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Sergio Hidalgo-Fuentes & Belén Fernández-Castilla

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Problematic internet use and the big five personality model: an updated three-level meta-analysis

Sergio Hidalgo-Fuentes a,b and Belén Fernández-Castilla c

ABSTRACT
In recent decades, there has been a significant increase in internet use. The excessive and pathological use of this technology, conceptualised as problematic use of the internet, has become a global public health problem due to the various negative effects associated with it. The present work is an updated three-level meta-analysis of the relationship between Big Five personality traits and the problematic use of the internet. A systematic search was performed in PsycINFO, Web of Science, Scopus, ERIC, ProQuest Dissertation & Theses Global and PubMed. The risk of publication bias was evaluated using funnel plots and Egger’s test. Extraversion (r = −.10, IC 95% [−.14, −.06]), openness (r = −.10, IC 95% [−.14, −.06]), agreeableness (r = −.19, IC 95% [−.22, −.15]) and conscientiousness (r = −.27, IC 95% [−.30, −.24]) were significantly negatively correlated with the problematic use of the internet, while neuroticism (r = .26, IC 95% [−.22, .30]) was positively correlated. The results of this meta-analysis contribute to explaining individual differences in problematic internet use.

1. Introduction
In today’s society, increasingly focused on technology, the internet has become an indispensable tool to search for information, access various entertainment options, study or carry out numerous jobs (Brooks, Wang, and Schneider 2020), impacting substantially the way we communicate or relate to each other (Firth et al. 2019). The use of the internet experienced a significant increase of 1,331.9% between 2000 and 2021 (Miniwatts Marketing Group 2021), reaching a total of 4,660 million active users in 2021, a figure that represents approximately 60% of the total world population (Johnson 2021).

Although the term internet addiction is the most used in the scientific literature to refer to a compulsive and harmful use of this technology (Brand et al. 2016), there is significant controversy about its use to conceptualise this problem. Thus, the use of the internet does not seem to be an end in itself among individuals who have excessive use but rather a multidimensional environment that allows them to access specific applications and content (Kuss, Griffiths, and Binder 2013; Ryding and Kaye 2018). This has caused some authors to doubt the viability of internet addiction as a construct and to focus on more specific online activities such as gambling and video games. (Starcevic and Aboujaoude 2017; Van Rooij and Prause 2014). In addition, problematic internet use (PIU) is not recognised as an addiction in the two most used diagnostic manuals of mental disorders: the DSM-5 (American Psychiatric Association 2013) and the ICD-11 (World Health Organization 2018). For all the above, numerous authors recommend the use of the term PIU as more precise (Kardefelt-Winther 2017; Starcevic and Billieux 2017), which will be the term that will be used in general in this work.

One of the most widespread theoretical frameworks at present to explain individual differences in relation to the PIU is the I-PACE model (Brand et al. 2016), through which the development and maintenance of the PIU can be explained through interaction of personal, affective, cognitive and executive variables. Among the personal variables that would influence the predisposition to develop a PIU would be certain personality traits such as low conscientiousness or high emotional instability (Brand et al. 2016).

Personality traits have been defined as stable patterns of emotion, cognition and behaviour that try to explain the how and why of individual behaviour (DeYoung 2015). Among the most influential taxonomies of personality structure in recent decades is the Big Five model (McCrae and Costa 2008), which includes the...