Contents lists available at ScienceDirect

Computers in Human Behavior

Full length article

Time perspective in Internet and Facebook addiction

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ABSTRACT

Time perspective is a predictor of addictive behaviors. As the number of Internet and Facebook users is increasing, it is worth investigating the role of time perspective in maladaptive types of usage. In this study, we examined the potential relationship of time perspective with Internet addiction and Facebook intrusion. The participants were 756 Internet users with Facebook accounts. We used the Zimbardo Time Perspective Inventory, the Facebook Intrusion Questionnaire, the Facebook Intensity Scale, and the Internet Addiction Test. We analyzed similar associations between time perspective and the two types of addiction. Age and daily time spent online were predictors of Internet addiction, Facebook intensity, and Facebook intrusion. Past Negative and Present Fatalistic orientations were positive predictors for both types of addiction, whereas Future time perspective was a negative predictor. Present Hedonistic orientation was a negative predictor only of Internet addiction. The findings of this study may contribute to the development of health promotion interventions and workshops aimed at preventing maladaptive online behaviors.

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1. Introduction

Nowadays, the Internet has become an indispensable tool in many aspects of life. In 2014, the number of Internet users reached over 3 billion, which means 40% of the world population have access to the Internet (Internet Live Stats, 2015). The trends observable in contemporary society include an increasing amount of time spent online, the Internet being commonly used at work and at home (Eurostat, 2013), or the decreasing age of the first Internet use (Pew Research Center, 2012). According to Eurostat (2014), 78% households in Europe have Internet access, which means having access to the virtual world is no longer a luxury. This omnipresence of the Internet puts many users in danger of becoming addicted to it. According to some statistics, there may be between 6% and 13% of addicts among Internet users (Morahan-Martin, 2005). In addition, some authors outline different subtypes of Internet addiction, such as Facebook addiction (Andreassen, Torsheim, Brunborg, & Pallesen, 2012), online gaming addiction (Kuss, Louws, & Wiers, 2012), or Internet sex addiction (Young, 2008). As social networking sites enjoy an increasing popularity (especially

Facebook, with more than 1393 billion Facebook users at present; Facebook, 2014), people more and more often experience problems that stem from using them in maladaptive ways. The terms functioning in the literature — "Facebook addiction" (Andreassen et al., 2012) or "Facebook intrusion" (Elphinston & Noller, 2011) — are defined as excessive involvement in Facebook that disrupts everyday activities, leads to compulsive use of the site, and manifests itself in neglecting social life. Considering the increasingly strong influence of the Internet on human life, it seems of paramount importance to determine the factors that may contribute to dysfunctional Internet use. In addressing this problem, time perspective with its robust predictive power may suggest interesting answers.

Time Perspective (TP) may be defined as an individual's concentration on particular dimensions of time. Zimbardo, Keough and Boyd (1997) distinguish five of them: Past Positive, Past Negative, Present Hedonistic, Present Fatalistic, and Future (Zimbardo et al., 1997). People divide and classify life events according to these dimensions. TP is a sociocognitive variable that comprises ideas about oneself, about the world, and about others, as well as a person's goals, expectations, and memories. It is possible to identify certain characteristics associated with different types of TP. Those who are future-oriented set their goals more accurately; they are able to restrain themselves from succumbing to current temptations and more easily delay gratification (Zimbardo & Boyd, 2008). At the same time, however, they tend not to concentrate sufficiently on

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present enjoyment and may neglect private aspects of their life. Those who are more past-oriented live by their memories; they cultivate traditions, and their mind often drifts back to the times that have gone by. Those who are present-oriented tend to be able to derive pleasure from current events and enjoy their life more fully. At the same time, they may have difficulties in setting goals for the future and be more willing to take risks.

The concept of time perspective has been examined in connection with many aspects of human activity and applied to a wide range of issues – for instance, to academic achievement (e.g., de Voider & Lens, 1982), delayed gratification (e.g., Wu & He, 2012), career decision-making (e.g., Walker & Tracey, 2012), health behavior (e.g., Crockett, Weinman, Hankins, & Marteau, 2009), or HIV risk (e.g., Rothspan & Read, 1996). There is a vast body of research that investigated the role of TP in several types of addiction. The TP theory has been widely used to explain addictive behaviors. Researchers have found a significant role of TP in gambling (e.g., Sharif-Razi, Kaya, Mihajlovic, Deamond, & Nussbaum, 2012). The study by MacKillop, Anderson, Castelda, Mattson, and Donovick (2006) revealed that symptoms of pathological gambling correlated positively with present time orientation and negatively with the Future subscale. What is more, shorter time horizons were found in pathological gamblers (Hodgins & Engel, 2002). Those who were more present-oriented reported higher use of alcohol, drugs, and tobacco (Keough, Zimbardo, & Boyd, 1999), as well as higher cannabis use (Apostolidis, Fieulaine, Simonin, & Rolland, 2006). Future orientation was negatively related to substance use, and the pattern was the opposite in the case of present orientations (Wills, Sandy, & Yaeger, 2001). Tests revealed that coping and negative affectivity were mediators in the relationship between TP and substance use. Present orientation correlated with negative self-esteem, lack of control, maladaptive coping, and negative affectivity, whereas Future orientation correlated negatively with anger coping and positively with perceived control, behavioral coping, self-esteem, and positive affectivity (Wills et al., 2001).

Future perspective correlated negatively with cannabis consumption (Apostolidis et al., 2006). TP was associated with risk perception. Those who were high on the Future scale perceived greater risk in substance use in comparison with Present Hedonistic persons. Higher consideration for future consequences was associated with lower proneness to hazardous drinking (Beenstock, Adams, & White, 2011). Hall et al. (2012) showed that Future time perspective enhances attempts to quit smoking. Similarly, Merson and Perriot (2012) confirmed the role of Future time perspective in smoking cessation; additionally, the Past Negative and Present Fatalistic dimensions were associated with failure to quit smoking. In his longitudinal study, Adams (2009) investigated the link between TP and smoking cessation. He concluded that enhanced Future orientation may guarantee the effectiveness of quit smoking interventions.

Another area where TP makes a difference might be the use of the Internet and social networking sites; however, this is not reflected well in the literature. For instance, Chittaro and Vianello (2013) investigated this issue recently on an Italian sample. The authors found that Past Negative and Present Fatalistic orientations can be predictors of problematic Internet use. Lukavska (2012) examined the relationship between time perspective and massive multiplayer online role-playing game (MMORPG) playing. To measure TP, she used the Zimbardo Time Perspective Inventory (ZTPI). Each time orientation was examined in terms of how it related to the frequency of MMORPG playing. Future perspective correlated negatively with time spent playing, while present perspective was positively associated with it. The author underlines that the TP theory can be successfully applied in therapy.

Taken together, the above findings support the conclusion that having a negative view of one's past and present may be related to Facebook and Internet activity. Negative attitude towards time indicated a higher probability of depression, anxiety (Linden, Lau-Barraco, & Hollis, 2014), and psychiatric problems (van Beek, Berghuis, Kerkhof, & Beekman, 2011). A review of the literature reveals a relationship between depressive symptoms and Internet addiction (e.g., Banjanin, Banjanin, Dimitrijevic, & Pantic, 2015) as well as Facebook addiction (e.g., Błachnio, Przepiorka, & Pantic, 2015). Given that personality traits are strongly related to Internet addiction (Amichai-Hamburger & Hayat, 2013) and that there is a strong correlation between TP and personality (e.g, Zhang & Howell, 2011), the relationship between online behavior and TP may be a fruitful direction for research. Future-oriented people – namely, those who consider the future consequences of their behavior and attach great importance to their goals – should be more resistant to harmful habits. Additionally, Future perspective is related to conscientiousness (Adams & Nettle, 2009), a personality trait negatively related to Internet addiction (Wang, Ho, Chan, & Tse, 2015).

The present study is aimed at filling the abovementioned gap in research on the association between TP and online addictions. The area where we have applied the time perspective theory also includes social networking sites, exemplified by Facebook. This is quite a novel approach to explaining addictive tendencies, which consists in exploring the role of TP in predicting Internet addiction, Facebook intrusion, and Facebook intensity. On the basis of previous findings, we assumed that Past Negative and Present Fatalistic perspectives would be positively related to Internet and Facebook addiction and Facebook intensity and that there would be a negative relationship between Future time perspective and these addictions.

2. Method

2.1. Participants and procedure

The sample consisted of 756 Polish participants; 59% of them were women. The mean age of the participants was $M = 21.38$ years ($SD = 5.42$ years; range: from 18 to 58 years). The participants had been Internet users for an average of 9.52 years ($SD = 5.73$). On average, they spent 4.45 h per day online ($SD = 3.30$). They were all Internet users and had Facebook profiles. They were informed that they were taking part in a study whose aim was to examine online activity. The snowball sampling procedure was used for recruiting participants: the link to the study was posted on Facebook, and visitors were asked to share it on the their profiles. The participants received no remuneration for taking part in our research project.

2.2. Instruments

The participants completed the Polish adaptations of three questionnaires. When a Polish version was not available, it was created by means of the back translation procedure.

To measure TP, we used the 15-item *Zimbardo Time Perspective Inventory* (ZTPI; e.g., Zimbardo & Boyd, 1999) in a Polish adaptation by Cybis, Rowinski, and Przepiorka (2012). A short version of this measure was proposed by Zhang, Howell, and Bowerman (2013). They obtained the abbreviated 15-item ZTPI (SZTPI-15) with verified convergent and discriminant validity, external validity, test–retest reliability, and self-peer ratings. It consists of five scales, corresponding to five time orientations: Past Negative, which measures negative attitude to the past and frequently thinking back to negatively evaluated events (e.g., *I think about the bad things that have happened to me in the past*; 3 items; $\alpha = .74$); Present

Hedonistic, which measures focus on pleasure experienced "here and now" as well as disregard of past experience and the future consequences of one's actions (e.g., *I believe that getting together with one's friends to party is one of life's important pleasures*; 15 items; α = .63); Future, measuring focus on goals and the formulation of future plans (e.g., *I am able to resist temptations when I know that there is work to be done*; 3 items; α = .71); Past Positive, which measures thinking back to positively evaluated past events (e.g., *Happy memories of good times spring readily to mind*; 3 items; α = .51); Present Fatalistic, measuring focus on the present combined with a belief that one has no influence on the future (e.g., *Fate determines much in my life*; 3 items; α = .56). Responses were given on a 5-point Likert scale, ranging from 1 (*very untrue*) to 5 (*very true*).

The Facebook Intrusion Questionnaire, developed by Elphinston and Noller (2011), is based on behavioral addiction components and a scale measuring Facebook involvement. The instrument consists of eight items (e.g., *I have been unable to reduce my Facebook use*) measuring the relations between the tendency for Facebook involvement and eight dimensions of behavioral addiction, namely: cognitive salience, behavioral salience, interpersonal conflict, conflict with other activities, euphoria, loss of control, withdrawal, as well as relapse and reinstatement. The items are rated on a 7-point Likert scale, from 1 (*strongly disagree*) to 7 (*strongly agree*). In the present study Cronbach's α was .84.

The Facebook Intensity Scale (FBI; Ellison, Steinfield, & Lampe, 2007) measures the intensity and frequency of Facebook use. It contains eight items (e.g., *Facebook is part of my everyday activity* or *I would be sorry if Facebook shut down*). The Polish version of the scale in the present study had Cronbach's α of .84. FBI combines two aspects of Facebook intensity and engagement in Facebook: the number of Facebook friends and the amount time spent on Facebook.

The Internet Addiction Test (Young, 1998), adapted into Polish by Hawi, Blachnio et al. (2015), measures Internet addiction. It comprises 20 items, rated on the following Likert scale: *not applicable*, *rarely*, *occasionally*, *frequently*, *often*, and *always*. Cronbach's α was .93.

3. Results

In the first step of the analyses, we tested the hypothesis concerning the association between TP and Internet and Facebook addictions as well as Facebook intensity. The descriptive statistics and intercorrelations between variables for the total sample are presented in Table 1. As predicated, Past Negative time perspective was positively correlated with Internet addiction, Facebook intrusion, and Facebook intensity. Past Positive orientation correlated positively with Facebook intensity and Facebook intrusion. Present Hedonistic orientation correlated negatively with Internet addiction and Facebook intensity and was not significantly related to

Facebook intrusion. There was a significant positive association between Present Fatalistic orientation and Internet addiction, Facebook intrusion, and Facebook intensity. Future time perspective correlated negatively with Internet addiction, Facebook intrusion, and Facebook intensity.

Furthermore, we used hierarchical multiple regression analysis in order to assess the impact of demographic and time perspective variables on Internet addiction, Facebook intensity, and Facebook intrusion. In the first step, we entered demographic variables (gender, age, years of using the Internet, daily time spent online), and in the second step we entered TP. Table 2 presents the results of regression analyses for Internet addiction, Facebook intensity, and Facebook intrusion.

In the first step, age (β = −.18, $p < .001$), years of using the Internet (β = .09, $p < .05$), and daily time spent online (β = .18, $p < .001$) turned out to be significant predictors. Entering TP in Step 2 resulted in a statistically significant increment in the explained variance (R^2 change = .17, $F(9, 747) = 26.671$, $p < .001$). Our assumptions concerning the relationship between Past Negative and Present Fatalistic orientations and Internet addiction were supported. Analysis showed that Past Negative and Present Fatalistic orientations had significant positive beta weights (β = .18, $p < .001$ and β = .27, $p < .001$, respectively), the same was the case for daily time spent online (β = .14, $p < .001$). Age remained a significant negative predictor of Internet addiction (β = −.13, $p < .001$). Present Hedonistic and Future orientations were significant positive predictors (β = −.18, $p < .001$ and β = −.16, $p < .001$, respectively).

The same procedure was applied to Facebook intensity. The results are presented in the Table 2. We entered gender, age, years of Internet use, and daily time spent online in the first step and perspective in the second. In the first step gender, age, and daily time spent online turned out to be predictors of Facebook intensity (β = −.14, $p < .001$; β = −.22, $p < .001$; β = .25, $p < .001$, respectively). The same demographic variables remained significant predictors of Facebook intensity when TP was entered in the second step. Regarding TP, Past Negative and Past Positive orientations were positive predictors of Facebook intensity (β = .15, $p < .001$; β = .11, $p < .005$; β = .09, $p < .001$; β = .20, $p < .005$, respectively), whereas Future orientation was a negative predictor of this variable (β = −.17, $p < .001$), supporting our hypotheses.

The same procedure was applied to Facebook intrusion. The variables from the first step (gender, age, years of Internet use, and daily time spent online) remained significant. Gender, age, and Future time perspective were significant negative predictors of Facebook intrusion (β = −.11, $p < .001$; β = −.11, $p < .001$; β = −.21, $p < .001$), while years of Internet use, daily time spent online, as well as Past Negative and Present Fatalistic orientations were positive predictors of this variable (β = .11, $p < .001$; β = .09, $p < .001$; β = .19, $p < .001$; β = .19, $p < .001$, respectively).

Table 1
Intercorrelations among the variables in the sample ($N = 756$).

	M (SD)	1	2	3	4	5	6	7	8
1. Internet Addiction	1.60 (.96)	—							
2. FB Intensity	−.01 (.67)	.55***	—						
3. FB Intrusion	2.98 (1.24)	.69***	.69***	—					
4. Past Negative	3.28 (1.02)	.26***	.24***	.27***	—				
5. Past Positive	3.41 (.85)	.01	.12**	.07	.12**	—			
6. Present Hedonistic	4.01 (.83)	−.14***	.13**	.01	.14***	.38***	—		
7. Present Fatalistic	2.65 (.88)	.34***	.13***	.26***	.23***	.17***	.01	—	
8. Future	3.23 (.93)	−.17***	−.18***	−.19***	.01	.21***	.14***	.08*	—

*$p < .05$; **$p < .01$; ***$p < .001$.

Table 2
Regression analysis results in predicting Internet addiction, Facebook intensity, and Facebook intrusion ($N = 756$).

	Internet addiction		Facebook intensity		Facebook intrusion	
	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2
Gender	.02	.03	−.14***	−.12***	−.13***	−.11**
Age	−.18***	−.13***	−.22***	−.14**	−.19***	−.11**
Internet use (years)	.09*	.08*	.05	.03	.13**	.11**
Daily time spent online (hours)	.18***	.14***	.25***	.23***	.13**	.09*
Past Negative		.18***		.15***		.19***
Past Positive		.04		.11**		.06
Present Hedonistic		−.18***		.04		−.03
Present Fatalistic		.27***		.05		.19***
Future		−.16***		−.17***		−.21***
R^2	.07	.24	.12	.19	.07	.19
R^2 change	.07***	.17***	.13***	.07***	.08***	.12***
F	$F(4, 747) = 14.115$***	$F(9, 747) = 26.671$***	$F(4, 747) = 24.362$***	$F(9, 747) = 17.877$***	$F(4, 747) = 15.934$***	$F(9, 747) = 20.529$***

* $p < .05$; ** $p < .01$; *** $p < .001$.
Note. All beta weights are standardized; all R^2 values presented in the table are adjusted R^2.

4. Discussion

The main aim of the study was to examine how TP is related to Internet and Facebook addiction as well as Facebook intensity. The set of predictors revealed for the two maladaptive ways of using the Internet and Facebook was very similar, which may confirm the universal pattern of developing online addiction. It was revealed that high Negative Past and Fatalistic Present orientation are associated with a tendency for addictive Internet and Facebook use, whereas high Future orientation plays the role of a kind of buffer against these two types of addiction. Present Hedonistic orientation was a negative predictor only of Internet addiction.

Regarding TP, it was confirmed that people with a Past Negative and Present Fatalistic time perspective are more vulnerable to Internet and Facebook addiction. In the literature, Past Negative and Present Fatalistic orientations have been found to be related to those individual characteristics that are specific to Internet and Facebook addiction, such as low emotional stability, depression, and low self-esteem or external locus of control (for a review, see e.g., Blachnio et al., 2015; Chak & Leung, 2004; Hamburger & Ben-Artzi, 2000). It is worth noting that the same relations were revealed by Chittaro and Vianello (2013), who found associations between Past Negative and Present Fatalistic orientations and problematic Internet use.

Surprisingly, we found the relationship between Present Hedonistic orientation and Internet addiction to be the opposite of what we expected based on what had been presented in previous studies concerning other kinds of addiction, such as alcohol or gambling addiction. This may stem from the fact that Internet addiction is a type of addiction that differs from other types (Block, 2008). The present study revealed the negative contribution of Present Hedonistic orientation to the higher risk of Internet addiction. However, considering that the participants were mostly members of the young generation born in the 1990s, for whom the Internet is no longer a luxury but a rather common technological product, this result is not surprising. Bearing in mind that Present Hedonistic orientation is related to activities that bring happiness and to avoiding boredom (Sailer et al., 2014), one will note that it may stimulate various behaviors and does not actually have to mean excessive Internet use aimed at the fulfillment of needs. Moreover, a substantial body of research shows that Present Hedonistic orientation is also related to life satisfaction (Sailer et al., 2014), and in older adults it is associated with high positive affect (Desmyter & De Raedt, 2012). In this light, the negative relationship between Internet addiction and Present Hedonistic orientation becomes understandable.

The present findings are in line with the notion, based on the findings of other studies, that Future time perspective is a kind of buffer against addictive tendencies. We found Future orientation to be a negative predictor of Internet and Facebook addiction. Previous studies showed that Future perspective is related to conscientiousness and the consideration of future consequences; Future orientation is characteristic for those who are emotionally stable and have a higher tolerance for frustration (Zimbardo & Boyd, 1999). Wang et al. (2015) showed that a low level of conscientiousness is a predictor of Internet addiction. Accordingly, some results confirm the negative relationship between conscientiousness and social networking sites addiction (Wilson, Fornasier, & White, 2010).

We found Facebook intensity to be related to Past Positive orientation. This can be explained by the fact that one of the motives for using Facebook is keeping up with one's acquaintances' lives and building social capital (Ellison, Steinfield, & Lampe, 2007). Those who are oriented positively towards the past are willing to maintain and cultivate their relationships from the past, and Facebook enables them to fulfill this need. Interestingly, those who perceive the world in a negative or fatalistic way also use Facebook more intensively. They have more Facebook friends and spend a longer time logged in there. It can be supposed that for such users Facebook may be a kind of escape from the real world and real problems. Other studies actually confirm this assumption, showing that Facebook addiction is related to avoidance and emotional strategies of coping with stress (author's work under review).

As regards demographic variables, we found age and daily time spent online to be predictors of Internet addiction, Facebook intensity, and Facebook intrusion. Our findings show that younger users and those who spent more time online are clearly at greater risk of developing Internet and Facebook addiction. This is consistent with the study that showed that the more intense is the use of Facebook, the higher is the risk of Facebook addiction (author's work under review). The result pointing to young age as a predictor of both types addiction is quite logical, since most participants were born between 1980 and 1990, which makes them members of the so-called Y-generation, or Millennials, who spend more time online than older generations do (Pew Research Center, 2009). As regards gender, it we found it to be a significant predictor only of Facebook intensity and Facebook intrusion. Females were more likely to be addicted to Facebook than males. Perhaps this is because the applications offered by Facebook may be attractive for females. Statistics also show that females are more active on Facebook than males and that there are more Facebook users in this group (Gourdeau, 2015).

4.1. Limitations and future research

The present study has some limitations that should be taken into account. The first and main one is the use of self-reported data, which can be less reliable and more biased. In future studies, additional indices or different methods for measuring addictions should be applied. Another possible limitation of the present study is the fact that only one type of Internet addiction was considered. It would be beneficial to broaden the scope of research to include online gaming or online gambling addiction. Also, some of the subscales of the time perspective measure had low reliability. However this result may stem from the fact that we used a short version of the ZTPI. Other short versions of this scale have similar reliabilities (for review see Orosz, Dombi, Tóth-Király, & Roland-Lévy, 2015). Researchers using shorter versions of different measures should be aware of certain methodological concerns, such as reduced criterion validity (see Credé, Harms, Niehorster, & Gaye-Valentine, 2012). It should be pointed out that the use of the short version in the present study reflects a general tendency in a number of psychological domains, not only in research on time perspective in different cultural contexts (Wang, Chen, Cui, & Liu, 2015; Zhang et al., 2013) but also in personality research (e.g., Gosling, Rentfrow, & Swann, 2003) or organizational psychology (Nagy, 2002). It is even more vital in Internet research because of the reduction of the time needed for questionnaire completion. We decided also to use a short version of the scale instead of the longer version also because in previous studies some criticism had been raised against the latter regarding low loadings and low CFA model fit (Sircova et al., 2014).

In the next study, the cross-cultural direction should be considered. An answer to the question of whether people who have a problem with excessive Internet use have the same attitude to time in different cultures could be interesting. Consistency between our Polish study and the Italian study by Chittaro and Vianello (2013) indicates that this direction should be continued. What is more, as the previous studies confirmed the associations between Internet addictions and different personality traits (Amichai-Hamburger & Hayat, 2013), it would be valuable to introduce TP as a possible mediator or moderator of this relationship in future studies.

5. Conclusions

Despite its limitations, the above investigation has increased the knowledge of online behaviors. The present study showed the associations of TP with Internet addiction and Facebook intrusion. It confirmed that TP has a great explanatory power for maladaptive behaviors. In particular, our study demonstrated that young age, long daily time spent online, negative evaluation of the past, a fatalistic view of the present, and not thinking about the future are predictors of both Internet addiction and Facebook addiction.

These findings afford a better understanding of the mechanism behind the development of Internet and Facebook addiction. They could be widely used among psychologists, psychiatrists, counselors, and teachers and serve as a foundation for workshops and counseling. It seems that being oriented towards future goals can serve as a barrier preventing pathological Internet use.

Acknowledgment

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