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Commentary on: *The Bergen Study Addiction Scale: psychometric properties of the Italian version. A pilot study*. Theoretical and methodological issues in the research on study addiction with relevance to the debate on conceptualising behavioural addictions

Komentarz redakcyjny do pracy: *Skala Uzależnienia od Uczenia się Bergen: cechy psychometryczne wersji włoskojęzycznej. Badanie pilotażowe*. Teoretyczne i metodologiczne zagadnienia dotyczące badania uzależnienia od uczenia się w kontekście debaty na temat konceptualizacji uzależnień behawioralnych

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Occam's Razor is, of course, not an arbitrary rule nor one justified by its practical success. It simply says that unnecessary elements in a symbolism mean nothing. Signs which serve one purpose are logically equivalent; signs which serve no purpose are logically meaningless.

Ludwig Wittgenstein, *Tractatus Logico-Philosophicus*

The paper by Loscalzo and Giannini titled “The Bergen Study Addiction Scale: psychometric properties of the Italian version. A pilot study” published in the current issue of “*Psichiatria i Psychologia Kliniczna*” (Journal of Psychiatry and Clinical Psychology) concerns the results of the study on an Italian validation of Bergen Study Addiction Scale (BStAS) (Atroszko, 2015; Atroszko et al., 2015). As such it is a noteworthy effort in validating tools to study the recently suggested construct of study addiction (Atroszko 2015; Atroszko et al., 2015), which can further research in this area. What is more, the paper draws attention to the important issues in the conceptualisation of this phenomenon associated with its relationship to externalising/internalising disorders and obsessive-compulsive characteristics. However, there are several drawbacks related both to the theoretical and methodological approach of Loscalzo and Giannini that need to be addressed. These include (1) suggesting that “studyholism” is a different construct from study addiction, which ignores the parsimony rule used in science known as “Occam’s razor,” (2) assuming

that addiction means automatically a purely externalising disorder, (3) usage of exploratory factor analysis to validate a measure based on the theory and previously already validated in independent cross-cultural samples, and (4) ignoring already existing publications and data. These issues seem critical because of the ongoing debate on the validity of conceptualising new behavioural addictions and overpathologising everyday behaviours (Atroszko and Griffiths, 2017; Billieux et al., 2015; Griffiths, Demetrovics & Atroszko, 2018; Kardefelt-Winther et al., 2017). Since many authors have doubts about the meaningfulness of distinguishing new addictions, it is crucial to follow the highest scientific standards in the research of these phenomena.

STUDY ADDICTION VS. STUDYHOLISM: A CASE OF SPURIOUS MULTIPLICATION OF PSYCHOLOGICAL CONSTRUCTS

The rule of parsimony, known as Occam’s razor (Baker, 2004), in its most famous formulation states that “Entities are not to be multiplied beyond necessity” (Crombie, 1959). It is congruent with the principles of the modern scientific method (Popper, 1992). The basic assumption in the case of both study addiction and studyholism, with which Loscalzo and Giannini agree, is that they “are related to the same problem-behaviour, namely to a negative psychological condition associated with overstudying” (Loscalzo and Giannini, 2018, p. 272). Therefore, it seems self-evident that

there is no necessity to distinguish two different psychological constructs to refer to the same basic problem behaviour. Based on the previous research and theoretical developments, this pattern was conceptualised as an addiction and studied within the framework of work addiction (Atroszko, 2015; Atroszko et al., 2017). Following the rule of parsimony, it was suggested to be a potential early form of work addiction (Griffiths et al., 2018), which has been recognised as a serious problem for decades (Atroszko and Griffiths, 2017).

Loscalzo and Giannini argue that the first main conceptualisation difference between study addiction and studyholism lays in including obsessive-compulsiveness in the latter. However, study addiction has been explicitly linked to compulsiveness and obsessiveness, perfectionistic tendencies and dysfunctional perfectionism (Atroszko, 2013a, 2010, 2015; Atroszko and Atroszko, 2013; Atroszko et al., 2015). Simultaneously to developing BStAS on the basis of Bergen Work Addiction Scale (Andreassen et al., 2012), a multidimensional scale (Multidimensional Inventory – Learning Profile of a Student) for measuring study addiction was developed in Poland (Atroszko, 2013a, 2015; Atroszko and Atroszko, 2013). Obsessiveness and compulsiveness were identified as separate components in the initial theoretical structure of the scale, following previous literature showing obsessive-compulsive aspects of work addiction (see Andreassen, 2014). After a multistep validation process, they became part of the compulsive learning component measured by the final version of the scale, because psychometrically they were fully convergent with other distinguished compulsion-related components such as tolerance, withdrawal, and loss of control. A large-scale cross-cultural study showed that this final study addiction scale including the compulsive learning component, along with the components of neglecting health, ignoring other spheres of life and study overload, were almost perfectly convergent with BStAS in Polish and Norwegian samples (correlations between latent factors of 0.92 and 0.94, respectively) (Atroszko, 2015).

Contrary to what Loscalzo and Giannini write, the addiction framework is not an ad hoc assumed approach but a result of a relatively long-standing (in comparison to other behavioural addictions) research into work addiction, which takes into account the issues of comorbidity with such disorders as obsessive-compulsive disorder (OCD), obsessive-compulsive personality disorder (OCPD) or attention deficit hyperactivity disorder (ADHD) (Andreassen, 2014; Andreassen et al., 2016; Atroszko et al., 2018). This issue was recently extensively commented upon (Atroszko and Griffiths, 2017; Griffiths et al., 2018). One way to think about it would be to assume a Bayesian approach (Wagenmakers et al., 2011). Taking into account the existing data on the phenomenology of study addiction and work addiction, it is consistent with the addiction process and fits better to the addiction hypothesis than other hypotheses. In many cases, OCPD may be a risk factor for

this addiction. However, taking into account the diagnostic criteria for OCPD (American Psychiatric Association, 2013), not everyone with OCPD will have symptoms related to study/work. Furthermore, data suggests that OCPD, contrary to addiction, is not a progressive process of losing control and increased compulsion towards a certain behaviour (Koob and Volkow, 2010), but a personality pattern which often is not so stable (Diedrich and Voderholzer, 2015). Study addiction (1) was shown to be related to work addiction in longitudinal research and (2) showed similar temporal stability to work addiction; (3) both addictions show seven core addiction symptoms: salience, mood modification, tolerance, withdrawal, conflict, relapse and problems, (4) are related to higher involvement in studying/working, longer time devoted to studying/working, key personality traits (higher neuroticism and conscientiousness), lower performance levels, impaired general health, decreased quality of life, poor sleep, and higher perceived stress, and (5) they have similar prevalence rates (Andreassen et al., 2013; Atroszko, 2015; Atroszko et al., 2016a, 2015, 2016b; Griffiths et al., 2018). Therefore, study addiction fits well into the diagnostic criteria of a behavioural addiction in that it phenomenologically appears as an addiction (see Atroszko, 2012; Grant et al., 2010), it shows a relationship with deteriorated functioning, and it is temporally stable, which is one of the key criteria for the validity of a psychiatric disorder (Atroszko, 2012; Atroszko and Griffiths, 2017; Robins and Guze, 1970).

Loscalzo and Giannini argue that the second main conceptualisation difference between study addiction and studyholism rests on the distinction between different kinds of heavy study investors to prevent overpathologising of everyday behaviour. However, the differentiation between healthy and unhealthy patterns of high involvement into study and work is well recognised in the existing literature (Andreassen and Pallesen, 2016; Atroszko and Griffiths, 2017; Griffiths et al., 2018). A good theory postulates not only what a construct is, but also what it is not. The work addiction conceptualisations were elaborated and clarified through decades of empirical research in different countries from eastern and western cultures. At present, the differences between harmonious passionate work/study engagement and work/study addiction are well acknowledged by researchers. Therefore, suggesting that studyholism is different from study addiction in that it takes into account this distinction is simply invalid. The theoretical and empirical differences between healthy and unhealthy studying in relation to study addiction were previously analysed in detail (Atroszko, 2013a, 2015, 2013b; Atroszko and Atroszko, 2013; Atroszko et al., 2016a, 2015, 2016b; Griffiths et al., 2018). Finally, there is empirical evidence that sophisticated though eventually non-rational subjective analyses of social phenomena seem to be entertained by individuals in particular high-IQ knowledge work sectors (Charlton, 2009; Dutton and van der Linden, 2015; Madison et al., 2017; Woodley, 2010). In science, this is related to introducing novelty rather

than systematic investigation of phenomena in the collaborative elaboration of theoretical and methodological problems (Makel and Plucker, 2014; Nosek et al., 2012). This leads to an undue proliferation of superfluous theories, models, constructs, and phony breakthroughs etc., at the cost of understanding basic phenomena, resulting in increasing confusion. This approach to science, together with the observations that currently science tends to serve more politics and industry, are critically analysed (Bauer, 1994; Ziman, 2002), and some authors point to the crisis of science (Charlton, 2012; Fleck, 1986). In this context, one could ask: why would the presumably novel term “studyholism,” based on the analogy to workaholism, which is based on the analogy to alcoholism (Oates, 1971), indicate that the labelled problem is less addiction and more obsession?

INTERNALISING/EXTERNALISING FRAMEWORK APPLIED TO STUDY ADDICTION

Clustering internalising and externalising symptoms is an approach to classify psychopathological disorders derived from principal component analytical results of a study on children (Achenbach, 1966). This approach is also used in reference to adult disorders and has a broad recognition in clinical psychology (Achenbach et al., 2016; American Psychiatric Association, 2013). Applying this framework to behavioural addictions, and study/work addiction in particular, merits more attention as it may prove both theoretically and methodologically useful. However, it has to be done cautiously and with special care to the specificities of different behavioural addictions which vary substantially, for example in terms of individual psychological differences (Andreassen et al., 2013; Grant et al., 2010). Antisocial behaviour, substance use and personality traits such as aggression and impulsivity commonly co-occur, hence, some suggest they should be classified together under the rubric of *externalising disorders* (Krueger et al., 2005). Loscalzo and Giannini define these disorders elsewhere as “characterized by behaviours that are visible to others” (Loscalzo and Giannini, 2017, p. 311) referring vaguely to clinical psychology terminology without providing any specific references for the understanding of this broad category based on clustering disorders. However, externalising disorders are often referred to as *disruptive behaviour disorders*, and labels such as *socially deviant* or *discipline problems* are used for them (Maughan et al., 2005). Study addiction seems to have almost nothing in common with such behaviours. Previous studies show that study addiction is related to quite the opposite individual characteristics: higher conscientiousness, diligence, agreeableness, and in Norway to such values as benevolence (helpfulness, honesty, forgiveness, loyalty, responsibility), tradition (respect for tradition, humbleness, accepting one’s portion in life, devotion, modesty), conformity (obedience, honouring parents and elders, self-discipline, politeness), and security (national security, family

security, social order, cleanliness, reciprocation of favours) (Atroszko, 2015; Atroszko et al., 2015). What is more, study addiction is strongly related to depression, anxiety, and social anxiety (Atroszko, 2015), which are classified as internalising problems. Research on work addiction has linked it to harm avoidance and perseverance (Paluchowski and Hornowska, 2003). The internalising aspects of work addiction have been recognised since the oldest descriptions of workaholic tendencies, mentioning physical discomforts on days free from work (Ferenczi, 1919; Oates, 1971). Therefore, the claim that excessive pathological involvement in studying (or work) when conceptualised as addiction automatically assumes it is a purely externalising disorder is grossly oversimplifying the picture and can be very misleading. In the broader context, the relationship between study addiction and internalising/externalising disorders is strictly related to our understanding of what addiction is, and the answer is not straightforward at all (Marmet et al., 2018; Shaffer et al., 2004).

What follows is that the issue of externalising and internalising behaviours needs to be put in the context of comorbidity of disorders (Kendler et al., 2003; Krueger and Markon, 2006). Another fundamental differentiation is related to the constructs of impulsivity and compulsivity and the potential cross-diagnostic significance of this distinction when used in the analyses of comorbidities and commonalities across a range of disorders, including ADHD, OCD, substance dependence (Robbins et al., 2012), and behavioural addictions (Grant et al., 2010). What is more, the complex patterns of genetic and environmental risk factors for internalising and externalising disorders, and substance use disorders have to be taken into account (Kendler et al., 2003). Therefore, the issues of externalising/internalising behaviours, compulsivity and impulsivity, comorbidity, and understanding of addiction within these frameworks, including specific genetic and environmental risk factors, show that our understanding of psychopathology requires new insights and perhaps a new paradigm. This seems even more necessary, taking into account that the brain disease model of addiction is being increasingly criticised (Levy, 2013; Lewis, 2017; Satel and Lilienfeld, 2014).

In the light of the results showing that work addiction is linked to OCD, ADHD, anxiety, and depression (Andreassen et al., 2016; Atroszko et al., 2017) it seems arbitrary to choose just obsessive-compulsiveness and conceptualise studyholism as a mixture of addiction and obsessiveness. Empirical evidence showed that ADHD was most strongly related to work addiction among the investigated psychiatric disorders (Andreassen et al., 2016). In such case, one could ask: Why studyholism is not a mixture of addiction, OCD, and ADHD? The deficits in the ability to focus attention seem like a perfect candidate for an underlying problem and a risk factor of excessive studying, and study addiction as a compensatory mechanism for this deficit.

One way of understanding this comorbidity problem was presented within the discussion on the validity of conceptualising behavioural addictions, emphasising that addiction

is conceptualised as a coping mechanism (Griffiths et al., 2018). Study addiction was explicitly conceptualised as an ineffective stress coping mechanism (Atroszko, 2015), which is in accordance with the model of addiction as dysfunctional stress coping (Jacobs, 1986; Sinha, 2008). Here, it should be noted that in the addiction literature, some authors suggested that it is necessary to exclude addiction diagnosis when behaviour is a coping mechanism to deal with another comorbid problem (e.g. depressive disorder) (Kardefelt-Winther et al., 2017). This proposition was instantly criticised as a misguided assumption conflicting with the well-established standards in the diagnosis of addiction (Griffiths, 2017), because substance-based addictions are used as coping strategies (Shiffman, 1985). It is congruent with longitudinal studies on the relationship between internalising and externalising disorders as predictors of the onset of substance use in adolescents (King et al., 2004). In relation to study addiction, a pre-existing vulnerability (genetic and/or environmentally caused), for example, associated with attention deficits could predispose an individual to an excessive effort devoted to studying in order to compensate for it (see Marmet et al., 2018).

EXPLORATORY FACTOR ANALYSIS APPLIED IN THE CONFIRMATORY CONTEXT

The recommendations on the usage of proper factor analytical approach to situations where data is theory-driven are unambiguous (Bollen, 1989; Henson and Roberts, 2006; Thompson and Daniel, 1996). They follow the basic approach to science based on hypothesis testing (Popper, 1992, 1994). Therefore, it is not congruent with the prevailing standards of scientific inquiry to use exploratory factor analysis (EFA) in the context where the structure of the investigated measure is both grounded in an explicitly stated theory (Atroszko et al., 2015) and supported by previous data which validated the factorial structure in independent cross-cultural samples (Atroszko, 2015; Atroszko et al., 2015). What is more, Loscalzo and Giannini use confirmatory factor analysis (CFA) in an exploratory way (Bollen, 1989; Schmitt, 2011). The modified model with correlated residuals in the approach used by Loscalzo and Giannini is, in fact, exploratory and should be further cross-validated in a separate sample. Therefore, the presented results are *de facto* not cross-validated.

What is more, Loscalzo and Giannini argue that overstudying is conceptualised by means of two different theorisations (i.e. study addiction and studyholism), hence, they use EFA. However, if that was the case, the proper approach following the standards of modern scientific method would be to create two structural models according to each theory and compare their fit to the data (Bollen, 1989; Popper, 1992, 1994). It seems technically possible, taking into account the major assumption of Loscalzo and Giannini that studyholism is a mixture of addiction and obsessiveness. Therefore, two separate latent factors, one for addiction and one for

obsessiveness could be proposed, and proper items would have their loadings on these factors. However, based on the theory of addiction (which is defined by its compulsive nature; Koob and Volkow, 2010) and previous multistaged validation of the study addiction scale (Atroszko, 2015), it could be predicted that such structure would present problematic psychometric properties in comparison to a single factor structure. It is more probable, though, that separating out addiction and obsession would require a novel psychometric approach, and perhaps it is not even empirically possible to extract obsessiveness from addiction *via* psychometric models. This likely impossibility is intuitively reasonably easy to realise when one thinks of how to separate psychometrically addiction from obsession (both conceptualised as negative pathological constructs) in such an example of an item: “I cannot stop thinking about studying” (from Atroszko, 2015), or by analogy “I cannot stop thinking about drinking alcohol.” Finally, one could ask: Is it even meaningful or practically useful to investigate such differentiation in isolation from the whole context of a problematic behaviour?

IGNORING THE EXISTING PUBLICATIONS AND DATA

If our aim is to advance understanding of problematic behaviour related to overstudying (or any other phenomenon for that matter), then it seems indispensable to follow the developments in the field, especially that in the current science the pace of new information appearing is exponential. Therefore, ignoring the existing literature most likely will increase confusion about the subject matter.

The examples of not taking into account the existing publications by Loscalzo and Giannini include: (1) data on the relationship between work addiction and ADHD (externalising behaviour) (Andreassen et al., 2016; Atroszko and Griffiths, 2017; Atroszko et al., 2017; Griffiths et al., 2018); (2) the developments in the debate on the conceptualisation of behavioural addictions and overpathologising of everyday behaviours in relation to work and study addiction including (a) the issue of using addiction framework, and (b) the differentiation between healthy and unhealthy patterns of high involvement into study and work (Atroszko and Griffiths, 2017; Griffiths et al., 2018); (3) understanding addiction as coping with stress and other underlying problems (Atroszko, 2015; Atroszko and Griffiths, 2017; Griffiths, 2017; Griffiths et al., 2018; Jacobs, 1986; Marmet et al., 2018; Shaffer et al., 2004; Shiffman, 1985; Sinha, 2008). What is more, Loscalzo and Giannini conclude that the Italian BStAS has a problematic structure and suggest reasons for that as if it was a currently discovered issue. However, problematic structures of scales based on the addiction component model (Griffiths, 2005) applied to work addiction (Atroszko et al., 2017; Griffiths et al., 2018; Orosz et al., 2016) and other addictions (Atroszko et al., 2018) were previously described and most probable causes were already suggested. Furthermore, this should be explicitly

mentioned when testing the model fit. Therefore, before analysing modification indices, models based on the previous findings should be tested. This relates to the previously mentioned issues of using CFA in an exploratory way. On the other hand, low factor loadings for several items and negative associations with study engagement indeed require further attention, and it would be recommended that Loscalzo and Giannini publish the Italian wording of the items to enable analysis of the problem for other researchers, and replication studies in independent Italian samples.

CONCLUSION

Thus far, there has been consistent data suggesting that there is such phenomenon as negative overstudying, a pathological compulsive approach to learning that leads to serious negative consequences for the functioning of an individual and/or people close to them. Both the theoretical models and data are highly consistent with the hypothesis that it is an addiction-like disorder. Furthermore, it is congruent with the assumption that addiction is a coping mechanism, therefore, studying is used as an ineffective coping mechanism to deal with excessive stress and the underlying psychological problems. As such, externalising (ADHD) and internalising disorders (depression, anxiety, social anxiety, OCD, OCPD) may be risk factors for this addiction. Other behavioural addictions and substance use disorders, anxiety, and depression could also be potential consequences of study addiction.

It is highly recommended to investigate this basic phenomenon systematically, and with a robust methodological approach, otherwise, the progress both in understanding it and in a wider recognition of it may be hindered. It seems especially relevant, taking into account the known prevalence rates for study and work addiction, which suggest that around 8–10% of the population could be affected (Griffiths et al., 2018). It seems that even after accounting for diagnostic accuracy issues (Maraz et al., 2015), this could be a fairly prevalent problem. In consequence, the social and individual costs of it are probably enormous. For example, within the framework of calculating the costs of work-related stress and psychosocial risks, the recently evaluated cost to Europe of work-related depression was estimated to be €617 billion annually (European Agency for Safety and Health at Work, 2014). This estimate was made up of costs to employers resulting from absenteeism and presenteeism (€272 billion), loss of productivity (€242 billion), health care costs of €63 billion and social welfare costs in the form of disability benefit payments (€39 billion). In comparison, the costs of pathological gambling (whose prevalence rates could be around ten times lower than those of work addiction) are about \$4.7 billion annually (Gerstein et al., 1999). Pathological gambling is officially recognised as a disorder (behavioural addiction), and a lot of effort is put into systemic solutions to minimise its harm and costs (Błaszczynski et al., 2011). Work and study addiction are yet to be officially recognised, but

their potential costs could exceed many of the known psychological or physical disorders and diseases, and some authors have pointed this out for some time now (e.g. Burke and Fiksenbaum, 2008; Fassel, 1990; Robinson, 2000).

What is more, study addiction is not only a pending social problem, but also a fascinating case for understanding psychopathology since it presents itself phenomenologically as an addiction, but individual characteristics of study addicts are almost opposite to that of substance abusers or pathological gamblers. As the currently presented overview of the essential conceptualisation issues suggests, it raises critical questions about psychiatric nosology. Moreover, by suggesting that one of the most valued activities (learning) for some individuals may be unhealthy, it forces us to re-evaluate the idea of health and well-being itself.

Currently, there is consistent initial data strongly suggesting the need for further global research into study addiction, however, there is still a fundamental lack of recognition of this need among the international addiction research community (see Kardefelt-Winther et al., 2017). At present, this area of research would benefit from studies on the validity of the construct (including developing potentially universal diagnostic criteria) in different countries, cultures and educational systems. There is a need for its recognition by professionals from a wide range of relevant disciplines such as researchers from educational studies, medicine (psychiatry, public health, epidemiology), sociology, policy making, cultural studies and economy as well as different areas of psychology (clinical, educational, work and organisation, cognitive, social etc.). Therefore, there is a plethora of areas in which the understanding of study addiction and the development of practical solutions for managing it can be systematically advanced. Creating a spurious and confusing differentiation between study addiction and study-holism seems not to be one of them.

Conflict of interest

The author does not report any financial or personal links to other persons or organizations that might negatively affect the content of this publication and/or claim rights thereto.

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