

Life History Strategies and Problematic Use of Short-Form Video Applications

Xinrui Wang, Shan Zhao, Meng Xuan Zhang, Feifei Chen & Lei Chang

Evolutionary Psychological Science

e-ISSN 2198-9885

Evolutionary Psychological Science
DOI 10.1007/s40806-020-00255-9



Your article is protected by copyright and all rights are held exclusively by Springer Nature Switzerland AG. This e-offprint is for personal use only and shall not be self-archived in electronic repositories. If you wish to self-archive your article, please use the accepted manuscript version for posting on your own website. You may further deposit the accepted manuscript version in any repository, provided it is only made publicly available 12 months after official publication or later and provided acknowledgement is given to the original source of publication and a link is inserted to the published article on Springer's website. The link must be accompanied by the following text: "The final publication is available at link.springer.com".



Life History Strategies and Problematic Use of Short-Form Video Applications

Xinrui Wang¹ · Shan Zhao¹ · Meng Xuan Zhang¹ · Feifei Chen¹ · Lei Chang¹

Received: 24 April 2020 / Revised: 29 July 2020 / Accepted: 31 July 2020
© Springer Nature Switzerland AG 2020

Abstract

With the booming development of short-form video applications (SVAs), problematic use of SVAs raises new concerns. Taking a life history approach, the present study revealed that problematic use of SVAs may be a manifestation of fast life history strategies (LHS), associated with a lack of consideration of future consequences and sole focus on immediate rewards. An analysis of the responses of 376 TikTok users demonstrated that slow LHS was negatively associated with problematic SVA use and was positively associated with future orientation, which in turn was negatively associated with problematic SVA use. This set of associations suggests that problematic SVA use or other behavioral addiction represents a fast LHS manifestation that discounts the future by focusing on immediate hedonic rewards.

Keywords Short-form video application · Problematic use · Life history strategy · Future orientation

Introduction

The short-form video application (SVA) is a burgeoning online social platform that has become popular worldwide. Taking TikTok (Douyin in Chinese) as an example, since its 2016 launch in China, it has rapidly gained users, with 250 million daily active users at the end of 2018 (ByteDance 2019), and it has been gaining global popularity (Iqbal 2019; Perez 2018). Through SVA, people can create and share short videos that last several seconds to several minutes but mostly within 1 min. SVAs enable users to create intricate videos with ease, and they present customized content to users based on their preferences. Because creating and watching short videos are enjoyable, people may be tempted to use SVAs excessively and become problematic users (Fang et al. 2019; Zhang et al. 2019).

Referencing concepts of problematic use of other types of social networking service (SNS; e.g., Facebook, Instagram, and YouTube), the present research defined problematic SVA use as uncontrolled and compulsive use of SVAs that is likely to have negative physical or sociopsychological consequences (Hawi and Samaha 2017; Kim et al. 2009;

Kircaburun and Griffiths 2018; Klobas et al. 2018; Meena et al. 2012; Turel and Qahri-Saremi 2016). Problematic use of an SNS has been linked to impulsivity (Rothen et al. 2018; Turel and Bechara 2017), sensation seeking (Sheldon 2012; Wang et al. 2012), and future discounting (Turel et al. 2018). Connections have been identified between problematic SNS use and extroversion, neuroticism, unconscientiousness (Andreassen et al. 2012; Wilson et al. 2010), psychopathy (Chung et al. 2019; Lee 2019), and mental distress (Hong et al. 2014; Koc and Gulyagci 2013; Pontes et al. 2018). Considering that the aforementioned risk factors have been argued to be clustered in fast life history (LH) profiles (e.g., Copping et al. 2014; Del Giudice et al. 2014; Figueredo et al. 2007; Hurst and Kavanagh 2017; Jonason et al. 2010), the present study presumed that fast LH might also indicate problematic use of SVAs.

LH theory describes how individuals allocate their limited time and energy to competing life tasks, such as growth and development, body maintenance, and mating and reproduction (Figueredo et al. 2005, 2006; Stearns 2000). Located on a fast to slow continuum, life history strategies (LHS) are employed to organize a suite of coordinating functioning psychosocial traits and behaviors in response to environmental constraints (Promislow and Harvey 1990). Harsh and unstable environments favor fast LHS by which individuals develop fast and reproduce early to realize residual fitness gains before mortality and mobility strike. By contrast, individuals who

✉ Lei Chang
chang@um.edu.mo

¹ Department of Psychology, Faculty of Social Sciences, University of Macau, Avenida da Universidade, Taipa, Macau, China

grow up in benign and stable environments are more likely to adopt slow LHS by prioritizing development over mating because the stable environment affords future fitness gains (Ellis 2004; Chang and Lu 2018). Fast versus slow LHS may also explain individual differences in various psychosocial characteristics and behaviors. For instance, fast strategists tend to value immediate rewards, disvalue distal benefits (seen as probably fruitless), be more aggressive and exploitative, and take more risks. Slow strategists tend to be oriented toward longer term planning, value conspecific cooperation and co-existence, and avoid risks, all to maximize long-term fitness benefits (Belsky et al. 2010; Griskevicius et al. 2011; Lu and Chang 2019; Mishra et al. 2017; Simpson et al. 2012).

Future-oriented traits have been seen as central characteristics of slow LHS adapted to predictable environments in which long-term investment is likely to succeed (Chang et al. 2019; Kruger et al. 2008; Kruger et al. 2020). Future orientation refers to a long-term perspective characterized by the pursuit of prospective goals and rewards, a capacity for delaying gratification, and awareness of future consequences from current behaviors (Steinberg et al. 2009; Strathman et al. 1994; Zimbardo and Boyd 1999). Future orientation may play a critical role in the relationship between LHS, environmental constraints, and LHS-related behaviors such as risk-taking, sociosexual orientation, procrastination, and health behaviors (Chen and Chang 2016; Chen and Kruger 2017; Kruger et al. 2008; Kruger et al. 2020; Ponzi et al. 2015). To persevere with long-term objectives, a future-oriented person is more likely to resist present hedonic obsessions such as behavioral addiction.

Addictive behaviors are characterized by indulgence in the immediate pleasures provided by psychoactive substances, alcohol, or the Internet (Nesse and Berridge 1997; Nixon and McClain 2010; Meshi et al. 2015; Yuan et al. 2011) and ignoring potential negative outcomes, such as damage to health and social functioning. This description may fit problematic use of SVAs, the primary selling point of which is that they provide exciting and enjoyable content to their users. From the LH perspective, problematic SVA use may be seen as a behavioral expression of fast LHS, which is favored in unpredictable environments where grabbing as many immediate rewards as possible is a better strategy than expecting future benefits that may never be realized. Hence, future-oriented individuals may be less likely to engage in such problematic behaviors. Indeed, empirical studies have discovered negative associations between future orientation and substance abuse (Petry et al. 1998), pathological gambling (Hodgins and Engel 2002), and the Internet and Facebook addiction (Kim et al. 2017; Przepiorka and Blachnio 2016). The present study postulated that slow LHS is negatively associated with problematic SVA use. In addition, slow LH is hypothesized to be associated with strong future orientation, which, in turn, is related to less problematic SVA use.

Method

Participants

From March to April 2019, 376 TikTok users (139 men, reported age 17 to 62 years, mean (M) = 20.58, standard deviation (SD) = 4.39) were recruited through a Chinese online survey website (<https://www.wjx.cn/>). The participants came from 26 provinces (mainly from Beijing, $n = 85$, Henan, $n = 67$, and Shanxi, $n = 53$), including university students and community-dwelling adults. Participants answered a set of questions online voluntarily and anonymously. Ethics approval was obtained from the first author's university.

Measures

Slow LHS was measured using three subscales of the K-SF-42, a recently developed short form of the Arizona Life History Battery (Figueredo et al. 2017); the subscales were insight, planning, and control (e.g., "Once I make a plan to get something done, I stick to it"); parental relationship quality (e.g., "While you were growing up, your mother/father gave you time and attention when you needed it"); and romantic partner attachment (e.g., "I worry that my romantic partner/important other won't care about me as much as I care about him/her", reverse coded). The participants answered the questions on a 7-point scale ranging from 1 = strongly disagree to 7 = strongly agree. Given that a part of our sample was likely to be young adults without romantic relationship experience, we added a screening question to identify participants who had not had a romantic relationship. These participants were asked to rate their attachment to an important other in their life instead of a romantic partner. The three selected subscales were highly correlated with the full scale ($r = 0.860$, $p < 0.001$) in another study based on 301 undergraduate students (Wang & Chang, unpublished manuscript). The mean of the 18 items was used as a composite variable, with a higher score indicating that the participant was located at the relatively slow end of LHS. The internal consistency reliability estimate for the composite was 0.87.

Degree of future orientation was measured using the 12-item Consideration of Future Consequences Scale (Strathman et al. 1994). The participants answered on a 5-point scale ranging from 1 = strongly disagree to 5 = strongly agree. Sample items included "I consider how things might be in the future and try to influence those things through my day to day behavior." The mean of the 12 items was used as the composite variable. The internal consistency reliability estimate was 0.67.

Problematic SVA use was measured by adapting the 20-item Problematic Mobile Social Media Usage Assessment Questionnaire (Jiang 2018). We first asked the participants to identify whether they thought they had the problem of

excessive TikTok use (1 = yes, 0 = no). We then asked the participants to respond to the items on a 5-point scale ranging from 1 = strongly disagree to 5 = strongly agree. The items assessed dependency on TikTok (e.g., “I spend a lot of time using TikTok every day”), physical and cognitive impairment caused by excessive use (e.g., “Because of frequent and long-time use of TikTok, my eyesight has declined”), fear of missing out (e.g., “I’m afraid of missing things when I don’t check TikTok for a while”), and regret (e.g., “I often feel regret that I procrastinate on study or work because of using TikTok”). The mean of the 20 items was computed as a composite variable. The internal consistency reliability estimate was 0.95.

The participants provided their gender (1 = male, 2 = female) and age (years) as well as their subjective socioeconomic status (SES) relative to other people in their city on a 10-rung ladder (1 = the lowest SES to 10 = the highest SES; Adler et al. 2000).

Results

The descriptive statistics for all study variables and their correlation coefficients are presented in Table 1. Fifty-three participants (14.1%) believed that they used TikTok excessively. The participants who identified themselves as excessive users, relative to those who did not, scored higher on problematic SVA use (excessive users, $M = 2.97$, $SD = 0.59$; nonexcessive users, $M = 2.30$, $SD = 0.84$; $t = 7.14$, $p < 0.001$).

All major variables were significantly associated with each other in the expected directions. We examined gender difference in problematic SVA use as well. The results indicated that the male participants reported higher problematic SVA use than the female participants (male, $M = 2.54$, $SD = 0.85$; female, $M = 2.31$, $SD = 0.82$; $t = 2.56$, $p = 0.01$).

Path analysis was conducted using model 4 of the SPSS PROCESS macro (Hayes 2013). Only three participants had missing data for age, so we used listwise deletion in the model analysis. As presented in Fig. 1, after sex, age, and SES were controlled, slow LHS predicts less problematic SVA use ($B = -0.33$, $p < 0.001$) and stronger future orientation ($B = 0.16$,

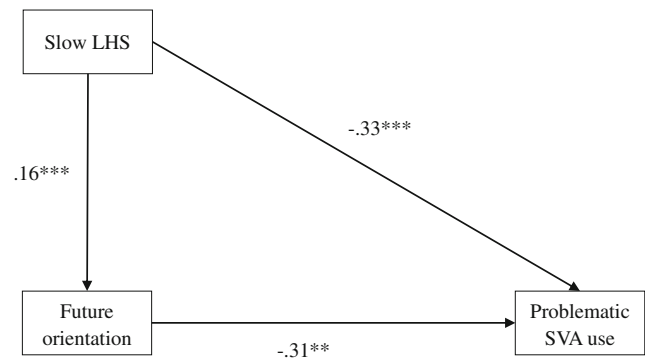


Fig. 1 Associations among slow life history strategy, future orientation, and problematic short-form video application (SVA) use. ** $p < 0.01$, *** $p < 0.001$.

$p < 0.001$). Stronger future orientation predicted less problematic SVA use ($B = -0.31$, $p = 0.001$).

Following the suggestion of a reviewer, we also examined the associations between the three subscales of K-SF-42 and the two outcome variables. The associations were all in the expected directions and were statistically significant (insight, planning, and control with future orientation, $r = 0.29$, $p < 0.001$, and with problematic SVA use, $r = -0.23$, $p < 0.001$; parental relationship quality with future orientation, $r = 0.25$, $p < 0.001$, and with problematic SVA use, $r = -0.26$, $p < 0.001$; romantic partner attachment with future orientation, $r = 0.19$, $p < 0.001$, and with problematic SVA use, $r = -0.36$, $p < 0.001$).

Discussion

The present study is the first reported attempt to investigate problematic SVA use through the LH approach. Overall, 14.1% of the TikTok users we surveyed reported that they used TikTok excessively. These respondents obtained higher scores for problematic SVA use than those who reported not having the problem. This suggests that SVAs may indeed induce problematic use that troubles individuals, indicating that problematic SVA use should be paid close attention. Sex differences in SNS addiction have been previously reported but are controversial (e.g., Cam and Isbulan 2012; Klobas et al.

Table 1 Descriptive statistics and correlations among all study variables ($n = 376$)

	M	SD	1	2	3	4	5	6
1. Problematic SVA use	2.39	0.84	1					
2. Slow LHS	4.93	0.85	-0.41***	1				
3. Future orientation	3.15	0.45	-0.31***	0.34**	1			
4. SES	5.21	1.73	-0.16**	0.16**	0.23**	1		
5. Age	20.58	4.39	0.06	0.03	-0.12*	-0.05	1	
4. Gender	—	—	0.13*	0.10	0.03	-0.00	0.02	1

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

2018; Tang and Koh 2017); the present study determined that men received higher scores than women for problematic SVA use. This result is consistent with the LH theory prediction that men are more likely to exhibit fast LH-related behaviors such as aggression and risk-taking than women (Hill and Chow 2002; Lu and Chang 2019; Wang et al. 2009). Our results indicate that men are more vulnerable to problematic SVA use than women.

The current study demonstrated that after sex, age, and subjective SES were controlled, slow LH was associated with less problematic SVA use. In modern society, in which slow LH traits such as diligence, responsibility, and long-term perspectives are emphasized (Chen and Chang 2016), addictive behaviors are seen as disorders (Goodman 1990). However, from an evolutionary perspective, the association between fast LHS and more problematic SVA use indicates that addictive behaviors could have adaptive meanings for those who grew up in a harsh or unpredictable environment. Immersion in drugs or entertainment on the Internet may reduce the cost of long-term investment and result in allocation of more energy to obtaining immediate rewards and enjoyment instead. By contrast, the negative association between slow LHS and problematic SVA use implies that a stable living environment orients individuals toward future planning and long-term fitness gains away from seeking immediate hedonic reward.

Consistent with previous research, our results indicated that slow LHS significantly predicts stronger future orientation (Chen and Chang 2016; Chen and Kruger 2017), which, in turn, predicts less problematic SVA use. Slow LH strategists, developed in a stable environment in which long-term investments are likely to obtain returns, are predisposed to be future oriented, emphasizing long-term fitness in health and development (Devolder and Lens 1982; Johnson et al. 2014; Lin et al. 2016). This orientation makes individuals less likely to be driven by the immediate hedonic enjoyment provided by SVAs, resulting in resistance of problematic SVA use. The finding suggests that future orientation being a protective factor against problematic SVA use may be included in interventions to train problematic users to refocus their attention on health enhancing behavior and academic performance (Hall and Fong 2003; Oyserman et al. 2006).

The present study has limitations. For example, using some but not all of the subscales of the K-SF-42 to measure slow LHS and using the psychometric approach as a whole may not have fully captured the construct. In future research, scholars should assess the construct more comprehensively by combining physiological (e.g., endocrine activities), biodemographic (e.g., age of puberty, age of sexual debut, and age of first reproduction), and psychometric measures. The current study did not examine individuals' childhood environment, which has profound influence on LH and related behavioral manifestations (e.g., Simpson et al. 2012) including SVA use. Future studies that include measures of developmental

environment may bring more insight into designing effective intervention of problematic SVA use. The present research also did not investigate potential fitness that might derive from SVA use. For example, self-expression and presentation through SVAs may increase individuals' perceived social competence, competitiveness, and even mate value, although the desire for self-expression may aggravate problematic SVA use. The present study only focused on problematic use of TikTok but excluded other SVAs such as Facebook and Instagram because they are not widely used in China. Researchers could also apply the evolutionary approach to investigate problematic use of other social platform like Facebook as well as other behavioral addictions.

Compliance with Ethical Standards

Conflict of Interest All authors declare that they have no conflict of interest.

Code Availability Not applicable.

References

- Adler, N. E., Epel, E. S., Castellazzo, G., & Ickovics, J. R. (2000). Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy, white women. *Health Psychology, 19*(6), 586–592. <https://doi.org/10.1037/0278-6133.19.6.586>.
- Andreassen, C., Torsheim, T., Brunborg, G., & Pallesen, S. (2012). Development of a Facebook addiction scale. *Psychological Reports, 110*, 501–517. <https://doi.org/10.2466/02.09.18.PR0.110.2.501-517>.
- Belsky, J., Steinberg, L., Houts, R. M., Halpern-Felsher, B. L., & Nichd. (2010). The development of reproductive strategy in females: Early maternal harshness -> earlier menarche -> increased sexual risk taking. *Developmental Psychology, 46*(1), 120–128. <https://doi.org/10.1037/a0015549>.
- ByteDance. (2019). TikTok big data analysis report. <https://index.toutiao.com/pdfs/view.html?file=/index.toutiao.com/report/download/f024b54a032bc14b5a837398b25cdec.pdf>. Accessed May 2019
- Cam, E., & Isbulan, O. (2012). A new addiction for teacher candidates: Social networks. *Turkish Online Journal of Educational Technology, 11*(3), 14–19.
- Chang, L., & Lu, H. J. (2018). Resource and extrinsic risk in defining fast life histories of rural Chinese left-behind children. *Evolution and Human Behavior, 39*(1), 59–66. <https://doi.org/10.1016/j.evolhumbehav.2017.10.003>.
- Chang, L., Lu, H. J., Lansford, J., Bornstein, M., Steinberg, L., Chen, B.-B., et al. (2019). External environment and internal state in relation to life-history behavioural profiles of adolescents in nine countries. *Proceedings of the Royal Society B: Biological Sciences, 286*, 20192097. <https://doi.org/10.1098/rspb.2019.2097>
- Chen, B. B., & Chang, L. (2016). Procrastination as a fast life history strategy. *Evolutionary Psychology, 14*(1), 147470491663031. <https://doi.org/10.1177/1474704916630314>.
- Chen, B. B., & Kruger, D. (2017). Future orientation as a mediator between perceived environmental cues in likelihood of future success and procrastination. *Personality and Individual Differences, 108*, 128–132. <https://doi.org/10.1016/j.paid.2016.12.017>.

- Chung, K. L., Morshidi, I., Yoong, L. C., & Thian, K. N. (2019). The role of the dark tetrad and impulsivity in social media addiction: Findings from Malaysia. *Personality and Individual Differences, 143*, 62–67. <https://doi.org/10.1016/j.paid.2019.02.016>.
- Copping, L., Campbell, A., & Muncer, S. (2014). Conceptualizing time preference: A life-history analysis. *Evolutionary psychology: an international journal of evolutionary approaches to psychology and behavior, 12*, 829–847. <https://doi.org/10.1177/147470491401200411>.
- Del Giudice, M., Klimczuk, A. C. E., Traficante, D. M., & Maestriperi, D. (2014). Autistic-like and schizotypal traits in a life history perspective: Diametrical associations with impulsivity, sensation seeking, and sociosexual behavior. *Evolution and Human Behavior, 35*(5), 415–424. <https://doi.org/10.1016/j.evolhumbehav.2014.05.007>.
- Devolder, M. L., & Lens, W. (1982). Academic-achievement and future time perspective as a cognitive-motivational concept. *Journal of Personality and Social Psychology, 42*(3), 566–571. <https://doi.org/10.1037/0022-3514.42.3.566>.
- Ellis, Bruce J. (2004). Timing of Pubertal Maturation in Girls: An Integrated Life History Approach. *Psychological Bulletin, 130*, 920–958.
- Fang, J., Wang, Z. Y., & Hao, B. (2019). Analysis of “anesthesia” mechanism in mobile short video applications take “Tik Tok” app as an example. *Proceedings of the First International Symposium on Management and Social Sciences (Ismss 2019), 309*, 348–351.
- Figueredo, A. J., Vasquez, G., Brumbach, B. H., Sefcek, J. A., Kirsner, B. R., & Jacobs, W. J. (2005). The K-factor: Individual differences in life history strategy. *Personality and Individual Differences, 39*(8), 1349–1360. <https://doi.org/10.1016/j.paid.2005.06.009>.
- Figueredo, A. J., Vasquez, G., Brumbach, B. H., Schneider, S. M. R., Sefcek, J. A., Tal, I. R., Hill, D., Wenner, C. J., & Jacobs, W. J. (2006). Consilience and life history theory: From genes to brain to reproductive strategy. *Developmental Review, 26*(2), 243–275. <https://doi.org/10.1016/j.dr.2006.02.002>.
- Figueredo, A. J., Vasquez, G., Brumbach, B. H., & Schneider, S. M. R. (2007). The K-factor, covitality, and personality: A psychometric test of life history theory. *Human Nature-an Interdisciplinary Biosocial Perspective, 18*(1), 47–73. <https://doi.org/10.1007/Bf02820846>.
- Figueredo, A. J., Garcia, R. A., Menke, J. M., Jacobs, W. J., Gladden, P. R., Bianchi, J., Patch, E. A., Beck, C. J. A., Kavanagh, P. S., Sotomayor-Peterson, M., Jiang, Y. F., & Li, N. P. (2017). The K-SF-42: A new short form of the Arizona life history battery. *Evolutionary Psychology, 15*(1), 1–12. <https://doi.org/10.1177/1474704916676276>.
- Goodman, A. (1990). Addiction: Definition and implications. *British Journal of Addiction, 85*(11), 1403–1408.
- Griskevicius, V., Tybur, J., Delton, A., & Robertson, T. (2011). The Influence of Mortality and Socioeconomic Status on Risk and Delayed Rewards: A Life History Theory Approach. *Journal of Personality and Social Psychology, 100*, 1015–1026. <https://doi.org/10.1037/a0022403>
- Hall, P. A., & Fong, G. T. (2003). The effects of a brief time perspective intervention for increasing physical activity among young adults. *Psychology & Health, 18*(6), 685–706. <https://doi.org/10.1080/0887044031000110447>.
- Hawi, N. S., & Samaha, M. (2017). The relations among social media addiction, self-esteem, and life satisfaction in university students. *Social Science Computer Review, 35*(5), 576–586. <https://doi.org/10.1177/0894439316660340>.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: Guilford Press.
- Hill, E. M., & Chow, K. (2002). Life-history theory and risky drinking. *Addiction, 97*(4), 401–413. <https://doi.org/10.1046/j.1360-0443.2002.00020.x>.
- Hodgins, D. C., & Engel, A. (2002). Future time perspective in pathological gamblers. *Journal of Nervous and Mental Disease, 190*(11), 775–780. <https://doi.org/10.1097/01.Nmd.0000038173.64197.93>.
- Hong, F. Y., Huang, D. H., Lin, H. Y., & Chiu, S. L. (2014). Analysis of the psychological traits, Facebook usage, and Facebook addiction model of Taiwanese university students. *Telematics and Informatics, 31*(4), 597–606. <https://doi.org/10.1016/j.tele.2014.01.001>.
- Hurst, J. E., & Kavanagh, P. S. (2017). Life history strategies and psychopathology: The faster the life strategies, the more symptoms of psychopathology. *Evolution and Human Behavior, 38*(1), 1–8. <https://doi.org/10.1016/j.evolhumbehav.2016.06.001>.
- Iqbal, M. (2019). TikTok revenue and usage statistics (2019). <https://www.businessofapps.com/data/tik-tok-statistics/>. Accessed May 2019
- Jiang, Y. (2018). Development of problematic mobile social media usage assessment questionnaire for adolescents. *Psychology: Techniques and Applications, 6*(10), 613–621.
- Johnson, S. R. L., Blum, R. W., & Cheng, T. L. (2014). Future orientation: A construct with implications for adolescent health and wellbeing. *International Journal of Adolescent Medicine and Health, 26*(4), 459–468. <https://doi.org/10.1515/ijamh-2013-0333>.
- Jonason, P., Koenig, B., & Tost, J. (2010). Living a fast life: The dark triad and life history theory. *Human Nature, 21*, 428–442. <https://doi.org/10.1007/s12110-010-9102-4>.
- Kim, J., LaRose, R., & Peng, W. (2009). Loneliness as the cause and the effect of problematic internet use: The relationship between internet use and psychological well-being. *Cyberpsychology & Behavior, 12*(4), 451–455. <https://doi.org/10.1089/cpb.2008.0327>.
- Kim, J., Hong, H., Lee, J., & Hyun, M. H. (2017). Effects of time perspective and self-control on procrastination and Internet addiction. *Journal of Behavioral Addictions, 6*(2), 229–236. <https://doi.org/10.1556/2006.6.2017.017>.
- Kircaburun, K., & Griffiths, M. D. (2018). Instagram addiction and the big five of personality: The mediating role of self-liking. *Journal of Behavioral Addictions, 7*(1), 158–170. <https://doi.org/10.1556/2006.7.2018.15>.
- Klobas, J. E., McGill, T. J., Moghavi, S., & Paramanathan, T. (2018). Compulsive YouTube usage: A comparison of use motivation and personality effects. *Computers in Human Behavior, 87*, 129–139. <https://doi.org/10.1016/j.chb.2018.05.038>.
- Koc, M., & Gulyagci, S. (2013). Facebook addiction among Turkish college students: The role of psychological health, demographic, and usage characteristics. *Cyberpsychology, Behavior and Social Networking, 16*(4), 279–284. <https://doi.org/10.1089/cyber.2012.0249>.
- Kruger, D. J., Reischl, T., & Zimmerman, M. A. (2008). Time perspective as a mechanism for functional developmental adaptation. *Journal of Social, Evolutionary, and Cultural Psychology, 2*(1), 1–22. <https://doi.org/10.1037/h0099336>.
- Kruger, D. J., Kruger, J. S., Jordan, T., Sheu, J.-J., Glassman, T., & Miller, S. A. (2020). Life history speed mediates the relationship between environmental conditions, health-related behaviors, and self-reported health. *EvoS: The Journal of the Evolutionary Studies Consortium, 11*, 68–93.
- Lee, S. L. (2019). Predicting SNS addiction with the big five and the dark triad. *Cyberpsychology-Journal of Psychosocial Research on Cyberspace, 13*(1). <https://doi.org/10.5817/Cp2019-1-3>.
- Lin, W., Wang, L., Bamberger, P. A., Zhang, Q., Wang, H. F., Guo, W. C., Shi, J., & Zhang, T. (2016). Leading future orientations for current effectiveness: The role of engagement and supervisor coaching in linking future work self salience to job performance. *Journal of Vocational Behavior, 92*, 145–156. <https://doi.org/10.1016/j.jvb.2015.12.002>.

- Lu, H. J., & Chang, L. (2019). *Aggression and risk-taking as adaptive implementations of fast life history strategy*, 22(5), e12827. <https://doi.org/10.1111/desc.12827>
- Meena, P. S., Mittal, P. K., & Solanki, R. K. (2012). Problematic use of social networking sites among urban school going teenagers. *Industrial Psychiatry Journal*, 21(2), 94–97. <https://doi.org/10.4103/0972-6748.119589>.
- Meshi, D., Tamir, D. I., & Heekeren, H. R. (2015). The emerging neuroscience of social media. *Trends in Cognitive Sciences*, 19(12), 771–782. <https://doi.org/10.1016/j.tics.2015.09.004>.
- Mishra, S., Templeton, A. J., & Meadows, T. J. S. (2017). Living, fast and slow: Is life history orientation associated with risk-related personality traits, risk attitudes, criminal outcomes, and gambling? *Personality and Individual Differences*, 117, 242–248. <https://doi.org/10.1016/j.paid.2017.06.009>.
- Nesse, R. M., & Berridge, K. C. (1997). Psychoactive drug use in evolutionary perspective. *Science*, 278(5335), 63–66. <https://doi.org/10.1126/science.278.5335.63>.
- Nixon, K., & McClain, J. (2010). Adolescence as a critical window for developing an alcohol use disorder: Current findings in neuroscience. *Current Opinion in Psychiatry*, 23, 227–232. <https://doi.org/10.1097/YCO.0b013e32833864fe>.
- Oyserman, D., Bybee, D., & Terry, K. (2006). Possible selves and academic outcomes: How and when possible selves impel action. *Journal of Personality and Social Psychology*, 91(1), 188–204. <https://doi.org/10.1037/0022-3514.91.1.188>.
- Perez, S. (2018). TikTok surpassed Facebook, Instagram, Snapchat & YouTube in downloads last month. <https://techcrunch.com/2018/11/02/tiktok-surpassed-facebook-instagram-snapchat-youtube-in-downloads-last-month/>. Accessed May 2019
- Petry, N. M., Bickel, W. K., & Arnett, M. (1998). Shortened time horizons and insensitivity to future consequences in heroin addicts. *Addiction*, 93(5), 729–738. <https://doi.org/10.1046/j.1360-0443.1998.9357298.x>.
- Pontes, H. M., Taylor, M., & Stavropoulos, V. (2018). Beyond “Facebook addiction”: The role of cognitive-related factors and psychiatric distress in social networking site addiction. *Cyberpsychology, Behavior and Social Networking*, 21(4), 240–247. <https://doi.org/10.1089/cyber.2017.0609>.
- Ponzi, D., Henry, A., Kubicki, K., Nickels, N., Wilson, M. C., & Maestripieri, D. (2015). The slow and fast life histories of early birds and night owls: Their future- or present-orientation accounts for their sexually monogamous or promiscuous tendencies. *Evolution and Human Behavior*, 36(2), 117–122. <https://doi.org/10.1016/j.evolhumbehav.2014.09.008>.
- Promislow, D., & Harvey, P. (1990). Living fast and dying young: a comparative analysis of life-history variation among mammals. *Journal of Zoology*, 220, 417–437. <https://doi.org/10.1111/j.1469-7998.1990.tb04316.x>
- Przepiorka, A., & Blachnio, A. (2016). Time perspective in Internet and Facebook addiction. *Computers in Human Behavior*, 60, 13–18. <https://doi.org/10.1016/j.chb.2016.02.045>.
- Rothen, S., Briefer, J.-F., Deleuze, J., Karila, L., Andreassen, C. S., Achab, S., Thorens, G., Khazaal, Y., Zullino, D., & Billieux, J. (2018). Disentangling the role of users’ preferences and impulsivity traits in problematic Facebook use. *PLoS One*, 13(9), e0201971. <https://doi.org/10.1371/journal.pone.0201971>.
- Sheldon, P. (2012). Profiling the non-users: Examination of life-position indicators, sensation seeking, shyness, and loneliness among users and non-users of social network sites. *Computers in Human Behavior*, 28(5), 1960–1965. <https://doi.org/10.1016/j.chb.2012.05.016>.
- Simpson, J., Griskevicius, V., Kuo, S., Sung, S., & Collins, W. (2012). Evolution, stress, and sensitive periods: The influence of unpredictability in early versus late childhood on sex and risky behavior. *Developmental Psychology*, 48, 674–686. <https://doi.org/10.1037/a0027293>.
- Stearns, Stephen C. (2000). Life history evolution: successes, limitations, and prospects. *Naturwissenschaften*, 87, 476–486.
- Steinberg, L., Graham, S., O’Brien, L., Woolard, J., Cauffman, E., & Banich, M. (2009). *Age differences in future orientation and delay discounting.*, 80(1), 28–44. <https://doi.org/10.1111/j.1467-8624.2008.01244.x>
- Strathman, A., Gleicher, F., Boninger, D. S., & Edwards, C. S. (1994). The consideration of future consequences: Weighing immediate and distant outcomes of behavior. *Journal of Personality and Social Psychology*, 66(4), 742–752. <https://doi.org/10.1037/0022-3514.66.4.742>.
- Tang, C. S. K., & Koh, Y. Y. W. (2017). Online social networking addiction among college students in Singapore: Comorbidity with behavioral addiction and affective disorder. *Asian Journal of Psychiatry*, 25, 175–178. <https://doi.org/10.1016/j.ajp.2016.10.027>.
- Turel, O., & Bechara, A. (2017). Effects of motor impulsivity and sleep quality on swearing, interpersonally deviant and disadvantageous behaviors on online social networking sites. *Personality and Individual Differences*, 108, 91–97. <https://doi.org/10.1016/j.paid.2016.12.005>.
- Turel, O., & Qahri-Saremi, H. (2016). Problematic use of social networking sites: Antecedents and consequence from a dual-system theory perspective. *Journal of Management Information Systems*, 33(4), 1087–1116. <https://doi.org/10.1080/07421222.2016.1267529>.
- Turel, O., He, Q. H., Brevers, D., & Bechara, A. (2018). Delay discounting mediates the association between posterior insular cortex volume and social media addiction symptoms. *Cognitive, Affective, & Behavioral Neuroscience*, 18(4), 694–704. <https://doi.org/10.3758/s13415-018-0597-1>.
- Wang, X. T., Kruger, D. J., & Wilke, A. (2009). Life history variables and risk-taking propensity. *Evolution and Human Behavior*, 30(2), 77–84. <https://doi.org/10.1016/j.evolhumbehav.2008.09.006>.
- Wang, J. L., Jackson, L., Zhang, D. J., & Su, Z. Q. (2012). The relationships among the big five personality factors, self-esteem, narcissism, and sensation-seeking to Chinese University students’ uses of social networking sites (SNSs). *Computers in Human Behavior*, 28, 2313–2319. <https://doi.org/10.1016/j.chb.2012.07.001>.
- Wilson, K., Fomasier, S., & White, K. M. (2010). Psychological predictors of young adults’ use of social networking sites. *Cyberpsychology, Behavior and Social Networking*, 13(2), 173–177. <https://doi.org/10.1089/cyber.2009.0094>.
- Yuan, K., Qin, W., Liu, Y., & Tian, J. (2011). Internet addiction: Neuroimaging findings. *Communicative & Integrative Biology*, 4(6), 637–639. <https://doi.org/10.4161/cib.17871>.
- Zhang, X., Wu, Y., & Liu, S. (2019). Exploring short-form video application addiction: Socio-technical and attachment perspectives. *Telematics and Informatics*, 42, 101243. <https://doi.org/10.1016/j.tele.2019.101243>.
- Zimbardo, P. G., & Boyd, J. N. (1999). Putting time in perspective: A valid, reliable individual-differences metric. *Journal of Personality and Social Psychology*, 77(6), 1271–1288. <https://doi.org/10.1037/0022-3514.77.6.1271>.

Publisher’s Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.