M. H. W., Branje, S. J. T., Delsing, M., ter Bogt, T. F. M., & Meeus, W. H. J.
    (2009). Different types of Internet use, depression, and social anxiety: The role of
    perceived friendship quality. *Journal of Adolescence*, *32*(4), 819–833.
    doi:10.1016/j.adolescence.2008.10.011

Short, J. A., Williams, E., & Christie, B. (1976). *The social psychology of
    telecommunications*. New York: John Wiley & Sons.

Smahel, D., Brown, B. B., & Blinka, L. (2012). Associations between online friendship and
    Internet addiction among adolescents and emerging adults. *Developmental
    Psychology*, *48*(2), 381–388. doi:10.1037/a0027025

Sobel, M. E. (1982). Asymptotic intervals for indirect effects in structural equations models.
    In S. Leinhart (Ed.), *Sociological methodology* (pp.290-312). San Francisco: Jossey-
    Bass.

Sommer, G., & Fydrich, T. (1989). *Soziale Unterstützung, Diagnostik, Konzepte, Fragebogen
    F-SozU*. Tübingen: Deutsche Gesellschaft für Verhaltenstherapie

Sproull, L., & Kielser, S. (1986). Reducing social context cues: Electronic mail in
    organizational communication. *Management Science*, 32, 1492–1513.

Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation
    approach. *Multivariate Behavioral Research*, 25, 173–180

Stangier, U., Heidenreich, T., Berardi, A., Golbs, U., & Hoyer, J. (1999). Die Erfassung
    sozialer Phobie durch die Social Interaction Anxiety Scale (SIAS) und die Social
    Phobia Scale (SPS). *Zeitschrift für Klinische Psychologie*, 28(1), 28–36.

Suler, J. (2004). The Online Disinhibition Effect. *Cyberpsychology & Behavior*, *7*(3), 321–
    326.

Thayer, S. E., & Ray, S. (2006). Online communication preferences across age, gender, and
    duration of Internet use. *Cyberpsychology & Behavior : The Impact of the Internet,
    Multimedia and Virtual Reality on Behavior and Society*, *9*(4), 432–440.
    doi:10.1089/cpb.2006.9.432

Trepte, S., Reinecke, L., & Juechems, K. (2012). The social side of gaming : How playing

online computer games creates online and offline social support. *Computers in Human Behavior*, *28*(3), 832–839. doi:10.1016/j.chb.2011.12.003

Valkenburg, P. M., & Peter, J. (2007). Preadolescents ' and Adolescents ' Online Communication and Their Closeness to Friends Preadolescents ' and Adolescents ' Online Communication and Their Closeness to Friends. *Developmental Psychology*, *43*(2), 267–277. doi:10.1037/0012-1649.43.2.267

Valkenburg, P. M., & Peter, J. (2011). Online Communication Among Adolescents: An Integrated Model of Its Attraction, Opportunities, and Risks. *Journal of Adolescent Health*, *48*(2), 121–127. doi:10.1016/j.jadohealth.2010.08.020

Valkenburg, P. M., Sumter, S. R., & Peter, J. (2011). Gender differences in online and offline self-disclosure in pre-adolescence and adolescence. *The British Journal of Developmental Psychology*, *29*, 253–269. doi:10.1348/2044-835X.002001

von Oertzen, T., Brandmaier, A.M., & Tsang, S. (2015). Structural Equation Modeling with Ωnyx. *Structural Equation Modeling: A Multidisciplinary Journal,* 22(1), 148 161. *doi:* 10.1080/10705511.2014.935842

Waddell, J. C., & Peng, W. (2014). Does it matter with whom you slay? the effects of competition, cooperation and relationship type among video game players. *Computers in Human Behavior, 38*, 331–338. doi:10.1016/j.chb.2014.06.017

Walther J. B. (1992). Interpersonal effects in computer-mediated communication: a relational perspective. *Communication Research* 19, 52–90.

Walther, J. B. (1996). Computer-Mediated Communication: Impersonal, Interpersonal, and Hyperpersonal Interaction. *Communication Research* 23(1), 3-43.

Walther, J. B. (2007). Selective self-presentation in computer-mediated communication: Hyperpersonal dimensions of technology, language, and cognition. *Computers in Human Behavior*, *23*(5), 2538–2557. doi:10.1016/j.chb.2006.05.002

Wang, J. L., Jackson, L. a., & Zhang, D. J. (2011). The mediator role of self-disclosure and moderator roles of gender and social anxiety in the relationship between Chinese adolescents' online communication and their real-world social relationships. *Computers in Human Behavior, 27*(6), 2161–2168. doi:10.1016/j.chb.2011.06.010

Watling Neal, J., Neal, Z. P., & Cappella, E. (2014). I Know Who My Friends Are, but Do You? Predictors of Self-Reported and Peer-Inferred Relationships. *Child Development*, *85*(4), 1366–1372. doi:10.1111/cdev.12194

Wegge, D., Vandebosch, H., Eggermont, S., & Walrave, M. (2015). The Strong, the Weak, and the Unbalanced: The Link Between Tie Strength and Cyberaggression on a Social

Network Site. *Social Schience Computer Review*, *33*(3), 315–342. doi:10.1177/0894439314546729

Williams, D. (2006). On and Off the ' Net : Scales for Social Capital in an Online Era. *Journal of Computer-Mediated Communication*, *11*, 593–628. doi:10.1111/j.1083-6101.2006.00029.x

Wolak, J., Mitchell, K. J., & Finkelhor, D. (2002). Close online relationships in a national sample of adolescents. *Adolescence*, *37*(147), 441–455.

Yates, T. M., Gregor, M. A., & Haviland, M. G. (2012). Child Maltreatment, Alexithymia, and Problematic Internet Use in Young Adulthood. *Cyberpsychology, Behavior and Social Networking*, *15*(4), 22–25. doi:10.1089/cyber.2011.0427

Yee, N. (2006). Motivations for play in online games. *Cyberpsychology & Behavior : The Impact of the Internet, Multimedia and Virtual Reality on Behavior and Society*, *9*(6), 772–775. doi:10.1089/cpb.2006.9.772

Zadro, L., Williams, K. D., & Richardson, R. (2004). How low can you go? Ostracism by a computer is sufficient to lower self-reported levels of belonging, control, self-esteem, and meaningful existence. *Journal of Experimental Social Psychology*, 40(4), 560-567.

Zhang, F., You, Z., Fan, C., Gao, C., Cohen, R., Hsueh, Y., & Zhou, Z. (2014). Friendship quality, social preference, proximity prestige, and self-perceived social competence: Interactive influences on children's loneliness. *Journal of School Psychology*, *52*(5), 511–526. doi:10.1016/j.jsp.2014.06.001

Appendix A

Table 5

*Input Data (zero-order Pearson correlation coefficients, standard deviations and means)
for the Analysis of the Structural Regression Model of Social Interaction Anxiety (SIAS),
Online Friendship Quality (ONF) with Self-Disclosure (SDI) and Social Support (F-
SozU) and Preference for Online Social Interaction (POSI) on the Need to Transfer
Scale (NTT) (n = 760).*

Variable	1	2	3	4	5
ONF SDI					
ONF F-SozU	.673*				
NTT	.310*	.321*			
POSI	.136*	.165*	.011		
SIAS	-.050	-.052	-.192*	.323*	
SD	9.422	9.620	9.634	2.808	14.373
Mean	36.21	46.20	51.58	8.87	44.23

Note. * p < .01, two-tailed significance

Appendix B

Table 6
Model Covariances and Means (n = 760).

Variable	F-SozU	SDI	NTT	POSI	SIAS
Covariances					
F-SozU	92.421				
SDI	60.928	88.650			
NTT	30.087	27.547	92.691		
POSI	4.244	3.886	0.296	7.874	
SIAS	-7.315	-6.697	-26.557	13.005	206.309
Means					
	46.200	36.211	51.580	8.866	44.225

Appendix C

Table 7

Correlation Residuals of the Structural Regression Model (n = 760).

	F-SozU	SDI	NTT	POSI	SIAS
F-SozU	0.000				
SDI	0.000	0.000			
NTT	-0.388	0.539	0.000		
POSI	0.215	-0.299	0.000	0.000	
SIAS	0.091	-0.126	0.000	0.000	0.000

Appendix D

Table 8

Summary of the initial 16 items solution of the principal component analysis for the NTT (n = 97)

	Rotated Factor Loadings		
Item	Avoidance	Closure	Distance
Wenn ich daran denke, mich persönlich mit einem Online-Freund zu treffen, macht mir das Angst. (R)	**.816**	.195	.166
Es wäre mir unangenehm, einen Freund, den ich online kennengelernt habe auch persönlich zu treffen. (R)	**.814**	.288	.108
Es würde mir Unbehagen bereiten, einen Online-Freund persönlich zu treffen. (R)	**.798**	.350	.186
Ich hätte keine Angst davor, mich mit einem Freund zu treffen, den ich online kennengelernt habe.	**.796**	.064	.168
Wenn sich mir die Möglichkeit bietet, einen Online-Freund persönlich zu treffen, verzichte ich lieber darauf. (R)	**.675**	.305	.290
Mir käme es nicht in den Sinn, einen Online-Freund zu mir nach Hause einzuladen. (R)	**.649**	.287	.376
Selbst wenn es nur einmal im Jahr wäre, würde ich einen Online-Freund treffen wollen.	.354	**.834**	.155
Ich würde mich gerne häufiger persönlich mit einem Online-Freund treffen.	.249	**.760**	.293
Ich glaube, ich würde viele wertvolle Erfahrungen machen, wenn ich einen Online-Freund persönlich träfe.	.092	**.741**	.238
Ich glaube, ich würde mich persönlich genauso gut mit einem Online-Freund verstehen wie im Internet.	.309	**.680**	.150
Wenn ich die Zeit hätte, würde ich mich gerne regelmäßig mit einem Online-Freund treffen.	.234	**.650**	.270
Mir wäre es zu aufwendig einen Online-Freund zu besuchen, der weit weg lebt. (R)	.155	.209	**.828**
Ich würde einen Online-Freund auch besuchen, wenn ich dafür eine lange Reise auf mich nehmen müsste.	.159	**.412**	**.798**
Es würde mich reizen, einen Online-Freund zu besuchen, auch wenn er in einem anderen Land lebt.	.166	.342	**.742**

Note. Factor loadings over .40 appear in bold
(R) = Reversed item

Table 8 (continued)

Summary of the initial 16 items solution of the principal component analysis for the NTT (n = 97)

	Rotated Factor Loadings		
Item	Avoidance	Closure	Distance
Ich könnte mir durchaus vorstellen, dass ich auch einmal eine Beziehung mit einem Online-Freund eingehen könnte.	.180	.028	**.610**
Es lohnt sich nicht, einen Online-Freund persönlich zu treffen, wen ich ihn nur selten sehen würde. (R)	.355	.291	**.591**
Eigenvalues	7.82	1.73	1.24
% of variance	48.87	10.81	7.76
Cronbach's Alpha (standardized)	.91	.88	.85

Note. Factor loadings over .40 appear in bold
(R) = Reversed item

Appendix E

Abstract

Socially anxious people often prefer online social interaction (POSI) over face-to-face interaction and are motivated to use the internet to compensate for a lack of close real life relationships, which are an important supportive factor for people with anxieties. Occasionally, they form high quality friendships online. Those are showing a lot of similarities to traditional offline friendships. However, offline friendships still yield a higher quality and sometimes people transform a modality-switch. The current paper explores the modality-switching process of socially anxious people with two different studies. The first study establishes a new scale to measure the need to transfer (NTT) and the second study investigates the further application of the scale within a structural regression model. Additionally, aspects of friendships within different acquaintanceship contexts of online friends are examined. For the NTT scale three subscales emerged which measure the substantial motivation to invest resources into a friendship and weight possible risks and benefits. A sample of 760 internet users who reported to have an online friend participated at the following survey. Results revealed that online friends who meet on a regular basis displayed the highest friendship quality for the different acquaintanceship contexts. The structural regression model did confirm most of the hypotheses. Social anxiety had a direct negative influence on the NTT. High friendship quality did account for less social anxiety and a higher NTT. POSI only had a mediating influence on the NTT, but not a direct effect as hypothesized. Additional results and further implications are discussed.

Appendix F

Zusammenfassung

Menschen mit Sozialphobie präferieren häufig soziale Online-Interaktion (POSI) gegenüber face-to-face-Interaktion und sind motiviert das Internet als Kompensation für fehlende enge Sozialkontakte im echten Leben zu benutzen, welche ein wichtiger unterstützender Faktor für Menschen mit Ängsten sind. Gelegentlich formen sie hochqualitative Freundschaften online. Diese zeigen viele Gemeinsamkeiten mit traditionellen Offline-Freundschaften. Wie auch immer, Offline-Freundschaften zeigen trotzdem eine höhere Qualität und manchmal führen Menschen einen Modalitätenwechsel durch. Die aktuelle Arbeit untersucht den Prozess des Modalitätenwechsels von Menschen mit Sozialphobie mit zwei verschiedenen Studien. Die erste Studie etabliert eine neue Skala, die das Transformationsbedürfnis (NTT) untersucht und die zweite Studie wendet diese Skala dann in einem Strukturgleichungsmodell an. Zusätzlich untersucht die zweite Studie Aspekte von Freundschaften in verschiedenen Bekanntschaftsgraden von Online-Freunden. In der NTT-Skala entstanden drei Subskalen, die die substantielle Motivation Ressourcen in eine Freundschaft zu investieren, mögliche Risiken und Vorteile, messen. In einer Stichprobe von 760 Internet-Nutzern, die berichteten einen Online-Freund zu besitzen, nahmen an der folgenden Studie teil. Die Ergebnisse zeigten, dass Online-Freunde, die sich regelmäßig sehen, die höchste Freundschafts-Qualität in den verschiedenen Bekanntschaftsgraden aufweisen. Das Strukturgleichungsmodell konnte die meisten Hypothesen bestätigen. Sozialphobie hatte einen direkten negativen Einfluss auf den NTT. Hohe Freundschafts-Qualität war für weniger Sozialphobie und einen höheren NTT verantwortlich. POSI hatte nur einen mediierenden Effekt auf den NTT, aber keinen direkten Effekt wie angenommen. Weitere Ergebnisse und Implikationen der Studie werden diskutiert.

Lebenslauf

Persönliche Daten

Name:	Nina van Aken
Akademischer Grad:	Bachelor of Science
Adresse:	Simmeringer Hauptstraße 20A/9
	1110 Wien
Telefon:	0699/17173540
E-Mail:	ninavaken@hotmail.de
	a1001961@unet.univie.ac.at
Staatsangehörigkeit:	Deutsch
Geburtsdaten:	21. September 1990 in Troisdorf

Schulausbildung

1997 – 2001	Katholische Grundschule Mondorf
2001 – 2007	Alfred-Delp-Realschule Niederkassel
2007 – 2010	Erwerb des Abiturs am Kopernikus Gymnasium Niederkassel

Studienverlauf

September 2010 – Juni 2013

Bachelorstudium Psychologie Universität Wien
Titel der Bachelorarbeit:
* The Benefits of Action Video Games on Visual Attention

September 2013 – Voraussichtlich Mai 2016

Masterstudium Psychologie Universität Wien
Studienschwerpunkt:
* Geist und Gehirn

Titel der Masterarbeit:
* The Transformation of Online Friendships into a Real Life Context in Individuals with Social Anxiety – Development and Application of the Need to Transfer Scale

Berufliche Tätigkeiten

2006 und 2007:	Betreuung von Kindern im Rahmen von Schulpraktika (Grundschule & Kinder- und Jugendreitverein)
Mai – August 2010:	Sozialforschung via Telefoninterviews (nhi2)
Februar - März 2013:	Volontariat in der Klinischen Kinder- und Jugendpsychologie an der Fakultät für Psychologie, Universität Wien
März bis Juli 2015:	Praktikum an der Universität Wien im Bereich Klinische- und Gesundheitspsychologie im Virtual Reality Laboratory

Weitere Qualifikationen

Englisch – Fließend in Wort und Schrift
Zweitstudium in Statistik an der Universität Wien
Gute Kenntnisse im Umgang mit Statistik-Programmen (R, SPSS)
Kenntnisse in Literaturverwaltung (Mendeley)
Erfahrung mit wissenschaftlichem Arbeiten