Implicit and Explicit Self-Esteem in the Context of Internet Addiction

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Abstract

Previous research has repeatedly found that people suffering from some clinical disorders (e.g., bulimia nervosa, depression) possess low explicit (i.e., conscious, deliberate) self-esteem while at the same time displaying high implicit (i.e., unconscious, automatic) self-esteem. This phenomenon has been termed damaged self-esteem and was proposed to be an indicator of psychological distress. Although Internet addiction has been found to be associated with low levels of explicit self-esteem, as well as with high levels of psychological distress, its relation to implicit self-esteem has, to our knowledge, not been investigated thus far. We therefore hypothesized that the phenomenon of damaged self-esteem could also be found amongst people suffering from Internet addiction, and conducted two studies using the Initial Preference Task as a measure of implicit self-esteem. As expected, we found that individuals scoring high on Internet addiction possess low explicit and high implicit self-esteem. This effect was, however, only found for the first name initial of the Initial Preference Task, leading to the conclusion that first and last name initials might tap into different parts of implicit self-esteem.

Introduction

High self-esteem is usually viewed positively because it is less associated with a range of unfavorable and disadvantageous characteristics, such as depression or neuroticism. High self-esteem, however, can also signal maladjustment and delusion when causing aggression or violence. Based on these findings, it can be concluded that high self-esteem does not necessarily have to lead to secure and adaptive characteristics and behaviors but can also lead to defensive and maladaptive ones. While this may at first appear to be irrational logic, in an attempt to explain it, Jordan et al. postulated a dual separation of high self-esteem into secure and defensive high self-esteem. Whereas some people possess secure high self-esteem, others possess defensive high self-esteem.

This view is supported by implicit cognition research showing that there are two independent forms of self-esteem: explicit (i.e., conscious attitudes toward oneself) and implicit (i.e., unconscious representations of attitudes toward oneself) self-esteem. These dual-process models provide a useful framework for integrating both forms of self-esteem. Furthermore, both systems are assumed to operate simultaneously, meaning that people can possess different levels of implicit and explicit self-esteem at the same time. When observing only those individuals with high degrees of implicit and/or explicit self-esteem, they can be categorized into three different self-esteem profile groups: (1) secure (or congruent) self-esteem, when individuals show both high implicit and explicit self-esteem; (2) damaged self-esteem, when individuals show high implicit but low explicit self-esteem; and (3) defensive (or fragile) self-esteem, when individuals show low implicit but high explicit self-esteem.

Previous research found that each of these groups is associated with different personality and behavior characteristics. Despite possessing the same high level of explicit self-esteem, individuals belonging to the defensive and the secure self-esteem group behave differently, depending on their level of implicit self-esteem. Individuals with defensive self-esteem are, for example, more likely to prefer their ingroup members, to possess higher levels of narcissism, and to promote more defensive reactions to adverse feedback than individuals with secure self-esteem. But also individuals with damaged self-esteem—as another form of incongruent self-esteem—show characteristics that differ from the above-mentioned groups. They exhibit higher levels of anger suppression and nervousness, report more days of impaired health, and show more defensive reactions to social feedback. All this evidence supports the notion that both kinds of discrepancies (i.e., defensive and damaged self-esteem) between implicit and explicit self-esteem are maladaptive.
because they seem to indicate a lack of integration in self-presentation.

Clinical psychological research has also revealed a variety of highly interesting results concerning the association between some clinical disorders and implicit and/or explicit self-esteem. Referring to depression, it has been found that implicit but not explicit self-esteem predicted future depressive symptomatology. Furthermore, contrary to first expectations, depressed patients—in particular those individuals with suicidal ideation—were found to possess high levels of implicit self-esteem when compared to a control group. The same applied to eating disorders, where female individuals with bulimia nervosa displayed higher levels of implicit self-esteem than individuals in control groups.

The reason for this might be grounded in an automatic threat defense mechanism, which is a routinized reaction to threat and may aim to protect people from negative emotions by compensating the loss of explicit self-esteem with an automatic increase in implicit self-esteem. Therefore, damaged self-esteem might be a direct result of implicit self-esteem compensation and consequently an indicator of psychological distress. For the example of bulimia nervosa, the following mechanism might operate. Since bulimia nervosa is related to high levels of perfectionism, bulimic individuals often impose (unrealistic) high standards on themselves, which most often cannot be met. This continued inability to meet their goals may lead to low levels of explicit self-esteem. At this point, the automatic threat defense mechanism may come into play, preventing the individual from negative emotions by increasing their levels of implicit self-esteem, leading to damaged self-esteem.

If the presence of damaged self-esteem is indeed an indicator for psychological distress, it should also be very likely to be associated with other psychologically distressing clinical disorders such as Internet addiction. Furthermore, since individuals with low self-esteem are generally more likely to expect rejection than those high in self-esteem, they might fear rejection when looking for or establishing interpersonal contacts. Therefore, the Internet may provide a suitable means of communication for such individuals because, compared to face-to-face encounters, it offers them communication opportunities associated with less risk of rejection. Thus people with damaged self-esteem might also be under a greater risk of Internet addiction.

Internet addiction was first studied by Young and research on Internet addiction has dramatically increased in the last decade. Internet addiction is currently a highly discussed issue in both clinical psychology and psychiatry. In many countries worldwide, but especially in Asian countries such as China, Taiwan, or South Korea, it poses a serious problem, ranging from 1 (never) to 5 (always). The IA-T covers the degree to which Internet use affects daily routine, social life, productivity, sleeping pattern, and feelings (Cronbach’s $z = 0.92$). The overall score can range from 20 to 100, with higher scores reflecting greater problems caused by Internet use. Young suggests that a score within the range of 20–39 points reflects an average amount of Internet usage that is completely controlled by the individual; a score of 40–69 signifies frequent problems due to Internet usage; and a score of 70–100 indicates that the amount of Internet usage is causing significant problems.

We therefore hypothesized that the phenomenon of damaged self-esteem could also be found amongst people scoring high on Internet addiction. In order to test our hypothesis, we conducted two studies using the Initial Preference Task (IPT) as a measure of implicit self-esteem. The IPT is one of the most used measure of implicit self-esteem apart from the self-esteem Implicit Association Test. It is based on the name letter effect, which takes advantage of the fact that people prefer letters in their name to letters not in their name. This effect is strongest for the initial letters and has been found to be indicative of implicit self-esteem.

Study 1: Method

Participants

A sample of 259 participants was recruited from the general population (i.e., people from all walks of life) through a snowball sampling technique. All participants were from German-speaking countries (i.e., Austria, Germany). Fifteen participants were excluded because of implausible answers (e.g., always using the same answer), resulting in a final sample of 244 participants (57% female) with ages ranging from 13 to 63 years ($M = 27.1$, $SD = 10.7$).

Materials

Usually, for reliability reasons, the overall score of the IPT (see below) is calculated by obtaining the mean of the effect for the first- and last-name initial (i.e., constituting a two-item measure). However, it has been repeatedly hypothesized that the effect for the first- and last-name initial might measure different aspects of implicit self-esteem, but this hypothesis has yet to be empirically investigated. Since averaging the values (first and last initial separately) across Time 1 and Time 2 from this retest study, led to satisfying reliabilities (first-name initial: $z = 0.70$; last-name initial: $z = 0.68$), we did not have to average the effects of both initials. This allowed us to examine the effects of each initial separately without sacrificing reliability (for descriptives see Table 1). We therefore introduced two different measures of implicit self-esteem: the first one using the ratings on the first-name initial and the second one using the ratings on the last-name initial. The same procedure (averaging of the values from Time 1 and Time 2) was also applied to the remaining measures, which are introduced hereafter.

Internet addiction: Internet Addiction Test. The Internet Addiction Test (IA-T) is a 20-item questionnaire in which participants are asked to rate items on 5-point Likert scales ranging from 1 (never) to 5 (always). The IA-T covers the degree to which Internet use affects daily routine, social life, productivity, sleeping pattern, and feelings (Cronbach’s $z = 0.92$). The overall score can range from 20 to 100, with higher scores reflecting greater problems caused by Internet use. Young suggests that a score within the range of 20–39 points reflects an average amount of Internet usage that is completely controlled by the individual; a score of 40–69 signifies frequent problems due to Internet usage; and a score of 70–100 indicates that the amount of Internet usage is causing significant problems.

Internet addiction: Online Cognition Scale. The Online Cognition Scale (OCS) is a theory-driven, multidimensional
Table 1. Descriptives for Study Variables from Study 1 and Study 2

<table>
<thead>
<tr>
<th></th>
<th>Study 1 (n = 244)</th>
<th></th>
<th>Study 2 (n = 138)</th>
<th></th>
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<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>Internet behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duration of Internet use (months)</td>
<td>97.0</td>
<td>37.3</td>
<td>11</td>
<td>240</td>
</tr>
<tr>
<td>Mean time online per week for private purposes (hours)</td>
<td>8.1</td>
<td>7.4</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>Mean time online per week for business purposes (hours)</td>
<td>9.4</td>
<td>11.2</td>
<td>1</td>
<td>90</td>
</tr>
<tr>
<td>Daytime usage: ratio night/day</td>
<td>76/168</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet addiction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IA-T</td>
<td>33.3</td>
<td>9.6</td>
<td>20</td>
<td>75</td>
</tr>
<tr>
<td>OCS</td>
<td>1.98</td>
<td>0.73</td>
<td>1.0</td>
<td>4.9</td>
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<tr>
<td>Explicit measures of self-esteem</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>RSES</td>
<td>24.5</td>
<td>4.7</td>
<td>7</td>
<td>30</td>
</tr>
<tr>
<td>Implicit measures of self-esteem</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IPT—first-name initial</td>
<td>1.86</td>
<td>1.79</td>
<td>-4.2</td>
<td>6.5</td>
</tr>
<tr>
<td>IPT—last-name initial</td>
<td>1.37</td>
<td>1.80</td>
<td>-4.2</td>
<td>5.9</td>
</tr>
<tr>
<td>IPT—both initials</td>
<td>1.61</td>
<td>2.56</td>
<td>-2.6</td>
<td>6.1</td>
</tr>
<tr>
<td>GNL</td>
<td></td>
<td></td>
<td>7.3</td>
<td>1.67</td>
</tr>
</tbody>
</table>

GNL, General Name Liking; IA-T, Internet Addiction Test; IBAS, Internet Behavior and Attitude Scale; IPT, Initial Preference Task; OCS, Online Cognition Scale; RSES, Rosenberg Self-Esteem Scale.

measure of problematic Internet use, focusing on procrastination, impulsivity, and social rejection (z = 0.95). The OCS consists of 36 items that are answered on 7-point Likert scales ranging from 1 (don’t agree) to 7 (totally agree). As with the IA-T, the OCS represents a widely used, global measure of problematic Internet use.

Internet behavior: Internet Behavior and Attitude Scale. The Internet Behavior and Attitude Scale (IBAS)34 assesses Internet behaviors and attitudes (e.g., social aspects of Internet use and feelings of competency online) using 25 statements that are answered on 4-point Likert scales ranging from 1 (strongly agree) to 4 (strongly disagree). Sample items include, “Being online has made it easier to communicate with people I know” and “I avoid going online for information because there is too much to weed through (reverse)”. The overall score can range from 25 to 100, with higher values reflecting more positive attitudes and behaviors toward the Internet (z = 0.78).

Explicit measure of self-esteem: Rosenberg Self-Esteem Scale. The Rosenberg Self-Esteem Scale (RSES; German translation by von Collani and Herzberg35) is a 10-item self-report scale measuring feelings of self-worth and self-acceptance. Items are answered on 4-point Likert scales ranging from 0 (totally disagree) to 3 (totally agree), with higher values reflecting higher levels of explicit self-esteem (z = 0.89).

Implicit measure of self-esteem: Initial Preference Task. The Initial Preference Task (IPT)26 is used to assess levels of implicit self-esteem. Participants have to rate the letters A to Z on 9-point Likert scales ranging from 1 (I totally dislike it) to 9 (I like it very much). To avoid order effects, we used four different randomized lists of letters.

Procedure

Unless otherwise stated, two researchers (SS, CB) developed German versions of the scales from their English originals using the parallel blind technique.36 The study had two data-collection time points (test and retest) and was titled as “Internet in everyday life.” Once consent was obtained, each participant completed all measures in random order at both Time 1 and Time 2 (7 days after Time 1 ± 1 day). Basic demographic information was obtained at Time 2 (sex, age, overall duration of Internet usage, amount of Internet usage per week for both private and professional purposes, personal opinion about what amount of private Internet use is appropriate, and participants’ first and last name initials; for descriptives see Table 1). Once completed, the questionnaires were returned by the participants in a sealed envelope.

Study 1: Results

Scoring procedures

Initial preferences were scored using the recently recommended I-algorithm.31 The I-algorithm not only controls for individual differences in baseline response tendencies (e.g., response bias, individual differences in positive or negative affect or transient mood states) but also for baseline differences in the likability of different letters (e.g., visual features of letters, different exposure). Only initial letters were used to compute preference scores, as is now standard practice. Higher scores reflect higher levels of implicit self-esteem.

Correlations with Internet addiction

Individuals scoring high on Internet addiction had been using the Internet for a shorter period of time than individuals scoring low on Internet addiction, suggesting a newbie effect (IA-T: r = −0.13, p = 0.06; OCS: r = −0.14, p = 0.04). That is, individuals who start using the Internet are more prone to Internet addiction than individuals who are already experienced users. Moreover, individuals scoring high on Internet addiction used the Internet more for private purposes (IA-T: r = 0.41, p < 0.001; OCS: r = 0.40, p < 0.001) than for business
purposes (IA-T: \( r = -0.03, p = 0.64 \); OCS: \( r = 0.01, p = 0.95 \)) and more during the night than during the daytime (IA-T: \( r_{pb} = -0.30, p < 0.001 \); OCS: \( r_{pb} = -0.22, p < 0.001 \)). Furthermore, individuals scoring high on Internet addiction showed more positive attitudes and behaviors toward the Internet (as measured with IBAS) than those scoring low on Internet addiction (IA-T: \( r = 0.59, p < 0.001 \); OCS: \( r = 0.67, p < 0.001 \)).

Correlations with implicit self-esteem

Explicit (RSES) and implicit (IPT) self-esteem scores were not related to each other (see Table 2). This is in line with previous research on explicit-implicit correlations where either low or zero correlations have been reported.\(^{32,37,38}\) Participants with higher implicit self-esteem were found on average to have a higher weekly Internet usage for private purposes, a higher amount of appropriate private Internet usage, and also higher scores on the Internet addiction scales (IA-T, OCS). However, this effect was only found when measuring implicit self-esteem with the first-name initial, leading to the conclusion that preference scores of the first and last-name initial might indeed tap into different parts of implicit self-esteem (see Table 2).

Regression analysis

In order to investigate the influence of high vs. low implicit and explicit self-esteem on Internet addiction, a series of multiple linear regression analyses were conducted. Explicit and implicit self-esteem scores were centered, and the interaction was represented by a cross-product term.\(^{39}\) Explicit self-esteem was the strongest predictor of Internet addiction (first-name initial: \( \beta = -0.27, t = -4.37, p < 0.001 \)). Implicit self-esteem, however, did not have any influence (first-name initial: \( \beta = 0.09, t = 1.44, p = 0.15 \); last-name initial: \( \beta = -0.04, t = -0.71, p = 0.48 \)), and the interaction was only significant for the last-name initial (first-name initial: \( \beta = 0.05, t = 0.81, p = 0.42 \); last-name initial: \( \beta = 0.13, t = 2.05, p = 0.04 \)). Furthermore, in order to analyze possible differences between congruent and incongruent self-esteem, simple slope analyses were conducted following Cohen and Cohen.\(^{40}\) As can be seen in Figure 1, participants with damaged self-esteem had higher Internet addiction scores than participants with congruent high self-esteem (first-name initial: \( \beta = -0.47, t = 2.69, p = 0.008 \); last-name initial: \( \beta = -0.26, t = -1.32, p = 0.19 \)) and participants with defensive self-esteem had lower Internet addiction scores than those with congruent high self-esteem (first-name initial: \( \beta = 0.86, t = 1.97, p = 0.05 \); last-name initial: \( \beta = 0.51, t = 1.05, p = 0.30 \)), but, in both cases, the effect was only significant for the first-name initial.

Study 2: Method

In order to see if the results from Study 1 were replicable, we conducted a second study concentrating on the IA-T, and including another recently introduced implicit measure of self-esteem—the General Name Liking (GNL) measure.

Participants

As in Study 1, participants were recruited from the general population (\( n = 138 \)) through a snowball sampling technique and were all from German-speaking countries (i.e., Austria, Germany). The mean age of participants was 26.1 years (SD = 10.8; range = 16–68 years), and 58% were women.

Materials

Internet addiction: Internet Addiction Test. The same measure was used as in Study 1 (\( z = 0.84 \)).

Explicit measure of self-esteem: Rosenberg Self-Esteem Scale. The same measure was used as in Study 1 (\( z = 0.82 \)).

Implicit measure of self-esteem: Initial Preference Task. Recently a Duplicate-IPT has been introduced promising higher reliability (i.e., participants have to rate each letter of

Table 2. Correlations of Study Variables with Implicit Self-Esteem Measured Separately with the First- and Last-Name Initial

<table>
<thead>
<tr>
<th>Study 1 (( n = 244 ))</th>
<th>Study 2 (( n = 138 ))</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IPT</strong></td>
<td><strong>Duplicate-IPT</strong></td>
</tr>
<tr>
<td><strong>First</strong></td>
<td><strong>Last</strong></td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Internet Behavior</td>
<td></td>
</tr>
<tr>
<td>Duration of Internet use</td>
<td>(-0.10)</td>
</tr>
<tr>
<td>Mean time online per week for private purposes</td>
<td>0.19**</td>
</tr>
<tr>
<td>Mean time online per week for business purposes</td>
<td>0.05</td>
</tr>
<tr>
<td>Daytime usage: night vs. day</td>
<td>0.10</td>
</tr>
<tr>
<td>Appropriate private Internet usage per week IBAS</td>
<td>0.14*</td>
</tr>
<tr>
<td>Internet Addiction</td>
<td></td>
</tr>
<tr>
<td>IA-T</td>
<td>0.11‡</td>
</tr>
<tr>
<td>OCS</td>
<td>0.11‡</td>
</tr>
<tr>
<td>Explicit measures of self-esteem RSES</td>
<td>(-0.04)</td>
</tr>
</tbody>
</table>

\(^{1}\)p < 0.10; \(^{*}\)p < 0.05; \(^{**}\)p < 0.01 (two-tailed).

GNL, General Name Liking; IA-T, Internet Addiction Test; IBAS, Internet Behavior and Attitude Scale; IPT, Initial Preference Task; OCS, Online Cognition Scale; RSES, Rosenberg Self-Esteem Scale.
the alphabet twice) than the so far used single administration. In order to examine the IPT effect of each initial (first and last name) separately, we used the Duplicate-IPT to maintain high reliability (first-name initial: $\alpha = 0.93$, last-name initial: $\alpha = 0.82$). For the scoring of the Duplicate-IPT, the I-algorithm has been used as in Study 1.

Implicit measure of self-esteem: General Name Liking. The GNL is a single-item measure of global implicit self-esteem showing good validity and reliability. Participants were asked “How much do you like your name, in total?” and had to answer on a 9-point Likert scale ranging from 1 (not at all) to 9 (very much).

Procedure
Participants were instructed as in Study 1. Once consent was obtained, participants completed demographic questions (age, sex, mean usage of the Internet per week for private and business purposes, and general duration of Internet usage; for descriptives see Table 1) followed by the IPT (first administration), the IA-T, the RSES, the GNL, and the second administration of the IPT (using a different randomized list than at the first administration). Participants’ initials were obtained via the generation of a participant code. Once completed, the questionnaires were returned by the participants in a sealed envelope.

Study 2: Results

Correlations with Internet addiction
As in Study 1, individuals scoring high on Internet addiction used the Internet more often for private purposes ($r = 0.41$, $p < 0.001$) than for business purposes ($r = 0.11$, $p = 0.21$). Furthermore, individuals scoring high on Internet addiction possessed lower explicit self-esteem ($r = -0.22$, $p = 0.01$), replicating results from Study 1. In contrast to Study 1, participants using the Internet for a shorter period of time (i.e., users being less familiar to the Internet) were not found to have higher scores on the IA-T ($r = -0.02$, $p = 0.57$), indicating that a newbie effect could not be found.

Correlations with implicit self-esteem
As in Study 1, explicit self-esteem scores, as measured with the RSES, and implicit self-esteem scores, as measured with the IPT, were again not related to each other (see Table 2). Participants with higher implicit self-esteem, as measured with the GNL, on the other hand, revealed higher scores on the RSES. In line with the results from Study 1, implicit self-esteem, as measured with the IPT, revealed a small positive correlation with Internet addiction. And again, the effect was only apparent for the first-name initial such as in Study 1. The GNL failed to reveal such a connection with Internet addiction (Table 2).

Correlations implicit–implicit self-esteem
The IPT and GNL were correlated (IPT first: $r = 0.23$, $p = 0.008$; IPT last: $r = 0.15$, $p = 0.08$), and again, just as with the correlation between the IPT and the IA-T, the effect was higher for the first-name initial.

Regression analysis
Analyses were identical to Study 1. Again, explicit self-esteem turned out to be the strongest predictor for Internet addiction ($\beta = -0.23$, $t = -2.74$, $p = 0.007$). Implicit self-esteem was significant for the first-name initial (first-name initial: $\beta = 0.16$, $t = 1.97$, $p = 0.05$; last-name initial: $\beta = 0.09$, $t = 1.10$, $p = 0.27$), and no significant interaction was found (first-name initial: $\beta = -0.04$, $t = -0.42$, $p = 0.67$; last-name initial: $\beta = 0.04$, $t = 0.47$, $p = 0.64$).
In line with Study 1, simple slope tests were performed. As can be seen in Figure 1, participants with damaged self-esteem had higher Internet addiction scores than participants with congruent high self-esteem (first-name initial: $\beta = -0.51$, $t = -2.11$, $p = 0.04$; last-name initial: $\beta = -0.34$, $t = -1.45$, $p = 0.15$). Furthermore, participants with defensive self-esteem had lower Internet addiction scores than those with congruent high self-esteem, although only from a descriptive view (first-name initial: $\beta = 0.51$, $t = 0.94$, $p = 0.35$; last-name initial: $\beta = 0.57$, $t = 1.20$, $p = 0.23$). Effects were only significant for the participants with damaged self-esteem and, again, only apparent for the first-name initial.

General Discussion

The present research is the first systematic attempt to integrate the concept of implicit self-esteem in the context of Internet addiction. We found that higher levels of Internet addiction are associated with higher levels of implicit self-esteem, replicating results from previously reported studies examining the role of self-esteem in the context of other clinical disorders. Although the observed effect was not very strong, in Study 1, it was found for two different measures of Internet addiction (IA-T, OCS) and was replicated in Study 2. This provides evidence of the robustness of the found effect. Individuals scoring higher on Internet addiction showed lower levels of explicit self-esteem and spent more time on the Internet for private purposes than individuals scoring low on Internet addiction.

The fact that we used a retest design (Study 1) and a Duplicate-IPT (Study 2) allowed us to investigate whether the first- and the last-name initials are indicative of different facets of implicit self-esteem, while maintaining good reliability. Furthermore, we used the I-algorithm for the calculation of the name letter effect as a measure of implicit self-esteem. This algorithm was recommended because it controls for both differences in baseline likability of different letters and in individual response tendencies.

At first glance, it may appear surprising that individuals scoring high on Internet addiction were found to possess higher levels of implicit self-esteem than those scoring low on Internet addiction. This “positivity bias,” however, has also been found in the context of other clinical disorders such as depression or bulimia nervosa. As already discussed in the Introduction, this could be due to an automatic threat defense mechanism, which aims to prevent the individual from experiencing negative emotions such as anxiety. This automatic mechanism can, however, also lead to counterproductive, undesirable consequences because discrepancies between the two self-esteem systems (i.e., Internet addicts have low explicit self-esteem) may cause distress, doubt, and uncertainty, most often resulting in difficulties in re-establishing a consistent self-view. A regression analysis followed by simple slope analyses supported this view. Participants with damaged self-esteem (i.e., high implicit but low explicit self-esteem) had the highest Internet addiction scores in three out of four cases (see Figure 1). Interestingly, participants with defensive self-esteem (i.e., low implicit and high explicit self-esteem) had the lowest level of Internet addiction scores in all four cases (at least from a descriptive point of view). A simple post hoc analysis revealed that participants with damaged self-esteem had the highest mean usage of the Internet for private purposes per week, whereas participants with defensive self-esteem had the lowest mean usage (Study 1: 10.4 vs. 6.4 hours; Study 2: 12.6 vs. 7.8 hours). Hence, it can be argued that the reason why participants with defensive self-esteem do not use the Internet to the same extent as participants with damaged self-esteem may lie in differences in media usage patterns among both self-esteem profile groups. The current literature on self-esteem and media usage seems unsettled, since divergent results have been reported whether higher media usage can be found in individuals with either low or high (explicit) self-esteem. However, it can be said that current findings tend to suggest that individuals high in explicit self-esteem use the Internet less often and are therefore less likely to get addicted to it.

In general, we think future research should further investigate both implicit and explicit self-esteem in the context of Internet addiction. Investigating media usage and Internet addiction separately for both congruent and discrepant self-esteem participants might be a fruitful approach for further research to gain a deeper insight into the nature of Internet addiction.

Research using the IPT for the measurement of implicit self-esteem has almost exclusively used a mean value between the effects measured on the first- and last-name initials. Although it has been repeatedly pointed out that the two initials might reflect different aspects of implicit self-esteem, there was no empirical support for this assumption. In the current studies, we found the above-described positivity bias only when implicit self-esteem was measured with the first-name initial, thereby confirming the suggestions in recent literature that each initial might be measuring different aspects of implicit self-esteem. More generally, correlations with the IPT were only apparent or tended to be higher when the first-name initial was used. Based on the present findings, we cannot argue that this might be the case for other to-be-measured constructs, but in the case of Internet addiction, the first-name initial might be a better (i.e., more sensitive) measure of implicit self-esteem than the last name or the mean of both initials. Future research on implicit self-esteem may benefit from further investigating the IPT in assessing the effects of the first- and last-name initials separately. The newly introduced Duplicate-IPT might be a good starting point for keeping reliability at a satisfying level.

Our results are limited by the fact that the current sample was drawn from the general population (i.e., non-clinical), and therefore most participants did not score in the pathological range of Internet addiction (at least when referring to the scores of the IA-T and OCS). A way out of this would have been the recruiting of a clinical sample of Internet addicts. However, this seems to be difficult and beyond the scope of our study because Internet addiction is not yet recognized as a separate clinical disorder (i.e., it does not yet have a classification in the DSM or ICD) and therefore not explicitly diagnosed by practitioners. Although behaviors related to Internet addiction are often regarded as symptoms for other disorders, it still is difficult to screen for Internet addicts, at least because of the high comorbidity with other clinical disorders (e.g., depression). Nevertheless, we think that using actual Internet addicts may even raise effect sizes, rendering the found effect the lower limit of what might be achievable and therefore potentially interesting.
To sum up, future research on Internet addiction, as well as any other clinical disorder with self-esteem relevance, might benefit from not only looking at explicit self-esteem but also at implicit self-esteem.

Disclosure Statement

No competing financial interests exist.

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