Transactions on Replication Research

Time flies when you are having fun: Cognitive Absorption and Beliefs about Social Media Usage

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Abstract:

The purpose of this study was to do a methodological replication of Agarwal & Karahanna (2000), in the context of social media. The original work describes a construct labeled 'cognitive absorption' (CA) having a theoretical base derived from three inter-related areas of research: the personality trait dimension of absorption, the state of flow, and the notion of cognitive engagement. Regarding the methodological replication process, we adapted the original instrument to the context of social media and collected data from 326 students. Following the same procedures used by Agarwal & Karahanna (2000), we used Partial Least Squares (PLS) to analyze the data and found results that supported the ideas advanced in their study, although we also identified some differences concerning perceived usefulness, self-efficacy, and personal innovativeness. The differences we found seem to be entirely associated with the context of social media. The level of experience in using technology is likely explained by the fact that the exposure to technology is much more significant today than 16 years ago, technology has become part of the daily routine of individuals, where social media is one of the most widely used.

Keywords: User's beliefs, cognitive absorption, social media, user behavior toward social media

1 Introduction

This research aims to replicate the original study conducted by Agarwal and Karahanna in 2000, who described cognitive absorption (CA) as a multidimensional construct comprising five dimensions: temporal dissociation, focused immersion, heightened enjoyment, control, and curiosity. The theoretical bases of CA have grounded in three studies: a trait dimension called absorption (Tellegen, 1982; Tellegen and Atkinson, 1974), the state of flow (Csikszentmihalyi, 1990), and the notion of cognitive engagement (Webster and Ho, 1997). According to Agarwal and Karahanna (2000), CA is an intrinsic motivation variable, defined as a state in which there is a broad involvement with software. In the proposed nomological net shown in figure 1, CA is posited as an important antecedent for technology use behavior, mediated by perceived usefulness and ease of use, where the perception of ease of use influences the perceived usefulness (Agarwal and Karahanna, 2000).

Even after almost two decades, the original paper by Agarwal and Karahanna (2000) is still heavily cited in the IS field, demonstrating that the CA construct remains up-to-date and a pivotal antecedent to explain beliefs about information technology. Searching the EBSCO's Business Source Complete (11/2017) more than 340 studies cite the original work. Among those, there is a key research that explicitly applied the CA construct and found that CA has a significant impact on users behavior towards information technology (Chandra, Srivastava, & Theng, 2012). In their study, Saade and Bahli (2005) for instance explored CA to understand students intention to use Internet-based learning system and found that CA impacts the acceptance of online learning systems (Saadé & Bahli, 2005). In Chandra et al. (2012), the CA construct was also used with user trust. They aimed at proposing a nomological net for adaptive use intention of virtual worlds for workplace collaborations, and it revealed a similarly significant relation between CA and trust (Chandra, Srivastava, & Theng, 2012). More recently, Midha (2016) replicated the Agarwal and Karahanna (2000) study in the context of Second Life, and his findings supported cognitive absorption as a construct that positively influences perceived ease of use and perceived usefulness (Midha, 2016).

Whereas in the original study the Web was the target technology used as the research context, in the present study we focused on social media since it has currently been one of the most pervasive technologies in people's lives. Differently from the Web scenario in 2000 when accessing the Web was not widely available, today the social media provides that to people having different profiles, at any time and any place. With that being so, the replication in a social media context becomes entirely relevant. Firms have used social media to enhance brand popularity (De Vries, Gensler, & Leeflang, 2012), increase sales (Agnihotri, Kothandaraman, Kashyap, & Singh, 2012), generate social support for consumers (Ali, 2011), and other generating-value purposes (Hajli, 2014). Besides, individuals networking through social media delivers shared values that lead to a positive impact on virtual communities trust (Wu, Chen, & Chung, 2010). Therefore, our goal is to investigate the boundaries of the original work by applying a methodological replication approach to the social media context.

Facebook, LinkedIn, Instagram, and other social network sites are increasingly popular among individuals from different backgrounds. Such individuals are using that technology to become socially engaged and to socially interact with their online and offline social network (Boyd and Ellison, 2007; Pfeil, Arjan, and Zaphiris, 2009). The use of social technologies is expanding not only in users but also in the number of time people spent on interacting with the social networking. According to Published by the Pew Research Center, the Social Media Update (2016) states that Facebook remains the most popular social media platform. Out of 86% of Americans currently using the Internet, 79% are Facebook users, followed by 32% for Instagram, 31% for Pinterest, 29% for LinkedIn and 24% for Twitter. Those numbers have been annually growing, embracing male and female users, from urban or rural areas, various age groups and education background. Social media empowers people for it enables them to perform several activities online. Reading the news, enhancing professional network on LinkedIn, embracing social causes and enrolling in events (Duggan, Ellison, Lampe, Lenhart, & Madden, 2015; Duggan, Page, & Manager, 2016). Such facts endorsed our belief that social media has indeed become a thought-provoking context in which to study CA.

Figure 1 presents the nomological net proposed by Agarwal and Karahanna (2000). We are following the same methodological procedures of the original study.
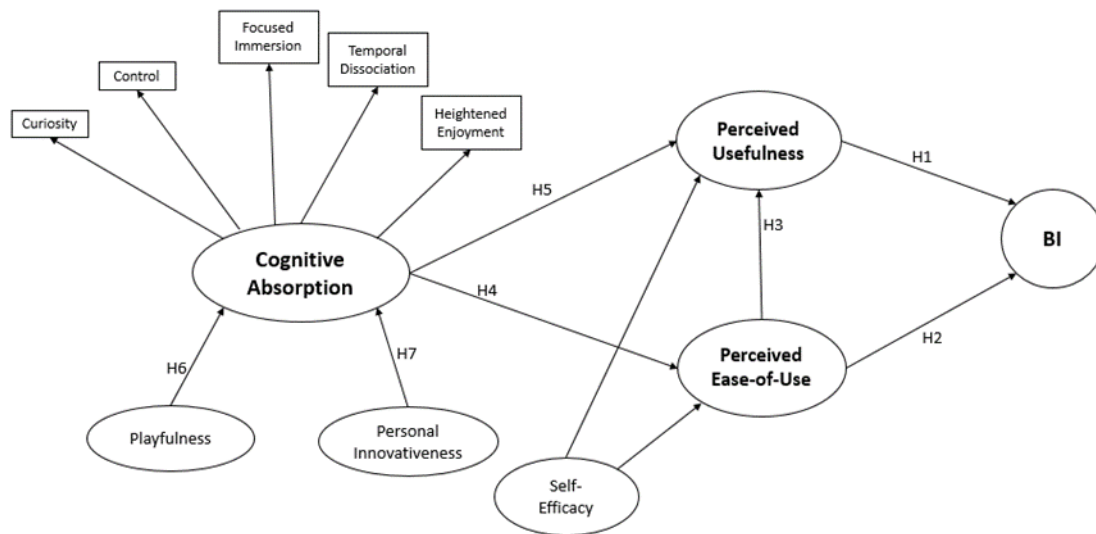
Figure 1: Nomological net

	Table 1. Hypotheses	
H1	Perceived usefulness of social media has a positive effect on behavioral intention to use social media.
H2	Perceived ease of use of social media has a positive effect on behavioral intention to use social media.
H3	Perceived ease of use of social media has a positive effect on the perceived usefulness of the use of social media.
H4	After controlling for self-efficacy perceptions, cognitive absorption with social media has a positive effect on the perceived ease of use of the social media.
H5	After controlling for self-efficacy perceptions, cognitive absorption with social media has a positive effect on the perceived usefulness of the social media.
H6	Computer playfulness has a positive effect on cognitive absorption with social media.
H7	Personal innovativeness has a positive effect on cognitive absorption with social media.

2 Methodology

To prepare the scales for the social media context, we made small adjustments in the items, replacing the word Web for social media (see Appendix B). The self-efficacy scale required a few more edits for the new context. In all cases, we retained the original meaning of the items, and only changed words to reflect the new setting. Based on the original study, we applied reverse scales for the same three elements (FI4R, CO2R, and PIIT2R) used by Agarwal and Karahanna (2000). However, we also noticed that the item HE4 (Using the social media bores me) was indeed a reverse scale, for some reason not reversed in the original paper. Thus, in other to correctly use it, we modified the scale to HE4R. All items, except those for self-efficacy, used a seven-point Likert scale, ranging from 1 = strongly disagree to 7 = strongly agree. Self-efficacy was measured using a 10-item response set having as anchors 1 for "Not at all confident" and 10 for "Very confident."

Using the Qualtrics platform, a total of 389 questionnaires were electronically forwarded to undergraduate students of a large state university, in the southwest of the United States. By email, they were invited to participate and instructed to respond to the questionnaire honestly. To ensure that they were answering the questions, we added three attention check questions. In the end, 27 responses, out of the 326 received, had missing or incomplete responses, leaving 299 valid ones. As recommended by The European Social Survey Education Net, we should discard respondents who gave the same answer in more than 80% of the questionnaire, since such answers would not reflect their actual responses. We then eliminated 5 students amongst the 299 valid responses because of low-quality level responses (same answer in more than 80% of the questions) they had offered. In the end, from a total of 389 valid responses, we collected 294, a response rate of 76%.

Table 2 compares the sample characteristics from the original study and our replication, and while in the first gender and age distribution are quite similar, in the second, people are more experienced in the use of technology, which is not a surprise if we considering the time passed between both studies.

Table 2: Sample Characteristics				
	Agarwal & Karahanna (2000)		Replication Study	
	Mean	Std. Deviation	Mean	Std. Deviation
Age	22.90	4.14	21.53	3.22
PC Experience	7.27	3.45	11.38	3.76
Social Media Experience	-	-	7.57	1.73
Web Experience	3.76	1.54	--	
Gender	Male	153	Male	158
	Female	117	Female	136
Notes: Age, PC Experience, Social Media Experience are number of years.				

3   Results

As in the original study, we analyzed data using partial least squares structural equation modeling. We also used SmartPLS (version 2.0) to assess measurement and structural models in a two-stage approach. First, we analyzed the measurement model starting with the confirmatory factor analysis. Second, we analyzed the structural model using the factor scores for the second-order factor of CA. Table 3 shows the descriptive statistics for the research constructs, where Behavioral Intention, Perceived Usefulness, Perceived Ease of Use, Self Efficacy, Temporal Dissociation, and Curiosity presented a slightly higher standard deviation than in the study performed by Agarwal and Karahanna (2000). In the replication study, we have found a higher self-efficacy mean compared to the original research, emphasizing the fact that nowadays people feel more comfortable with technology.

Table 3: Descriptive Statistics				
	Agarwal & Karahanna (2000)		Replication Study	
Construct	Mean	Std. Deviation	Mean	Std. Deviation
Behavioral Intention (BI)	6.35	1.07	5.70	1.24
Perceived Usefulness (PU)	5.43	1.01	3.60	1.28
Ease of Use (PEOU)	5.34	1.03	5.45	1.11
Self Efficacy (SE)	7.32	1.70	8.36	1.21
Playfulness (CPS)	4.69	1.04	4.59	1.10
Personal Innovativeness (PIIT)	4.87	1.07	3.97	.94
CA: Temporal Dissociation (TD)	5.36	1.18	5.40	1.33
CA: Focused Immersion (FI)	4.76	.98	4.37	.95
CA: Heightened Enjoyment (HE)	5.15	1.06	4.63	.80
CA: Control (CO)	5.33	.93	3.98	.89
CA: Curiosity (CU)	4.93	1.04	4.74	1.20

3.1   Measurement Model

To assess the psychometric properties of the scales, we analyzed the convergent validity regarding Average Variance Extracted (AVE) and item loadings, the discriminant validity through the cross-loadings and the square root of the AVE, and also internal consistency through composite reliability scores.

By analyzing the AVE of the model constructs and all their respective items, we identified that the Focused Immersion, Control, and Self-Efficacy constructs presented an AVE lower than 0.5. On average, that indicates more error in the items than in the variance explained by the construct (Hair et al., 2014). For that

reason, to ensure the convergent validity of the model, one by one, we eliminated the items with lower factor loadings (FI_4R; CO_2R; SE_2; SE_1) until we confirmed that the AVE was greater than or equal to 0.5. Agarwal and Karahanna (2000) maintained all items once they found AVE > 0.5 in all constructs.

The second evaluation phase of the measurement model included the analysis of the discriminant validity. In the analysis of the cross-loadings, the PIIT_2R indicator was the only one that showed problems, once it was verified the presence of cross-loadings exceeding outer load of PIIT_2R. With the objective of attaining discriminant validity through the analysis of cross-loadings, we eliminated the PIIT_2R indicator. The other items were appropriately loaded as presented in the factor analysis table in Appendix A. As for the Fornell-Larcker criterion; the model obtained discriminant validity because the square root of each AVE of the construct was more significant than the correlations between the other latent variables (Fornell and Larcker, 1981). Concerning internal consistency, the results of the composite reliability were higher than 0.8, considered satisfactory by Hair et al. (2014). Table 4 shows the results of the AVE and discriminant validity of the construct.

Table 4: Discriminant Validity and AVE Results												
	AVE	Composite Reliability	BI	PU	PEOU	SE	CPS	PIIT	TD	FI	HE	CO	CU
BI	0.88	0.96	**0.94**										
PU	0.67	0.89	0.18	**0.82**									
PEOU	0.74	0.92	0.61	0.15	**0.86**								
SE	0.52	0.90	0.13	0.00	0.19	**0.72**							
CPS	0.66	0.93	0.49	0.39	0.43	0.09	**0.81**						
PIIT	0.77	0.91	0.17	0.44	0.32	0.10	0.50	**0.88**					
TD	0.77	0.94	0.61	0.06	0.57	0.16	0.33	0.18	**0.88**				
FI	0.60	0.85	0.31	0.16	0.41	0.13	0.30	0.16	0.56	**0.77**			
HE	0.72	0.91	0.66	0.30	0.58	0.06	0.51	0.24	0.57	0.40	**0.85**		
CO	0.68	0.81	0.34	0.28	0.44	0.06	0.44	0.23	0.30	0.27	0.43	**0.83**	
CU	0.74	0.90	0.48	0.32	0.45	0.09	0.62	0.34	0.30	0.34	0.67	0.43	**0.86**

3.2   Structural Model

The structural model was analyzed through the significance of the relationships and the R² (coefficient of determination). Perceived Usefulness and Perceived Ease of Use account for 38.3% of the variance in Behavioral Intention. Both Cognitive Absorption and Self-Efficacy explain 44.1% of the variance in Perceived Ease of Use, while Cognitive Absorption, Self-Efficacy and Perceived Ease of use refer to 12.9% in Perceived Usefulness, and 46% in the original study. Such relevant difference may be attributed to the fact that social media is focused on enjoyment and social relationship rather than elements in performance, productivity, and effectiveness. In fact, the Web seems to be more useful for instrumental outcomes than social media, and therefore likely to explain the value of 46%. Playfulness and Personal Innovativeness describe 37% of the variance in Cognitive Absorption. Generally speaking, compared to the results found by Agarwal and Karahanna (2000), the results of the R² values found in this replication were inferior. Table 5 compares the results of both studies.

Table 5: Comparing R² results Original and Replication Study		
R²	Agarwal & Karahanna (2000)	Replication Study
Perceived Ease of Use + Perceived Usefulness → Behavioral Intention	48%	38.3%
Cognitive Absorption + Self-Efficacy → Perceived Ease of Use	46%	44.1%
Cognitive Absorption + Self-Efficacy + Perceived Ease of Use → Perceived Usefulness	46.2%	12.9%
Playfulness + Personal Innovativeness → Cognitive Absorption	42.1%	37%

From the seven hypotheses proposed by Agarwal and Karahanna (2000), six were supported, but in our study only five. Table 6 summarizes the hypothesis, while table 7 shows the test results. Hypothesis 1, which states that Perceived Usefulness has a positive effect on Behavioral Intention, was supported, as shown in Figure 2. Hypothesis 2 (Perceived Ease of Use -> Behavioral Intention) was significant at 0.001. Hypothesis 3 was not supported in the replication study, and the same happened in the original research, and the study conducted by Davis (1989). As in the Agarwal and Karahanna study (2000), hypotheses 4 and 5 were supported, showing that Cognitive Absorption is a significant predictor of Perceived Usefulness and Perceived Ease of Use. Regarding the predictors of CA, Playfulness and Personal Innovativeness, only the former had substantial effects on CA (H6), having the latter (H7) not supported.
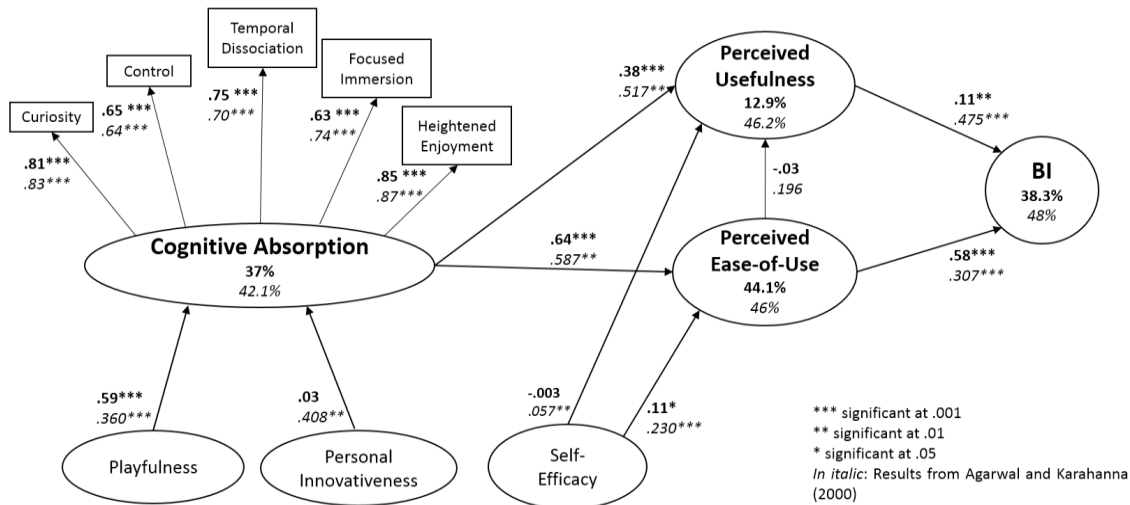

Figure 2: PLS Results from Replication study and Agarwal and Karahanna (2000)

Table 6. Summary of Hypothesis Tests		
Hypothesis	**Agarwal and Karahanna (2000)**	**Replication study**
	Support	Support
H1: Perceived Usefulness -> Behavioral Intention	Yes	Yes
H2: Perceived Ease of Use -> Behavioral Intention	Yes	Yes
H3: Perceived Ease of Use -> Perceived Usefulness	No	No
H4: Cognitive Absorption -> Perceived Ease of Use	Yes	Yes
H5: Cognitive Absorption -> Perceived Usefulness	Yes	Yes
H6: Playfulness -> Cognitive Absorption	Yes	Yes
H7: Personal Innovativeness -> Cognitive Absorption	Yes	No

Agarwal and Karahanna (2000) executed additional analysis, adding a direct path from Cognitive Absorption to Behavioral Intention and found that the direct path was significant and increased the R^2 of Behavioral Intention from 48% to 50.7%. We also tested such effect, and the R^2 rose from 38.3% to 49.3%, 11% higher when compared to the 2% achieved in the original study. Figure 3 illustrates the results, including the direct path from Cognitive Absorption to Behavioral Intention.
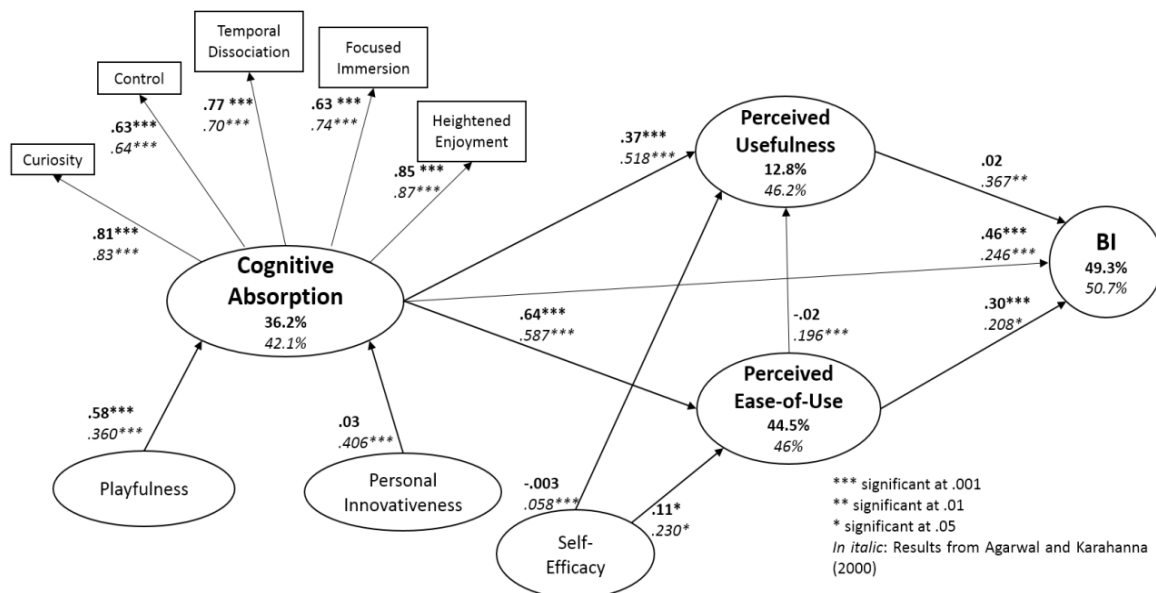
Figure 3: PLS Results (with direct effects) from Replication study and Agarwal and Karahanna (2000)

4   Discussion

In this study, our goal was to replicate the original paper from Agarwal and Karahanna (2000), by testing the model and the concept of cognitive absorption in a social media context. To adjust the study to such context, we replaced some words in the scale to reflect the new setting, but we precisely followed the methodological procedure as it was conceived. Despite the many technological advances that occurred during the sixteen years elapsing between the studies, our findings evidenced significant similarities, and it also disclosed some intriguing differences discussed next as well.

First, the hypothesis 3, which postulated that perceived ease of use would influence perceived usefulness, was supported neither by this replication nor by the original study. According to our findings, there is no relation between the PEOU of social media and the instrumental outcomes measured by PU. In other words, the perceived ease of use (PEOU) does not influence the perceived usefulness (PU), since the PU measures focus on productivity, effectiveness, and performance. As in the original research, the H3 was not supported, considering that PEOU of using the Web does not necessarily mean PU as well. Although those findings are in line with the TAM theory (Davis, 1989), Midha (2016) recently replicated the study by Agarwal and Karahanna (2000) in the Second life context and found that PEOU positively influences PU. In the research conducted by Midha (2016), that result was associated with the complexity of the Second Life platform, which did not take place in the web environment in Agarwal and Karahanna (2000) study, neither in the social media context of this replication. We suppose that the differences in our findings arise from the characteristics of the social media environment that typically is a user-friendly platform often related to the pleasure of meeting friends, having social interaction, and briefly resting from work.

Second, another highlight to be made concerns the personal experience of each studied population. The original study was published in 2000, in the late 1990s, and it investigated the web context. On the other hand, our replication involved a current sample comprising students who have been exposed to technology since their childhood. Indeed, most of those students could be referred to as digital natives. Thus, it is plausible to assume a different perception of "Ease of Use" between today and sixteen years ago and the presence of an intuitive and user-friendly technology that became the norm, and therefore, less critical.

Third, all coefficients of determination found in our replication were lower than those in the original study; however, the most relevant case relates the perceived usefulness construct, where we found an R² of 12.9%, while in the original paper that was 46.2%. In the original study, PU is positively influenced by CA and self-efficacy, which may explain such divergence, whereas in our replication PU is revealed only by CA. Hence, considering that we are studying a different context, it is possible to presume that social media is more related to playfulness and relationships than to enhance performance or productivity. People tend to

use social media to take a mental break from the job (Duggan et al., 2016) and not to improve instrumental outcomes to have a better performance in college.

Fourth, hypothesis 7, which points that personal innovativeness (willingness to try out any new technology) would influence cognitive absorption, was supported in the original paper, but not in the present replication. We presume that this hypothesis has not been confirmed because individuals with traits of innovativeness are more discerning about which new information technology would be more advantageous to spend time and attention. Compared to the 1990s, period of the original study, new ITs currently bombard us on a daily basis, in the social networks, gadgets, smartphones, and so on, making it unfeasible to test everything that is new. Having that in view, the average of 4.87 in PIIT in the original study and 3.97 in this replication means that in the present context users are less likely to try any new technology, considering the abundance of such ITs.

Fifth, the direct path from CA to BI was tested in both studies with different results. While in the original paper the increases in the immediate path explained variance in BI of just 2%, in our replication it reported an increase of 11%. Based on that, we may imply that CA is an even more critical antecedent of BI in the social media context when compared to the Web context. A likely reason might be bound to the power social media has in holding the attention of individuals, facilitating social interaction, and maintaining them connected for a long time. Many have admitted being addicted to social media, and it sure indicates a valuable issue for future studies. Considering the growing number of social media year by year, we believe that studies investigating individuals of different gender, location, age, and intellectual level is a relevant research topic in IS field, where the CA construct would undoubtedly provide the theoretical base.

Finally, in the conclusion of the original paper, Agarwal and Karahanna (2000) remarked that pleasure and enjoyment would be significant predictors of usage intention in the future. Our replication provides some evidence to support their argument since the use of social media context regards much more the pleasure and enjoyment of the social environment than to the usefulness for productivity and performance. Furthermore, we would suggest that future studies investigated how the Agarwal and Karahanna (2000) model works in a professional social media context, such as the LinkedIn. In that environment, users are mostly professionals from different areas, levels, and organizations, concerned with building or maintaining their networking to achieve better professional outcomes, rather than using it for enjoyment or for briefly resting from work.

5   Conclusion

Sixteen years after the Agarwal and Karahanna study, this methodological replication renders evidence that the Cognitive Absorption construct is comprised of five dimensions named Curiosity, Control, Focused Immersion, Temporal Dissociation and Heightened Enjoyment. Regarding the two personality traits mentioned as antecedents Cognitive Absorption, only playfulness was significant, since individuals at a playful cognitive state are also likely to experience a state of cognitive absorption. Moreover, statistics concerning the personality trait on the willingness to experience any new technology (Personal Innovativeness) were not significant. Behind that, we found that in a setting where a substantial amount of new technologies is presented to the user, the core conception relates more to experience new technology, already known by others, other than being the first to explore it.

Finally, despite all changes in technology and the time elapsed Agarwal and Karahanna (2000) have published their study, the cognitive absorption construct, and this nomological net have proven to be quite useful and valid when applied in a social media context.

Acknowledgments

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Appendix A: Factorial Analysis

Factorial Analysis – Agarwal and Karahanna (2000) / Replication study

	BI		PU		PEOU		SE		CPS		PIIT		TD		FI		HE		CO		CU	
BI_1	.94	.93	.59	.19	.54	.56	.17	.09	.27	0.45	.31	.18	.46	.57	0.3	.28	.51	.59	.48	.33	.4	.42
BI_2	.96	.95	.59	.13	.51	.61	.18	.08	.25	0.45	.34	.14	.46	.6	0.3	.32	.53	.63	.48	.33	.4	.49
BI_3	.96	.94	.65	.2	.56	.55	.15	.12	.29	0.49	.36	.16	.46	.56	0.31	.29	.57	.63	.53	.3	.42	.45
PU_1	.4	.06	.72	.87	.45	.05	.21	-.03	.4	0.28	.4	.4	.36	0	0.34	.12	.53	.19	.43	.2	.47	.25
PU_2	.6	-.06	.93	.72	.53	-.1	.19	-.04	.38	0.23	.38	.27	.34	-.14	0.31	.02	.54	.1	.48	.19	.5	.09
PU_3	.68	.34	.9	.84	.45	.32	.25	.01	.33	0.42	.41	.38	.37	.21	0.29	.2	.52	.4	.53	.29	.46	.38
PU_4	.53	.03	.91	.84	.37	-.03	.21	-.04	.33	0.26	.39	.35	.34	-.06	0.29	.1	.47	.12	.44	.21	.48	.19
PEOU_1	.48	.54	.39	.03	.86	.85	.34	.28	.26	0.3	.47	.17	.22	.46	0.28	.27	.41	.49	.56	.39	.29	.37
PEOU_2	.35	.44	.38	.21	.71	.78	.22	.26	.3	0.36	.27	.3	.19	.41	0.28	.31	.39	.39	.5	.33	.29	.34
PEOU_3	.51	.53	.5	.14	.86	.89	.3	.26	.34	0.43	.49	.35	.3	.52	0.37	.42	.49	.54	.62	.43	.41	.41
PEOU_4	.54	.57	.54	.13	.9	.9	.35	.26	.31	0.37	.48	.27	.32	.56	0.37	.39	.55	.54	.6	.37	.42	.41
SE_1	.09	.04	.14	.06	.27	.21	.74	**.59**	.08	.15	.32	.22	.03	.07	0.1	.01	.1	.05	.19	.03	.14	.07
SE_2	.05	-.11	.18	.05	.25	.08	.73	**.55**	.1	.03	.29	.17	.05	-.01	.06	.01	.07	.01	.14	.02	.16	.02
SE_3	.12	.04	.11	.01	.2	.24	.76	.68	.13	-.03	.36	.14	.03	.05	.05	.01	.11	.12	.22	.09	.18	.09
SE_4	.16	.08	.19	-.04	.29	.25	.82	.74	.18	-.07	.34	.1	.06	.11	.16	.03	.2	.08	.19	.03	.24	.02
SE_5	.15	.04	.24	-.02	.32	.22	.76	.74	.08	-.01	.26	.12	-.01	.05	.11	-.05	.14	.07	.14	-.02	.12	0
SE_6	.1	.07	.16	-.06	.29	.23	.32	.75	.03	0.06	.03	.12	.03	.02	.03	-.04	.09	.04	.1	.07	.02	.03
SE_7	.18	0.1	.07	.04	.11	.19	.8	.71	.21	0.06	.31	.2	.1	.16	.15	.1	.22	.11	.27	.05	.16	.03
SE_8	.06	.07	.26	.04	.33	.17	.7	.67	.12	0.08	.26	.2	.13	.06	.15	.03	.13	.08	.14	.05	.17	.06
SE_9	.15	.09	.17	-.02	.22	.22	.63	.71	.12	-.01	.19	.08	.01	.04	-.01	-.02	.07	.04	.2	.05	.04	.03
SE_10	.16	.1	.18	-.1	.25	.24	.7	.76	.14	.04	.25	.14	-.01	.1	.11	.01	.11	.05	.22	-.01	.08	.02
CPS_1	.27	.38	.35	.35	.31	.28	.2	.02	.76	0.8	.39	.46	.3	.28	.31	.24	.42	.37	.19	.31	.48	.46
CPS_2	.26	.41	.37	.28	.29	.36	.1	-.01	.87	0.86	.37	.37	.27	.3	0.34	.24	.41	.44	.21	.39	.56	.62
CPS_3	.29	.37	.39	.32	.38	.42	.16	.1	.75	0.72	.27	.39	.31	.24	0.38	.18	.44	.37	.29	.38	.42	.44
CPS_4	.24	.41	.37	.31	.25	.42	.12	-.02	.91	0.86	.37	.44	.27	.3	0.34	.25	.41	.47	.19	.35	.51	.53
CPS_5	.17	.47	.27	.33	.24	.3	.15	0	.8	0.79	.36	.38	.33	.29	0.31	.25	.42	.49	.1	.33	.45	.52
CPS_6	.2	.36	.28	.31	.32	.33	.14	.07	.83	0.8	.35	.37	.25	.22	0.32	.25	.37	.34	.22	.38	.38	.42

Factorial Analysis – Agarwal and Karahanna (2000) / Replication study																						
	BI		PU		PEOU		SE		CPS		PIIT		TD		FI		HE		CO		CU	
CPS_7	.23	.39	.33	.33	.31	.34	.16	-.01	.84	0.85	.34	.42	.18	.25	0.24	.26	.34	.43	.23	.35	.41	.52
PIIT_1	.41	.16	.36	.37	.36	.3	.26	.17	.34	0.45	.83	.92	.28	.19	0.31	.14	.41	.23	.28	.23	.44	.3
PIIT_2R	.31	.12	.34	.04	.45	.21	.3	.20	.32	.13	.77	**.43**	.22	.08	.32	-.01	.41	.14	.33	-.09	.28	.03
PIIT_3	.02	.02	.21	0.4	.32	.16	.34	.15	.25	.38	.7	.78	.08	.07	.29	.1	.31	.09	.17	.13	.29	.19
PIIT_4	.36	.22	.5	.39	.51	.35	.33	.19	.42	.47	.88	.92	.3	.19	.41	.16	.47	.29	.38	.24	.49	.38
TD_1	.38	.52	.34	.11	.27	.51	.05	.15	.32	.29	.24	.17	.87	.91	.46	0.5	.53	.5	.17	.26	.51	.4
TD_2	.47	.55	.42	.04	.32	.54	.13	.08	.33	.27	.27	.12	.84	.87	.42	.51	.56	.53	.24	.29	.49	.44
TD_3	.43	.51	.39	.03	.33	.5	.07	.14	.34	.28	.28	.14	.9	.87	.48	.52	.6	.48	.24	.27	.55	.44
TD_4	.39	.56	.26	.03	.21	.5	.03	.04	.17	0.3	.21	.18	.8	.88	.39	.48	.36	.49	.13	.26	.37	.41
TD_5	.39	.56	.29	.06	.2	.46	.02	.06	.21	0.32	.19	.19	.84	.85	.34	.46	.41	.49	.17	.24	.4	.38
FI_1	.3	.13	.29	-.02	.34	.23	.13	.03	.29	0.11	.31	-.01	.29	.35	.82	.67	.42	.23	.36	.13	.41	.17
FI_2	.27	.32	.29	.16	.26	.39	.1	-.03	.35	0.29	.31	.15	.52	.55	.74	.89	.54	.43	.16	.21	.52	.34
FI_3	.35	.31	.37	.21	.39	.37	.04	.01	.38	0.29	.42	.18	.51	.53	.79	.89	.55	.34	.34	.29	.52	.33
FI_4R	.17	-.16	.18	-.09	.24	-.15	.12	-.06	.14	-.10	.26	-.06	.18	-.2	.72	**-.11**	.34	-.11	.23	-.17	.2	-.21
FI_5	.14	.12	.23	.07	.29	.23	.14	.08	.25	.16	.32	.12	.34	.21	.81	.61	.38	.17	.25	.19	.43	.14
HE_1	.54	.62	.55	.3	.59	.55	.18	.05	.47	.5	.49	.25	.55	.52	.53	.38	.9	.91	.44	.38	.61	.68
HE_2	.37	.53	.47	.25	.33	.53	.17	.12	.39	.44	.39	.24	.49	.51	.49	.39	.83	.88	.24	.46	.58	.56
HE_3	.56	.64	.55	.3	.53	.53	.12	.1	.46	.52	.45	.21	.55	.52	.53	.37	.91	.92	.39	.41	.62	.64
HE_4R	.51	.41	.48	.1	.46	.29	.18	.09	.39	.21	.42	.06	.44	.35	.44	.16	.86	.65	0.4	.09	.52	.31
CO_1	.43	.22	.51	.15	.64	.35	.25	.12	.26	.27	.36	.17	.25	.2	.36	.16	.4	.31	.87	.76	.37	.28
CO_2R	.31	.06	.26	-.19	.31	.04	.2	.05	.03	-.17	.15	-.18	-.01	-.07	.07	-.15	.17	-.04	.58	**-.24**	.12	-.21
CO_3	.48	.33	.49	.29	.61	.39	.18	-.01	.25	.44	.33	.21	.24	.29	.34	.28	.39	.39	.88	.89	.34	.42
CU_1	.37	.44	.49	.25	.37	.44	.18	.05	.51	.52	.47	.29	.52	.44	.52	.33	.61	.64	.33	.36	.91	.9
CU_2	.47	.47	.52	.28	.44	.43	.16	.09	.48	.54	.49	.34	.51	.48	.45	.31	.62	.64	.35	.32	.9	.88
CU_3	.31	.32	.47	.31	.34	.27	.18	-.03	.51	.55	.4	.25	.45	.28	.48	.23	.56	.45	.31	.45	.88	.8

Appendix B: Measurement Instrument

Behavioral Intention
BI1. I plan to use the social media in the future.
BI2. I intend to continue using the social media in the future.
BI3. I expect my use of the social media to continue in the future.

Perceived Usefulness
PU1. Using the social media enhances my effectiveness in college.
PU2. Using the social media improves my productivity.
PU3. I find the social media helpful for my college activities.
PU4. Using the social media improves my performance in college.

Perceived Ease-of-Use
PEOU1. Learning to operate the social media is easy for me.
PEOU2. I find it easy to get the social media to do what I want it to do.
PEOU3. It is easy for me to become skillful at using the social media.
PEOU4. I find the social media easy to use.

Cognitive Absorption
CPS1. When using the social media, I am Spontaneous.
CPS 2. When using the social media, I am Imaginative.
CPS3. When using the social media, I am Flexible.
CPS4. When using the social media, I am Creative.
CPS5. When using the social media, I am Playful.
CPS6. When using the social media, I am Original.
CPS7. When using the social media, I am Inventive.

Personal Innovativeness
PIIT1. If I heard about new information technology, I would look for ways to experiment with it.
PIIT2. In general, I am hesitant to try out new information technologies.
PIIT3. Among my peers, I am usually the first to try out new information technologies.
PIIT4. I like to experiment with new information technologies.

Temporal Dissociation
TD1. Time appears to go by very quickly when I am using the social media.
TD2. Sometimes I lose track of time when I am using the social media.
TD3. Time flies when I am using the social media.
TD4. Most time when I get on the social media, I end up spending more time that I had planned.
TD5. I often spend more time on the social media than I had intended.

Focused Immersion
FI1. While using the social media, I can block out most other distractions.
FI2. While using the social media, I am absorbed in what I am doing.
FI3. While on the social media, I am immersed in the task I am performing.
FI4. When on the social media, I get distracted by other attentions very easily.
FI5. While on the social media, my attention does not get diverted very easily.

Heightened Enjoyment
HE1. I have fun interacting with the social media.
HE2. Using the social media provides me with a lot of enjoyment.
HE3. I enjoy using the social media.
HE4. Using the social media bores me.

Control
CO1. When using the social media, I feel in control.
CO2. I feel that I have no control over my interaction with the social media.
CO3. The social media allows me to control my computer interaction.

Curiosity
CU1. Using the social media excites my interest.
CU2. Interacting with the social media makes me curious.
CU3. Using the social media arouses my imagination.

Self-Efficacy
Often we are told about software packages that are available to make work easier. For the following questions, imagine that you were given a new software package for some aspect of your work. It doesn't matter what this software package precisely does, only that it is intended to make your job easier and that you have never used it before.

The questions below ask you to indicate whether you could use this unfamiliar software package under a variety of conditions. For each of the conditions, please point ou whether you think you would be able to complete the work using the software package. Match either "Yes" or "No." Then, for each condition that you answered "Yes," please rate your confidence about your first judgment, by writing in a number from 1 to 10, where 1 indicates "Not at all confident," and 10 indicates "Totally confident." You may enter any number in this range.

I could complete the job using the software package...

SE1. ...if there was no one around to tell me what to do as I go.
SE2. ...if I had never used a package like it before.
SE3. ...if I had only the software manuals for reference.
SE4. ...if I had seen someone else using it before trying it myself.
SE5. ...if I could call someone for help if I got stuck.
SE6. ...if someone else had helped me get started.
SE7. ...if I had a lot of time to complete the job for which the software was provided.
SE8. ...if I had just the built-in help facility for assistance.
SE9. ...if someone showed me how to do it first.
SE10. ...if I had used similar packages like this one before to do the job.

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