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Unveiling the dark side of social networking sites: Personal and work-related consequences of social networking site addiction

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ABSTRACT

Although previous research has explored the effects of social networking site (SNS) use in organizations, researchers have focused little on its negative consequences. This article attempts to fill this void by examining, through the lens of social cognitive theory, the extent SNS addiction impacts personal and work environments. The results, based on 276 questionnaires completed by employees in a large information technology corporation, show that addiction to SNSs has negative consequences on the personal and work environments. SNS addiction reduces positive emotions that augment performance and enhance health. SNS addiction fosters task distraction, which inhibits performance. Theoretical and practical implications are discussed.

1. Introduction

The advent of social networking sites (SNSs) such as Facebook, Twitter, Google+, Instagram has changed the way individuals connect and communicate with each other within organizations. Many individuals use SNSs [1,2] to the extent that they may spend approximately 8 h a day [3].

SNSs can have positive work-related outcomes [2,4–6] by making employees more connected and providing access to resources at work necessary for enhanced performance. However, excessive use of these SNSs may also promote negative outcomes, such as addiction, distraction, reduced positive emotions, low performance, and poor health [7,8]. The excessive use of SNSs has recently been proposed as a behavioral addiction because it shares several features found in other types of addiction, such as withdrawal, tolerance, relapse, conflict, and mood modification [9,10]. Although SNS addiction is not formally recognized as a diagnosis [11], it can be broadly defined as a psychological dependence on the use of SNSs that interferes with other important activities and yields negative consequences [12,13].

As a result, growing concern over the addictive use of SNSs has elicited a surge of research ranging from causes to consequences of this behavior [3,12,14–24]. Despite mounting interest in SNS addiction, little is known about its consequences on personal and work-related outcomes. Furthermore, the current SNS addiction literature also lacks a theoretical framework that explains in detail how SNS addiction, as a behavior, might influence different environments, both work and personal. Such limitations hinder further expansion of SNS addiction research and our understanding of why and how such behavior tends to be problematic for certain environments. In the current study, these limitations are addressed by integrating SNS addiction with personal and work-related consequences through the lens of social cognitive theory (SCT).

Our theoretical framework is based on Bandura's reciprocal determinism concept in SCT [25], which postulates that an individual's behavior can change the way the environment (personal and work) is perceived by him or her and the way that individual interacts with the environment. In this study, we concentrate on a subset of key personal and work-related consequences of SNS addiction. In particular, we focus on personal factors of positive emotions and health and work-related factors of task distraction and performance. The positive emotions concept captures the personal psychological feelings that broaden and build one's "enduring personal resources" and enable thoughts and actions that contribute to successful personal and work-related outcomes [26]. The significance of work-environment factors studied–task distraction and performance–and their impact have been previously researched [27–29], but the effects of SNS addiction on these factors have not been studied.

There are a number of key theoretical and practical implications of this study. From a theoretical perspective, this study contributes to the emerging body of knowledge about SNS addiction by offering a theoretical explanation and empirical support for the impact of SNS addiction behavior on work and personal environments. From a

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practical perspective, this study informs the management of information technology through greater understanding of the consequences of SNS addiction, and this may provide guidelines that can help mitigate the consequences of SNS addiction among organizational members.

This paper is organized as follows. In the next section, a brief review of the relevant literature is presented, which focuses on SCT. The literature review is discussed and concluded with theoretical hypotheses to be tested. The research methodology is then described, and the results of the structural equation modeling analysis are presented. This paper ends with a discussion of the study's implications and suggestions for future research, limitations of the study, and conclusions.

2. Literature review and theoretical development

2.1. Social networking sites

A plethora of research on SNS use has been published in recent years because of its exponential growth [1,2]. For instance, as of March 2017, there were on average 1.28 billion active users on Facebook sites per day [30]. Another report indicated that the average time spent by Facebook users alone has increased from 40 min in 2014 to 50 min in 2016 [31].

The debate over the effects of SNS use is not yet settled; some evidence shows that it can have a positive impact while other efforts indicate a negative one [5,32–34]. Research on positive effects has shown that SNS use enhances self-esteem and satisfaction in life among youths [34], enhances work outcomes such as job performance [35–37,5], yields organizational commitment [38], and elicits social responses such as informational resources [2].

In contrast, there are findings in the literature asserting that SNS use yields negative outcomes [39]. For instance, evidence shows that people who continuously use Facebook tend to compare their lives with others and perceive that others are better off [40]. Although these studies enhance our understanding about the use of SNSs, the impact of SNS addictive behavior on personal and work environments has received minimal attention.

2.2. Previous research on technology addiction

Research on technology addiction has flourished in recent decades. Despite the widespread consensus in the literature on the existence of technology addiction [41,18,24,13], the medical community still does not recognize it as a formal disorder [39,11]. The growing body of work on technology addiction has not yet arrived at a conceptual agreement about technology addiction nor its assessment instruments [41]. To refer to this concept, the following multiple terms have been used [42]: computer addiction [43], cyber-relationship addiction [44], Internet addiction [45–48], compulsive Internet use [49], Internet gambling addiction [50], Internet gaming addiction [51], mobile phone addiction [52,53], online auction addiction [13], Internet sex addiction [54], and SNS addiction [18]. Despite the lack of consensus of addiction definition, most scholars agree that technology addiction encompasses psychological dependence on the use of technology [12,13]. Among the different types of technology addictions, SNS addiction is the most recent phenomenon.

Previous studies on SNS addiction have highlighted a number of important topics such as psychological and socioeconomic predictors of SNS addiction [15,21,23], a link between SNS addiction and use [12,24], SNS addiction and security [3], SNS addiction and psychological problems [17,20,22], and evaluation of SNS addiction [14,16,18,19,55]. In particular, some of the extant literature focused on predictors of SNS addiction [56,57]. One of the earliest studies on SNS addiction reported that young people are more vulnerable to falling into SNS addiction [56]. It is also argued that the symptoms of SNS addiction resemble those of chemical and nonchemical addictions [56]. Personality traits [58] and self-esteem factors [59] such as extroversion and low conscientiousness were identified as significant predictors of SNS addiction [57]. In addition, loneliness, relationship building, and social activities were found to be significant predictors of SNS addiction [60].

A limited number of studies were geared toward the consequences rather than the predictors of SNS addiction. For example, a case study by Karaiskos et al. [61] reported that SNS addiction led to significant adverse effects in a woman's life including anxiety, insomnia, and loss of her job.

Although these efforts have expanded our understanding of SNS addiction from various angles, research in this area is relatively underdeveloped–mainly because it lacks empirically testable theories that can explain how SNS addiction impacts environments. To the best of the authors' knowledge, no research has yet studied the consequences of SNS addiction on personal and work-related outcomes based on a solid theoretical framework. Therefore, examining the impact of SNS addiction on personal and work environments through the lens of SCT in this study is an attempt to fill this gap in the literature.

2.3. Social cognitive theory

SCT was used as the theoretical framework for this study because it facilitates continuous and reciprocal interaction among behavior, personal factors, and the environment. Bandura's reciprocal determinism model in SCT consists of triadic factors—the person, the behavior, and the environment—where they interactively function as determinants of each other [25]. Studies using SCT often focus on subsets of the theory, i.e., one or two factors [62,53]. In the present study, the interaction between behavior and environment factors is the focus. To keep it simple, in this study, the focus is on the impact of the behavior on the environment despite the fact that the environment can also impact the behavior.

The reciprocal determinism concept in SCT [25] postulates that an individual's behavior (e.g., SNS addictive behavior) can change how the environment (e.g., workplace and personal environments) is perceived and how that individual in turn interacts with the environment. According to SCT, individuals addicted to an information technology, e.g., SNSs, are not only affected by their environment (e.g., social influence) but also by their behavior (e.g., addictive use of SNSs) and can also influence their environment. SNS users who show signs of addictive behaviors that regularly interfere with other tasks will have an impact on their environments, both personal and work.

2.4. SNS addiction effects on work and personal environments

Although scholars began studying the effect of technological addiction such as Internet addiction late in the past century [63], research into the growing phenomenon of SNS addiction did not appear in the literature until earlier this decade [18]. In this study, the consequences of SNS addictive behavior on both the personal and work environments are examined.

Addictive SNS behaviors cause conflicts between users and their environments and ultimately change the environment. Drawing on SCT, it is postulated that SNS addictive behavior results in friction between SNS users and their work environment and eventually impairs job performance. Individuals addicted to SNSs would be expected to perform worse because they tend to put more effort and time in SNSs and neglect other activities [64]. Recent evidence showed that the personal use of SNSs in the workplace slightly reduced perceived performance [65]. As of 2012, one study estimated that SNS nonwork use was costing American businesses over $650 billion a year [66]. One cost of employees' excessive SNS use for employers is decreased employee performance [66]. Although some organizations attempted to ban the use of SNSs at work to avoid these negative outcomes, most attempts have failed because workers use their mobiles to access SNSs. In addition, research has shown that extended access to addictive

stimuli elicits cognitive deficits such as that on working memory [67,68], which would result in forgetting how to perform certain tasks, difficulty with problem-solving, and taking more time to process new information. Therefore, such behaviors may negatively impact the individual's work environment—job performance. One can speculate that SNS addiction may negatively impair the individual's performance in the workplace, leading to the hypothesis

H1. *Greater addiction to SNSs reduces performance.*

Addictive behavior to SNSs may also impact the work environment by being a source of task distraction. Using SNSs excessively, employees can easily lose task attention, especially since they have access to sites from portable devices such as smart phones and tablets. Addicted SNS users tend to suffer from an urge-driven disorder [61] and deficient self-regulation [3], both of which keep them constantly attuned to their SNSs and with diminished control over addictive actions. This constant thinking about things that they want to do on SNSs makes it hard for them to pay attention to other tasks, leading to the hypothesis

H2. *Greater addiction to SNSs increases task distraction.*

Addictive behavior (i.e., SNS addiction) may have an impact on the personal environment [25], by inhibiting positive emotions [69]. The psychological dependence of addicts deprives them of enjoyable social lives [70] and leads them to neglect their personal lives [64]. Recent supportive evidence shows that SNS addiction is associated with mental health problems such as anxiety, depression, and stress [20].

Individuals in general strive to feel good [71]. However, some individuals resort to behaviors such as SNS use as a shortcut to gain such feelings [72]. Theorists posit that there is a cost to the individual to getting such instant gratification so cheaply without making the effort to use one's own strengths, virtue, and meaning [73]. The cost of such instant gratification is addiction, and SNS addiction may adversely influence an individual's ability to interact with others [53]. As individuals use SNSs excessively, they displace time that would otherwise have been used for social interaction. Time spent on SNSs by addicts could erode the "stimuli" that broaden and build positive emotions [26]. Their preoccupation with SNSs drives addicts to socially isolate themselves, which leads to emotional discomfort. In fact, recent evidence shows that SNS addiction is associated with increased difficulties in regulating emotions [17]. In the context of this paper, this rationale suggests addicts with extreme devotion to SNSs may not experience as many positive feelings, ultimately depriving themselves of experiencing positive emotions such as joy, happiness, contentment, love, and pride. Therefore, it is postulated that SNS addiction can have a negative impact on positive emotions by increasing the time spent alone and sacrificing time with loved ones.

According to SCT, behavior may alter the environment [25]. It can therefore be argued that addictive behaviors lead to conflicts between users and their personal environments. In particular, SNS addiction was postulated to alter the personal environment by reducing users' positive emotions, leading to the hypothesis

H3. *Greater addiction to SNSs reduces positive emotions.*

2.5. Task distraction effect

Distraction refers to competing reaction tendencies [74]. One can suggest that activities such as using SNS might distract attention from performing job tasks at hand as a result of the constant mental attachment that competes with job tasks. Distraction by SNSs is highly visible in society nowadays with users tuned to their devices while walking, sitting, and even in restrooms. Distraction impairs performance on some types of tasks [74] because of the decrease in the amount of attention and time dedicated to job tasks. It has been reported that such distractions by other technologies reduce the performance of medical residents in capturing patients' clinical information [75]. In fact, electronic distraction, including by SNSs, was considered one of the top 10 medical technology hazards in 2013 [76] that impede performance. In particular, studies report that on average SNS distraction occurs every 10 min, and it takes approximately 30 min for an employee to continue with the job task at hand after being distracted by SNSs [66]. Unfortunately, SNS addiction not only consumes time but also distracts employees from performing their work tasks. Accordingly, in this paper, it is posited that the divided attention resulting from SNS addiction can prevent users from thinking clearly about the tasks at hand, ultimately impairing performance and thus leading to the hypothesis

H4. *Greater task distraction reduces performance.*

2.6. Positive emotions effects

Positive emotions—such as joy, interest, contentment, love, and the like—have been theorized to broaden peoples' momentary thought–action repertoires and build the individual's enduring personal, physical, intellectual, social, and psychological resources [26,77]. Joy, for example, generates the urge to strive and be innovative, while interest produces the urge to seek new experiences and information, which creates knowledge and intellectual complexity [78]. These discrete positive emotions share the feature of enhancing an individual's enduring personal resources necessary to maintain quality outcomes such as health and enhanced work performance [26,78].

In the personal environment, positive emotions can improve mental and physical health and well-being [79]. Positive emotions help improve mental health by reducing negative emotions such as depression, anxiety, aggression, and stress-related health issues [79]. For example, experiencing positive emotions during stressful periods could help produce stress resistance by interrupting the experiences of negative emotions. In fact, positive emotions are posited to hasten the recovery process, in particular, during stressful times, because they play an important protective and healing role [80]. These outcomes from positive emotions are so durable that they can function as assets to be utilized later [81]. Therefore, it is posited that positive emotions will improve employee's health, leading to the hypothesis

H5. *Greater positive emotions improve health.*

Positive emotions can also have an impact on the work environment. In this research, we argue that positive emotions stimulate a greater thought–action repertoire and discovery of innovative and novel actions and ideas [82], which can be a recipe for improved performance. Positive emotions enlarge an individual's personal, social, physical, intellectual, and psychological resources and can help improve work-related outcomes [81]. There is evidence that the impact of positive emotions lasts longer than the transient emotional state that caused them [77,81], which can mean a more enduring positive impact on work performance. Therefore, it is posited that positive emotions will not only improve one's personal environment, as hypothesized in H5, but will also enhance one's work environment represented by performance, leading to the hypothesis

H6. *Greater positive emotions improve performance.*

3. Research method

To test our proposed hypotheses shown in Fig. 1, a survey was conducted at a large information technology corporation headquartered in the Midwest region of the United States. On the condition that the practical implications of our study findings would be shared, the two managers of the social computing initiative agreed to allow a survey of their employees in the US and worldwide on their use of SNSs. Email invitations were sent to 10,000 randomly selected employees to participate in a web-based questionnaire survey. In return for their

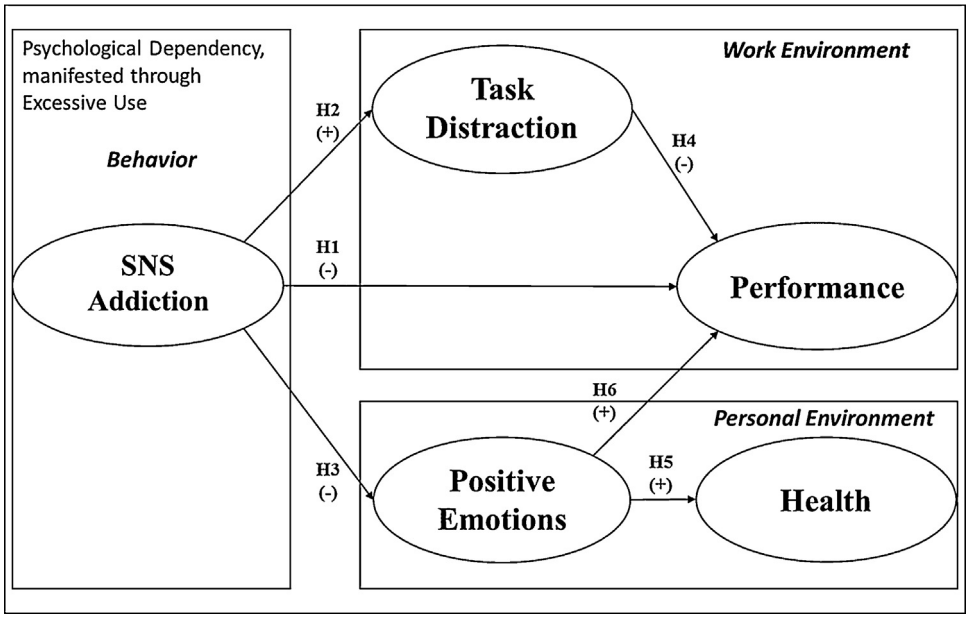

Fig. 1. Model with related hypotheses.

participation, respondents entered a sweepstake to receive a gift card award.

3.1. Instrument

Tested and validated scales were adapted from extant studies for the survey questionnaire. Because the managers raised concerns about the length of the instrument, we sought feedback on our initial measurements from several information systems faculty members from different institutions who had experience in survey research methods to restrict the number of items for the measurement instrument. We then recruited a couple of employees to test the questionnaire and provide feedback on length, ambiguity, and other concerns. The final version of the measurement instrument incorporated their feedback; as a result, a number of items were reworded for clarity and validity, and others were eliminated to maintain parsimony.

The SNS addiction construct was adapted from Charlton [64] and Turel et al. [13]. The items measuring performance (in-role and innovative performance) were adapted from existing scales that have been used by Ali-Hassan et al. [83] and Janssen and Van Yperen [27]. This variable was modeled as a second-order construct [84,85]. For the current study, innovative performance and in-role performance scales were combined to operationalize performance. The two scales tapping innovative and routine performance reflect the characteristic of contributing to the performance construct introduced in the current paper. Specifically, these two scales may be manifestations of a broader underlying dimension reflecting performance. An examination of the correlation between in-role performance and innovative performance revealed a robust association between the two ($r = 0.31$, $p < 0.001$). Second, items from both of these scales were submitted together to a reliability analysis that indicated a high degree of internal consistency between the two scales (composite reliability = 0.75). Thus, for the current study, items from these two scales were combined as a second-order construct to create a measure of performance.

The task distraction measure was adapted from Zwarun and Hall [29]. Participants were requested to report how distracted they felt by SNS use while performing work tasks on a scale from 1 (extremely distracted) to 10 (not distracted at all). In addition, they were asked the extent to which they could pay attention to job tasks while they were using or logged into their favorite SNS on a scale from 1 (a lot of attention) to 10 (extremely no attention). The items were correlated significantly ($r = 0.24$, $p < 0.001$). After reverse coding the distraction item, we combined the two measures into the same latent variable, as indicators, instead of summing them. The resulting loadings were relatively high, at 0.733 and 0.709, and the composite reliability acceptable at 0.684. The normalized loadings were a bit higher at 0.755 and 0.790. These coefficients suggest that the two indicators redundantly measure the same underlying construct. As such, we set the corresponding latent variable as reflective in our analysis.

Measurement scales for health were adapted from Moriarty et al. [86]. To make the health-related question statements more specific and thus minimize the possibility of common method bias [87,88], we time-anchored them by making reference to a particular period of time (i.e., past 30 days). Questions that are too general may introduce common variance into the measurement model, also introducing pathological collinearity and inflating path coefficients [87]. One example of a non-time-anchored and thus too general health-related question would be "Has your physical health been good?"

The items measuring positive emotions were adopted from existing scales that have been used by Diener et al. [89] and Lucas et al. [90]. These and all other measurement items are presented in Appendix A. As usually performed in PLS-based structural equation modeling, all indicators were standardized prior to the analyses, ensuring that all variables were expressed on the same scale [107]. Not doing so could potentially create serious problems in the estimation of parameters. All indicators were re-scaled to have a mean of zero and a standard deviation of one. Thus, for example, a value of 1 for any indicator means 1 standard deviation above the mean for that indicator; −1 means 1 standard deviation below the mean, and so on. This allowed us to combine various indicators measured on different original scales. It was important for us to retain the original scales because the measures have previously been validated employing those original scales.

In the recruiting email and the introduction to the questionnaire, participants were told their answers would be kept completely confidential and their identities would be kept anonymous at all times. The emphasis on anonymity was in hope of receiving more accurate estimates of sensitive behaviors and perceptions and as a means of reducing social desirability response bias [91]. After 2.5 weeks, an email reminder was sent, and the survey was closed after 3.5 weeks.

3.2. Respondents

Online invitations were sent to a random sample of 10,000 English-speaking members of an enterprise social networking system community with approximately 22,000 members worldwide. In total, 321 employees completed the web-based survey, resulting in a response rate of 3.2%. However, during the data-cleaning process, additional 45 respondents were eliminated because of incomplete answers, leading to a final dataset of 276 usable responses. Considering the length of the survey and the sensitivity of the questions, this response rate was predicted and equivalent to similar studies [92,93]. With that said, a low response rate presents a nonresponse bias that is a threat to the external validity of a study [94] and to the generalizability of the findings. To minimize this nonresponse bias threat, we took a priori steps suggested by Sivo et al. [95] such as offering a monetary enticement for participation in the form of a drawing, stressing anonymity, ensuring an appealing format, and emphasizing university sponsorship. As a post hoc step, nonresponse bias was examined by following the recommendation of Armstrong and Overton [96]; no significant differences were detected between the first third and the last third of the data. Therefore, it is safe to conclude that nonresponse bias was ruled out as a major concern in this study.

The final sample contained 276 respondents aged 19–67 years (M = 35.6, SD = 11.5). Females and males were equally represented with 51.9% (n = 143) and 48.1% (n = 133), respectively. The survey respondents had on average worked for this corporation for 5.9 years. Approximately 62.5% of the respondents were married; 75% were white and 15% were Asian; 87% worked in the USA, 10% worked in India, and 3% worked in other countries. The educational level of respondents was 4% high school degree, 7% associate degree, 62% bachelor's degree, 26% master's degree, and 1.5% doctoral degree. Only 33% of the respondents had children. The average respondent used a favorite SNS while at work twice a day on average for approximately 34 min (see Appendix B for the respondents' demographic characteristics).

Since all the data were collected through a single method, i.e., survey, common method bias was examined by employing Lindell and Whitney's [88] statistical approach by adding a marker variable, marital status, that is theoretically unrelated to the dependent variable. The results show that the correlation between the marker variable and the dependent and independent variables in the proposed model was low. We also employed the more conservative approach for common method bias assessment proposed by Kock [87], which relies on model-wide collinearity assessment. This approach also serves as an assessment of the extent to which the measurement instrument contributes to the generalizability of the analysis results [97]. As recommended, all variance inflation factors (VIFs) (listed in the following section) were lower than the threshold of 5 [98]. Thus common method bias is unlikely to be a serious concern.

4. Validation of the measurement instrument

Partial least squares (PLS) was used to test the measurement and the structural models. PLS is particularly favorable because it has fewer restrictions on normality and is suitable for exploratory models and theory development [84,99]. We chose to use the WarpPLS software package (version 5.0) [100] for the estimations.

4.1. Measurement model assessment

To confirm individual item convergent validity and reliability, factor loadings were assessed. Table 1 shows that all the measurement item loadings, obtained from a confirmatory factor analysis on their respective constructs, were above the suggested minimum threshold of 0.50 [98,100], indicating that the items had acceptable convergent validity.

Table 1
Construct reliability and validity.

Constructs	Indicators	Loadings	CR	FVIF	Normal
First-order Constructs					
SNS addiction	SNSAddiction1	(0.818)	0.905	2.818	No
	SNSAddiction2	(0.841)			
	SNSAddiction3	(0.841)			
	SNSAddiction4	(0.859)			
Positive emotions	PosEmo1	(0.823)	0.936	2.639	Yes
	PosEmo2	(0.902)			
	PosEmo3	(0.784)			
	PosEmo4	(0.724)			
	PosEmo5	(0.854)			
	PosEmo6	(0.812)			
	PosEmo7	(0.849)			
Task Distraction	Distraction1	(0.733)	0.684	4.905	No
	Distraction2	(0.709)			
Second-order Constructs					
In-role performance	IRPerf1	(0.868)	0.917	1.258	No
	IRPerf2	(0.897)			
	IRPerf3	(0.922)			
	IRPerf4	(0.734)			
Innovative performance	InnovPerf1	(0.871)	0.917	1.424	Yes
	InnovPerf2	(0.857)			
	InnovPerf3	(0.872)			
	InnovPerf4	(0.742)			
	InnovPerf5	(0.798)			

Notes: All loadings significant at the P < 0.001 level; CR = composite reliability; FVIF = full collinearity variance inflation factor; Normal = normally distributed (robust Bera–Jarque).

Composite reliability values were also calculated to ensure measurement reliability. As shown in Table 1, all composite reliability values exceeded the recommended threshold of 0.70 [101,102], indicating that all constructs had acceptable reliability.

Discriminant validity of constructs was also assessed by comparing the square root of the average variance extracted (AVE) values for each construct with the inter-construct correlations. The square roots of the AVE values, given in parentheses in Table 2, were larger than the respective inter-construct correlations, indicating acceptable discriminant validity [103].

Unlike reflective constructs in the model, which were assessed by classic common-factor reliability and validity tests, the health construct was measured formatively. Formative measures are indicators that are expected to cause part of the variation in a latent variable or construct [104]. They are not intended to be redundant and thus are not highly correlated with each other, which tends to lead to relatively low reliability measures [105,106]. We assessed the formative heath construct through P values associated with weights to test the indicator-construct links and indicator VIFs to rule out redundancy [107,106]. All P values were lower than 0.01, suggesting that the indicators were in fact significant predictors of the health construct. Redundancy among the health construct indicators was not a concern in

Table 2
Inter-construct correlation matrix.

	SNSAddiction	PosEmo	Distraction	IRPerf	InnovPerf
SNSAddiction	(0.837)	−0.181	0.731	−0.235	−0.161
PosEmo	−0.181	(0.824)	0.097	0.164	0.290
Distraction	0.731	0.097	(0.728)	−0.256	−0.173
IRPerf	−0.235	0.164	−0.256	(0.858)	0.312
InnovPerf	−0.161	0.290	−0.173	0.312	(0.830)

Notes: Square roots of average variances extracted (AVE) shown on the diagonal within parentheses; SNSAddiction = SNS addiction; PosEmo = positive emotions; Distraction = task distraction; IRPerf = in-role performance; InnovPerf = innovative performance.

Table 3
Model fit indices.

Index	Value	Interpretation
Average path coefficient (APC)	0.206	P < 0.01
Average R^2 (ARS)	0.359	P < 0.01
Average adjusted R^2 (AARS)	0.348	P < 0.01
Average block VIF (AVIF)	1.356	Acceptable if ≤5, ideally ≤3.3
Average full collinearity VIF (AFVIF)	2.058	Acceptable if ≤5, ideally ≤3.3
Tenenhaus GoF (GoF)	0.549	Small ≥ 0.1, medium ≥ 0.25, large ≥ 0.36

Table 4
Support for the hypotheses based on the results.

Hypothesis	Supported?
H1: Greater addiction to SNSs reduces performance.	No
H2: Greater addiction to SNSs increases task distraction.	Yes
H3: Greater addiction to SNSs reduces positive emotions.	Yes
H4: Greater task distraction reduces performance.	Yes
H5: Greater positive emotions improve health.	Yes
H6: Greater positive emotions improve health.	Yes
H7: Greater positive emotions improve performance.	Yes

this study since the highest VIF was 1.36 well below the suggested threshold of 5 [98]. These results suggest that the health construct was properly measured in a formative way.

To ensure our model is free from multicollinearity, a full collinearity test was conducted, and all VIFs were lower than the threshold of 5 [98]. Multivariate normality was also assessed according to the statistical approach suggested by Bera and Jarque [108] and Gel and Gastwirth [109]. Table 1 shows that three of the constructs were not normally distributed, confirming the appropriateness of using PLS-based structural equation modeling.

4.2. Structural model assessment

The structural model was estimated using a bootstrap resampling method with 100 resamples. To assess the structural model's quality, the model fit indices reported in Table 3 were examined [98,110,100]. All indices were either statistically significant or exceeded the respective recommended thresholds, indicating that the quality of our structural model is adequate.

5. Results

Fig. 2 presents the results of the proposed model estimates, e.g., the standardized path coefficients associated with each proposed hypothesis, significance of the path coefficients, and the variance explained (R^2) by the independent variables. Table 4 presents a summary of whether the proposed hypotheses were supported.

As shown in Fig. 2, all proposed hypotheses were supported with significant path coefficients, except for H1. Although the independent variables in the model explained 60% of the variance in the performance variable, SNS addiction explained 56% of the task distraction variance and 8% of the variance in positive emotions.

A number of control variables were collected in this study to rule out rival hypotheses, including gender, age, education level, race (white vs. other), organizational tenure (number of years of work experience at current organization), country of residence, and exercise. All control variables were included in the model to test their relationships with the dependent variables. Gender (male = 1; female = 2) ($\beta = -0.23$, $p < 0.001$), race (white = 1; other = 0) ($\beta = -0.16$, $p < 0.01$), and tenure ($\beta = -0.25$, $p < 0.001$) had a significant effect on performance.

In testing for mediation when assessing the direct effect of SNS addiction on performance, the relationship was found to be significant. When the task distraction and positive emotion variables were included as mediators in the model, the strength of the relationship between SNS addiction and performance disappeared, indicating a full mediation effect [111]. To test the statistical significance of the indirect effect of SNS addiction on performance, the Preacher and Hayes [112] approach was employed. The mediation effect of the two variables–task distraction and positive emotions–on the relationship between SNS addiction and performance was found to be statistically significant ($\beta = -0.64$, $p < 0.001$).

SNS addiction had significant effects on *task distraction* (H2) ($\beta = 0.75$, $p < 0.001$) and *positive emotions* (H3) ($\beta = -0.27$, $p < 0.001$). However, *SNS addiction* did not have a direct significant effect on *performance* (H1) ($\beta = 0.11$, $p > 0.01$). *Task distraction* (H4) ($\beta = -0.67$, $p < 0.001$) and *positive emotions* (H6) ($\beta = 0.51$, $p < 0.001$) had significant effects on *performance*. *Positive emotions* (H5) ($\beta = 0.37$, $p < 0.001$) had a significant effect on *health*.

6. Discussion

This study began by asking about the extent to which SNS addiction

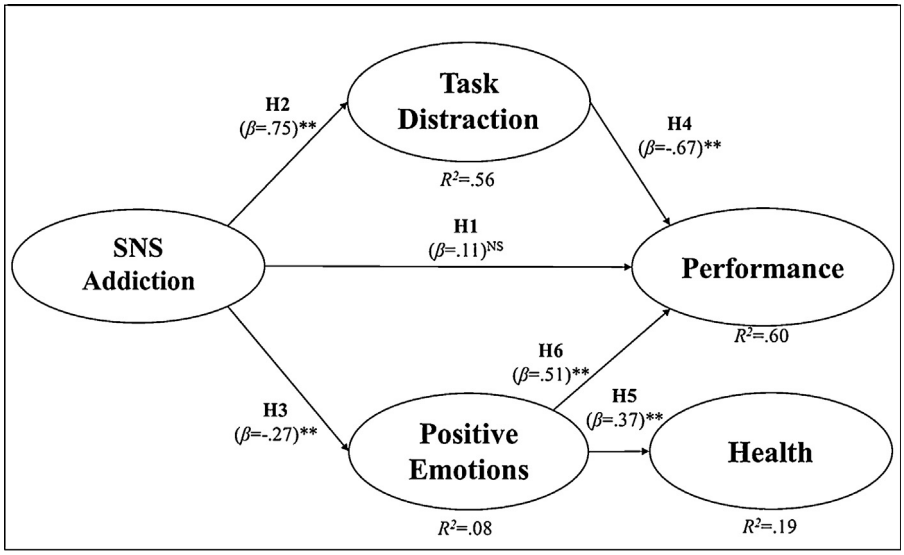

Fig. 2. Model with results for direct effects and related hypotheses.

impacts personal and work environments. The answer, based on the data analysis and results, is that addiction to SNS had several negative consequences on the personal and work environments. SNS addiction reduces positive emotions that augment the performance and enhance the health of addicts. In addition, SNS addiction fosters task distraction in the workplace, which in turn inhibits performance, or work environment. Generally, the theoretical model explained a significant percentage of the variance in job performance (60%) and health (19%).

Hypotheses 1, 2, and 3 examined the effects of SNS addiction on users' personal and work environments. The results showed that SNS addiction explained 56% of the task distraction variance and 8% of the variance in positive emotions. Hypothesis 4 focused on the impact of an important consequence of SNS addiction—task distraction—which thus may impair performance. Hypotheses 5 and 6 tested the effects of positive emotions on users' health and performance. These two hypotheses were supported. After controlling for demographic variables, SNS addiction, task distraction, and positive emotions explained 60% of the variance in performance. Positive emotions, after controlling for demographic variables, explained 19% of the variance in users' health.

Further exploratory analysis showed that the gender of SNS users had a significant effect on performance, indicating that males perform better than females. Indeed, past evidence showed that females tend to underestimate their performance when self-evaluating [113], which possibly provides an explanation for the difference in performance. However, white race had a significant negative relationship with performance, suggesting that non-white employees perform better than white employees. This result may suggest the actual performance of whites, which is also in line with the suggestion in the literature [114] that whites tend to be rated more positively than their actual performance due to systematic bias.

It was surprising to find tenured employees performing less well. One explanation for this is that when employees are new, they are introduced to cultural, behavioral, and organizational expectations that equip them with knowledge to perform well. However, as tenure increases, they may have less new learning that is reflected in their organizational knowledge and therefore their performance [115,116].

6.1. Theoretical implications

The research model makes a number of key theoretical contributions to the emerging body of knowledge about SNS addiction. First, the extant literature has investigated factors that explain SNS addiction, but this is the first study that, drawing on SCT, offers a theoretical explanation and empirical support for the impact of SNS addiction behavior on work and personal environments. Our results indicate that SNS addictive behavior has a significantly negative influence on personal and work environments.

Second, while the extant literature has explored several negative outcomes of addictive use of other technologies [117,118,53], this is the first study to empirically investigate the consequences of SNS addictive behavior on both personal and work environments. This study shows that the impact of SNS addiction on the personal environment is as strong as the impact on the work environment.

Third, this study contributes to theory by investigating the link between SNS addiction and positive emotions. The findings show that SNS addiction exerts a significantly negative influence on positive emotions, which in turn influences the employee's performance and health, while SNS addiction also exerts a significantly negative indirect influence on the employee's performance.

This study also contributes to theory by investigating the role of positive emotions on employees' performance and health. The findings show that positive emotions have a significant positive influence on work performance and health.

Given some of the prior findings related to the positive impact of SNS use [119,4–6], it seems important to investigate the possible dark side of this technology. Therefore, the theoretical model allowed the uncovering of an unexpected impact of the use of technology that was originally assumed to improve employees' performance and personal lives. The conclusion is that SNS addiction plays a key role in reducing an employee's performance and health. More specifically, SNS addiction reduces an employee's positive emotions, which in turn plays a key role in influencing performance and health. In addition, SNS addiction increases task distraction that impairs an employee's work performance.

6.2. Practical implications

The findings of this study offer a number of key implications for practitioners. The results provide evidence of the significantly negative impact of SNS addictive behavior on personal and work-related outcomes. Since an employee's SNS addiction is shown to be significant in affecting performance indirectly—through reduced positive emotions and increased task distraction—one practical implication is to design intervention programs such as rehabilitation therapy to treat the effects of such addictive behavior.

In addition, organizations may choose to intervene by imposing a SNS use policy to control and limit the usage hours in the workplace to ensure that SNS addictive behavior does not impede employees' performance and health. This policy can be enforced by providing employees with company-owned mobile devices that can be monitored.

Further, since SNS addiction plays an important role in reducing an employee's positive emotions, which are shown to positively influence performance and health, it is suggested as a practical implication that employers design health awareness programs that focus on positive emotions. In such a health awareness program, feelings of joy, happiness, love, contentment, caring, affection, and pride should be emphasized, and employees can be educated about the likely negative consequences of addictive behavior.

6.3. Limitations

As in any other empirical study, this study has some limitations that point to avenues for future research. The perception-based measure for SNS addiction used in this study, instead of an objective measure, can be regarded as a limitation. Future efforts should consider more objective measures such as neurobiological measures of SNS addiction.

Another limitation is that the data were collected through a cross-sectional survey questionnaire that may weaken the justification for the direction of our hypotheses, although our hypotheses are based on solid theories. That is, the analysis may indicate correlation rather than causation. For instance, while SNS addictive behavior leads to a lower level of positive emotions, the opposite might have happened. Experiencing a lower level of positive emotions may have led to the excessive/addictive use of SNSs. To uncover the causality dilemma, future researchers can conduct a longitudinal study in which they collect data from the same users at different points in time.

This study assessed the addictive use of SNSs by employees in general. Future efforts should consider focusing on the addictive use of a specific professional SNS because SNS adoption by working professionals may not be universal [120].

The potential risk of nonresponse bias affecting the generalizability of the findings is another limitation of this study. Nevertheless, a priori steps including offering monetary enticement for participation, stressing anonymity, ensuring an appealing format, and emphasizing university sponsorship and the post hoc step of examining the difference between the first third and the last third of respondents' data are anticipated to mitigate some of these risks [95].

This study investigated the consequences of an employee's SNS addictive behavior on personal and work environments. Another possible direction for future research is to investigate these relationships by considering cross-cultural studies to determine whether the

impact of SNS addiction differs based on culture—e.g., individualistic vs. collectivistic. A similar research direction is to investigate whether there are other consequences of SNS addiction and compare them to the consequences identified in this study. Research should also be done to replicate [121] this study and investigate whether the results hold for addiction to the same or other technologies.

10. Conclusion

In this article, two consequences—personal and work related—of SNS addiction are identified through the lens of SCT. The findings suggested that SNS addictive behavior can negatively influence an employee's personal and work environments. In particular, SNS addiction influences an employee's work-environment performance through the employee's positive emotions and task distraction. It also affects an employee's personal environment—health—by reducing positive emotions. Therefore, the excessive dependence on and use of SNSs by employees may result in undesirable consequences rather than the earlier supposed improved performance. The findings of this study are thus significant for enhancing our understanding of the relationship between SNS addictive behavior and the personal and work environments.

Appendix A. Measures and scale properties

Construct	Max	Min	M	SD	Items	Comments
SNS addiction	4	1	2.09	0.97	SNSAddiction1: Using my favorite social networking site sometimes interfered with other activities.	5-point Likert Scale with Anchors 1 = "strongly disagree" and 5 = "strongly agree."
	5	1	1.97	0.85	SNSAddiction2: I have made unsuccessful attempts to reduce the time I interact with my favorite social networking site.	
	4	1	1.64	0.82	SNSAddiction3: Arguments have sometimes arisen at home because of the time I spend on my favorite social networking site.	
	5	1	1.64	0.85	SNSAddiction4: I think that I am addicted to my favorite social networking site.	
Positive emotions	7	1	4.64	1.31	During the past week, how frequently did you feel each of the following emotions? PosEmo1: Joy	7-point Likert Scale with Anchors 1 = "never" and 7 = "always."
	7	1	4.92	1.19	PosEmo2: Happiness	
	7	1	4.79	1.29	PosEmo3: Contentment	
	7	1	4.62	1.32	PosEmo4: Pride	
	7	1	4.83	1.34	PosEmo5: Affection	
	7	1	4.89	1.44	PosEmo6: Love	
	7	1	5.05	1.26	PosEmo7: Caring	
Health	30	0	2.81	5.76	Health1: Thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?	Days from 0 to 30 (reversed).
	30	0	4.26	6.56	Health2: Thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?	
	25	0	2.14	4.40	Health3: During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?	
In-role performance	5	2	4.20	0.60	IRPerf1: I always complete the duties specified in my job description.	5-point Likert Scale with Anchors 1 = "strongly disagree" and 5 = "strongly agree."
	5	2	4.32	0.52	IRPerf2: I meet all the formal performance requirements of my job.	
	5	2	4.27	0.56	IRPerf3: I fulfill all responsibilities required by my job.	
	5	1	4.04	0.75	IRPerf4: I never neglect aspects of the job I am obligated to perform.	
Innovative performance	6	1	3.94	1.01	How often do you perform the following work activities? InnovPerf1: Create new ideas for improvements.	6-point Likert Scale with Anchors 1 = "never" and 6 = "always."
	6	1	3.91	0.99	InnovPerf2: Search out new working methods, techniques, or instruments.	
	6	1	3.53	1.09	InnovPerf3: Transform innovative ideas into useful applications.	
	6	1	3.52	1.08	InnovPerf4: Acquire management approval for innovative ideas.	

	6	1	3.75	1.04	InnovPerf5: Generate original solutions to problems.	
Task distraction	10	0	8.33	2.24	How distracted do you feel because of your favorite social networking site while performing your job tasks?	10-point Likert Scale with Anchors 1 = "extremely distracted" and 10 = "not distracted at all" (reversed)
	10	0	3.84	2.77	How much attention are you able to pay to job tasks while using/logged in your favorite social networking site?	10-Point Likert Scale with Anchors 1 = "A lot of attention" and 10 = "extremely no attention."

Notes: n = 276; *Max* = maximum; *Min* = minimum; M = mean value; SD = standard deviation.

Appendix B. Respondents' demographic characteristics

	Category	F	[%]	M	SD
Age				35.6	11.5
Tenure				5.9	6.7
SNS Frequency				2	2.9
SNS Time (hours)				0.56	1
Exercise (days a week)				3.22	2.47
Children	Has Children	91	33		
	No Children	185	67		
Gender	Female	143	51.9		
	Male	133	48.1		
Marital status	Married	173	62.5		
	Not married	103	37.5		
Race	American Indian or Alaska Native	6	2		
	Asian	41	15		
	Black or African American	11	4		
	Hispanic or Latino	8	3		
	Native Hawaiian or Other Pacific Islander	3	1		
	White	207	75		
Country	USA	240	87		
	India	28	10		
	Other	8	3		
Education	High School	11	4		
	Associate Degree	19	7		
	Bachelor's Degree	171	62		
	Master's Degree	72	26		
	Doctoral Degree or J.D.	4	1.5		

Notes: F = frequency; [%] = percentage; M = mean value; SD = standard deviation.

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