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Developing and Validating a New Multi-Dimensional Scale for Anti-Social Behaviour in a Higher Education Setting

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A New Scale for Anti-Social Behaviour in HE

**Developing and Validating a New Multi-Dimensional Scale for Anti-Social Behaviour in a
Higher Education Setting**

Ali B. Mahmoud

Dieu Hack-polay

Leonora Fuxman

Brenda Massetti

A. Zaher Al Samarh

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Abstract

The purpose of this research is to construct and validate a multi-dimensional scale of Anti-social Behaviour (hereafter ASB) in a Western higher education context (i.e. USA). To achieve this, four studies, each with a different sample, were performed. Study 1 (n = 150) followed an exploratory design to generate a pool of potential items measuring ASB. Study 2 (n = 254) explored the dimensionality of the items produced in Study 1 using Exploratory Factor Analysis (EFA) and reliability measures. Study 3 (n = 654) confirmed the factorial structure from Study 2 and assessed the measurement model invariance using structural equation modelling (SEM). Finally, Study 4 (n = 287) assessed the predictive validity of the ASB measure through testing a hypothetical path model linking ASB to narcissism and Machiavellianism via an SEM procedure. In total, our research findings conclude that the ASB measurement model is a two-factor multi-dimensional structure comprising: Interpersonal Antagonistic Behaviour (six items) as well as Indirect Distractive Behaviour (four items). The research and practical implications for universities are thereafter discussed.

Keywords: Antisocial behaviour; Scale development; Validation; Social psychology; Higher education.

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Introduction

The rise of anti-social behaviour (ASB) has been a major concern worldwide (Fortin, 2003). ASB spans across various layers of society, communities, workplaces, and education systems; and, as such, the study of ASB (in children, adolescents and adults) has generated a healthy interest from researchers across a variety of disciplines (Farrington, et al., 2006). A considerable amount of research identifies the causes of ASB and suggests strategies to mitigate negative emotional, societal, and personal implications of such behaviour; however, much of the research findings are context-specific. Education has received much attention in ASB research; however, most of the attention is devoted to primary and secondary school settings, with very limited findings that could be relevant within the university education context. This research study is specifically designed to address a gap in existing research on ASB in higher education by developing and validating a new measure of ASB in Western university settings. There are a number of assessment tools available to measure various types of ASB (e.g. Non-Violent and Violent Offending Behaviour Scale, NVOBS, developed by Thornton, Graham-Kevan, & Archer (2013) but No measures assessing ASB in higher education exist.

Yet, university settings have great potential for ASB. Their learning environments are more socially complex and novel than those in lower education settings, providing more opportunities for misunderstanding and miscommunication. University students are also expected to think and behave in more independent ways than what is typically allowed in lower education settings (Hearn, 2006). As this behavioural freedom combines with increasing student diversity, universities become ripe settings for ASB (Lukianoff & Haidt, 2018).

Another factor affecting ASB at the university level stems partly from the rise of for-profit degree mills in the U.S. These institutions offer post-secondary degrees for little or no student effort. Not

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only are they helping to shift the concept of education from achievement to commodity, but they are also shifting student expectations from academic performance to cost (Bartlett & Smallwood, 2004). As a result, students are beginning to view themselves as customers and developing a sense of degree entitlement (Eagle & Brennan, 2007). Research indicates that the concept of student-as-customer may enhance student self-esteem (Tait, 2003), while it also produces false expectations, leads to decreased effort (Delucchi & Korgen, 2002), and deters innovation (Naidoo & Jamieson, 2007). Generally, the more distorted a student's view regarding the rigours of university education, the more likely he or she will display ASB when those views meet reality (Lukianoff & Haidt, 2018).

Due to the current lack of evidence for any systematic assessments of student ASB and higher education processes, this research aims to design, construct and validate a new measure for ASB in a higher education setting. With the rise of both consumerism and the notion of the student as customer within Western universities, the construct of the university education has now become more of a commodity, with education providers fiercely acting as competitors in the market (Tait, 2003). Students' status customers may enhance their levels of self-esteem (Tait, 2003) but, at the same time, such a status can produce false expectations such as feeling amused, comfortable, and putting forward little effort (Delucchi & Korgen, 2002). Furthermore, such a 'student-consumer' mindset could deter innovation, promote passive and instrumental attitudes to learning, threaten academic standards and further embed academic privilege within the university education system (e.g., Naidoo & Jamieson, 2007).

As such, it is suggested that these trends within higher education could make universities susceptible to increased student ASB, specifically within the educational setting. Due to current lack of evidence for any systematic associations of student ASB and higher education processes,

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this research aims to design, construct and validate a new measure for ASB in a higher education setting.

Literature review

Anti-social behaviour

There is little consensus on the definition of anti-social behaviour. commonly-held authors link it to criminal behaviour (Andrews & Bonta, 2010; Liao, Barriga, & Gibbs, 1998) others perceive it as a cognitive distortion that causes individuals to behave contrary to acceptable norms (Barriga et al., 2001; Wallinius et al., 2011). Such cognitive distortion can be the result of family breakdown, unsatisfactory relationships, etc. (McCrystal, Percy, & Higgins, 2007). In this perspective, individual externalised actions such as delinquency and aggression would be considered antisocial behaviour as they deviate from social standards. This deviation can be categorised as misbehaviour.

The causes of anti-social behaviour (ASB) are multifaceted (Barriga et al., 2001) However, Gendreau, Goggin, & Law (1997) believe that ASB is more critically associated with 'lower levels of treatment, engagement, poorer treatment motivation' inside institutions. This shifts the 'blame' for antisocial behaviour from the sole focus on the individual to consider the role of the social and environmental context. Within social information processing theory, this entails that ASB may also be behavioural responses to types of stimuli (Gibbs, 1991).

In the context of this study, we define ASB as a deviant action that violates shared norms and threatens the well-being of a given collectively. Our definition differs since we define ASB as anomalous responses to stimuli associated with shared norms which cause individuals to operate

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outside social norms in a given collectivity, e.g. higher education institutions in the case of this study. Our definition deviates from some commonly-held perspectives (Andrews & Bonta, 2010; Liau, Barriga, & Gibbs, 1998) because it does not view ASB only in relation to violent behaviour and aggression (LeBlanc et al., 2008; Malik & Khan, 2015), but encapsulates also non-violent repressive behaviour as well.

We define ASB in higher education as action which disregards or breaches the essential rights of others and is deemed antagonistic or disruptive to others. In this perspective, actions pertaining to ASB in HE will include violent behaviour (aggression, verbal abuse, etc.) and non-violent behaviour (missing classes, truancy, cheating, etc.) - (see also Book et al., 2019). Because ASB in higher education has important implications for the learning process and the educational system, our scale is intended to identify at risk students so administrators, staff, and faculty can take appropriate action to ensure ASB is minimized on campus.

(Godenzi, Schwartz, & Dekeseredy, 2001); Monahan, Steinberg, & Cauffman (2009); Morrison et al. (2002); (Rubin et al., 2006)

Anti-social behaviour in higher education

Anti-social behaviour is a major preoccupation for many governments worldwide (Fortin, 2003). The causes of ASB are multi-fold. Some authors believe that it stems from emotional issues linked to disaffection with a number of societal variables, e.g. family, community relations, personal relations, work and the perception of inequalities (Jaffee, Strait, & Odgers, 2012). ASB is a gradual construction of behaviour perceived as negative in a given socio-cultural space (Fortin, 2003). This signifies that its roots are deeply seated in the social architecture that often generates a sense of disadvantage that those involved in ASB attempt to defy (Gendreau, Goggin, & Law, 1997).

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There is a sizeable body of literature on anti-social behaviour in education at primary and secondary school levels but such literature is limited in the context of ASB in higher education. Consequently, this literature review uses evidence from both lower education and the limited findings pertaining to higher education to examine the issues of ASB as they apply to the learning environment. Fortin (2003) found that anti-social behaviour of students is expressed in both violent and non-violent terms; however, there is a prevalence of the latter. She contends that the manifestation of ASB in students tends to predominantly take the form of withdrawal of their engagement and cooperation with teachers and peers alike. This has fundamental implications for the learning process for the offenders themselves and peers as well as impeding on the teachers' ability to deliver the curriculum effectively.

More recently, Malik & Khan (2015) examined the ASB of students who become addicted to social media such as Facebook. They found that participants in their study developed an obsession with self-presentation and suffered low self-esteem, which led to poor attendance as their presence on social media increased. This also leads to a greater propensity towards cheating (Stogner, Miller, & Marcum, 2013); this, thus presenting challenges to higher education rigour (Book et al., 2019). This is consistent with Fortin's study (Fortin, 2003) which showed those involved in ASB as lacking control, prone to conflict and rejecting negative feedback which they perceived as criticism. Such behaviour is a consequence of cognitive distortion (Barriga et al., 2001) which entails that the student confers biased meanings to information and various stimuli. The use of coercive force among male students, sometimes leading to sexual aggressiveness, was also noted in Godenzi, Schwartz, & Dekeseredy's (2001) study. Other authors (e.g., Gutman & Vorhaus, 2012; Webb et al., 1996) found bullying as well as alcohol and drug use to be the key

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resulting manifestation of ASB among students. Webb et al.'s findings were particularly alarming as they noted that 61 per cent of students exceeded the acceptable level of alcohol consumption, 15 per cent were involved in harmful drinking and up to 60 per cent reported using a drug such as cannabis. ASB is not only linked to environmental and social context but also to personality. Many studies have contended that the main predictors of academic misconduct among students are neuroticism and extraversion (Campbell, 1933; Digman, 1990). But recent research suggests that other dimensions of the Big Five personality predictors, conscientiousness, extraversion and agreeableness are more significant predictors of cheating behaviours among students (Cuadrado, Salgado, & Moscoso, 2019). Williams, Nathanson, & Paulhus (2010) found other momentous predictors – besides the Dark Triad – to include low agreeableness and low conscientiousness. This evidences that cheating (including collusion and plagiarism) among students may be more widespread than commonly thought (Chambliss et al., 2010).

It is widely acknowledged that ASB has serious consequences for the learning process. Schwartz & Gorman (2003) found that it could impair cognitive abilities and have a negative effect on skills and knowledge acquisition. Significant correlations were found to exist between ASB and students' educational outcomes as students who are not involved in ASB made more progress than those who do (Gutman & Vorhaus, 2012). However, the few studies on ASB in higher education fail to provide systematic evidence and conclusion about the association between ASB and higher education attainment, opening a gap in our understanding of the impact of ASB in higher education. We expect our study to fill some of this gap.

The theory of scale development

Measurement is an essential science activity. By observing the individuals, items, activities and procedures, we gain knowledge. And finding meanings for these observations often needs

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quantification (i.e. measuring the phenomena that our research interests lie in) (DeVellis, 2017). The measurement mechanism and the broader science issues it supports are well-connected; the boundaries between them are often unnoticeable (DeVellis, 2017). Duncan (1984) asserts that measurement is well-rooted in social phenomena and that these phenomena and their measurement precede relevant scientific knowledge. In this regard, psychometrics has developed as a subspeciality of psychology and social sciences slanted towards measuring observations where the methodology is typically the questionnaire and the variables of interests are components of a broader conceptual structure (DeVellis, 2017). That is, scholars will need to examine whether the theoretical concept is a unidimensional or a multidimensional measure (Carpenter, 2017). If it is multidimensional, the measurement model will need to be ultimately split into subscales that embody one composite measure (Carpenter, 2017). Researchers usually imitate methods reported in previous research in order to conduct empirical studies concerning scales development (e.g., Conway & Huffcutt, 2016). However, in reviewing relevant previous research (e.g., DeVellis, 2017), our case requires a four-phase empirical investigation, as it is normally required for constructing and developing a scale, i.e., in practice, four studies should be conducted following the order shown below:

1. Study 1 focuses on generating a pool of Items using a qualitative exploratory design.
2. Study 2 explores the dimensionality of Items resulted from Study 1 following a quantitative exploratory strategy (based on a new sample).
3. Study 3 confirms dimensionality and the pattern of Items loading on the factors identified in Study 2. New participants are enrolled to take part in this quantitative investigation. Invariance analyses is also recommended here to check for the measurement model

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stability. A measurement model re-specification might be needed, if the proposed dimensionality did not fit the data.

4. Study 4 tests the measurement model for predictive/nomological validity. This can be done through recruiting a new sample and assessing a theory-based hypothetical model where the respective latent variable is measured using the new scale.

With the above four-phase process of measurement construct, development and testing, the four studies described below allow us to arrive at a new measurement scale for ABS in a higher education setting.

Study 1: Item pool generation

Method, participants and procedure

Based on our literature review, we saw the need to strike out totally new items to construct the ASB scale (DeVellis, 2017). In order to identify themes that would reflect the scale's purpose (DeVellis, 2017), we undertook a pilot study by asking 150 undergraduate students at a midwestern university (with no exclusions based on age, gender, etc.) to anonymously report what they perceived anti-social behaviour (i.e., the overall variate/concept) to be in higher education by giving examples of such behaviours (see Appendix 1). That was assigned as an individual activity during student's seminars. This pilot study was intended to inform our initial construction and the items selected. Participants were provided with a link to an online survey that comprised of one paragraph question, and results were debated during the sessions. Demographics were not collected at that stage. Finally, participants were informed of our intentions for using their answers in further scholarly investigation, i.e., the current study, before the task was initiated. Utilising the

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procedures discussed earlier and based on the students' responses, we concluded the verbatims and transformed them into themes.

Results and discussion

Table 1 shows the results of study 1. It exhibits the eighteen themes of ASB alongside the percentages of their frequencies as reported by student. For example, the two most frequently reported types of ASB among the participants are 'talking whilst lecturer/others is/are talking' (50%) and 'interrupting teacher' (41%). These findings are then used to feed study 2 by translating the themes into a pool of items.

INSERT TABLE 1 ABOUT HERE

Study 2: Exploring dimensionality

Method, participants and procedure

The themes generated in study 1 were utilised to write as many items as possible for eventual inclusion in the ASB scale (DeVellis, 2017). We had a preliminary pool of twenty items that were subject to peer-assessment. Thus, part of that process was having the items studied by a panel of twelve experts (DeVellis, 2017) in personality, higher education and social psychology. Before evaluating the items, the expert panel was briefed regarding our operational definition of ASB and the study's aim. Firstly, we asked the panel to evaluate the wording of each item and make comments about any changes that would improve the precision and conciseness of the statements. We also consulted with the panel about the relevance of the items to the overall variable, i.e., to students' antisocial behaviour in a higher education setting. On the whole, the panel described the items as relevant to ASB but returned a few remarks to improve the wording of some items and enhance clarity. The procedure led to shortening the list to fourteen items as a result of rephrasing.

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Secondly, we constructed an online survey that contained the refined items followed by a few demographic questions (Nunnally & Bernstein, 1994). Randomly selected undergraduate students in the Midwestern region of the United States answered the survey questions utilising Likert scale, where 1 and 9 represented ‘not acceptable at all’ and ‘completely acceptable’ statements respectively. The sample returned 254 valid responses that were used for analysis. To determine the right number of factors can be achieved through parallel analysis (e.g., Cowden et al., 2019). Employing SPSS V.23, we ran a parallel analysis to determine the number of components of the scale by comparing the observed eigen values with those randomly generated (O’connor, 2000) alongside a scree plot (e.g., Psouni et al., 2020) from unrotated principal component analysis of the items, and an exploratory factor analysis (Wood, Aklobou Gnonhosou, & Bowling, 2015) using principal component analysis as an extraction method along with Varimax with Kaiser Normalization as a rotation approach to study the dimensionality of the items. We reran EFA four times during which we dropped four items, one a time, due to major cross-loadings between the factors (see Appendix 2). The resulting dimensions were also assessed for composite reliability (CR). The majority of the sample were female (64%) and aged 22 years on average. Thirdly, we solicited the same group of experts to reflect on the outcomes of the exploratory factor analysis and reliability tests, i.e., the resulting constructs and their underlying items. Furthermore, discussions with the panel included naming the new components.

Results and discussion

Following the procedures of study 2, our results show that ASB is a 10-item two-factor measurement structure with 6 items loading on the first factor and 4 items loading on the second. Table 2 summarises the parallel analysis results while Figure 1 visualises the scree plot. Both parallel analysis and scree test concludes that only two components can be extracted out of the

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items. Table 3 exhibits the refined items grouped into two factors named respectively: Interpersonal Antagonistic Behaviour (IAB), and Indirect Distractive Behaviour (IDB). Therefore, both factors are considered to have sufficient levels of discriminant validity by means of rotated component matrix. Furthermore, using the average variance extracted (AVE), both dimensions yield AVE values above .5 (i.e., $AVE_{IAB} = .538 > .5$; $AVE_{IDB} = .550 > .5$) and, accordingly, the results denote the measure to pass the convergent validity test based on Fornell & Larcker (1981). Composite reliability alphas (CRs) for both constructs are above .7 and below .9 (i.e., $CR_{IAB} = .872 > .7$; $CR_{IDB} = .829 > .7$) which implies that our measure is of a *very good* reliability (DeVellis, 2017; Hair et al., 2010). Thus, we judge the ASB measurement model to be valid and reliable at this stage.

INSERT TABLE 2 ABOUT HERE

INSERT FIGURE 1 ABOUT HERE

INSERT TABLE 3 ABOUT HERE

Study 3: Confirming dimensionality

Method, participants and procedure

Aiming to test our theory, i.e., the pattern of ASB measurement model dimensionality that was concluded in study 2, we conducted study 3 that included running a confirmatory factor analysis (CFA) for proposed ASB measure based on a new sample (Fokkema & Greiff, 2017) and using a structural equation modelling approach (DeVellis, 2017). We used maximum likelihood (ML)

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estimation alongside bootstrapping as a procedure to address the issue of multivariate non-normal data (Byrne, 2016) providing that, in practice, most data violate the presumption of multivariate normality (Byrne, 2016; Hancock & Liu, 2012; West, Finch, & Curran, 1995). We chose to perform 1,000 bootstrap samples which was above the threshold value, i.e., 599, recommended by Wilcox (2010). We employed Amos V. 25; hence we followed a covariance-based structural equation modelling (CB-SEM). To test the success of the bootstrap, we ran the analysis using Bollen-Stine bootstrap to test the null hypothesis that the model is correct (Bollen & Stine, 1993). Additionally, we used the following indices to judge the fit of the factorial structure to study 3 data: Chi-square to the number of degrees of freedom (χ^2/df), comparative fit index: CFI, standardized root mean square residual: SRMR, root mean square error of approximation: RMSEA, and PCLOSE (Hu and Bentler, 1999). Eventually, we evaluated the measurement model validity using average variance extracted for convergent validity, i.e., AVE (Fornell & Larcker, 1981) and comparing Square root of the AVE for each factor with the inter-factor correlation between the two constructs for discriminant validity (Hair et al., 2010). That was followed with internal consistency tests by calculating composite reliabilities (Nunnally & Bernstein, 1994).

Out of 1,000 distributed *paper-and-pencil* self-administered questionnaires, 654 responses were received at a response rate of 65% (Fincham, 2008) and were used in statistical analyses. Data were collected in the second half of 2018. The surveyors approached undergraduate students from different universities in Michigan, on different days of the week and at different times of the day to recruit participants for study 3. The questionnaire of study 3 contained the ASB measuring items produced by study 2 alongside two questions about age and gender. That was prefaced by a consent form that introduced the goal of study 3 and included an assertion of the confidentiality of

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the respondent's identity. The majority of our sample were females (54%) and aged 20 years or under (62%).

Results and discussion

We ran a confirmatory factor analysis, as shown in Figure 2, to evaluate the ASB measurement model structure with bootstrapping. The P-value related to Bollen-Stine bootstrap scores $.052 > .05$ which means that we accept the null hypothesis and we judge the model as correct. With $\chi^2/df = 3.1 < 5$, CFI = $.98 > .9$, SRMR = $.04 < .08$, RMSEA = $.057 < .06$, and PCLOSE = $.190 > .05$ (Hu & Bentler, 1999), our CFA confirms the ASB structure concluded in Study 2, i.e., comprising of Interpersonal Antagonistic Behaviour and Indirect Distractive Behaviour. Furthermore, none of the items loading on each factor are needed to be dropped from the measurement model or moved to the other component. Additionally, our results show that the measurement model owns good levels of convergent validity, i.e., $AVE_{IAB} = .54 > .5$ and, $AVE_{IDB} = .54 > .5$, as well as discriminant validity, i.e., the square root of the AVE for each factor is greater than the inter-factor correlation (see Figure 2). Furthermore, both constructs are deemed reliable based on the calculations of composite reliabilities, i.e., $CR = .87 > .7$ and $CR = .82 > .7$. Finally, we test the measurement model invariance across the groups of gender as well as age, and it is found invariant as all Z scores are below 1.96 (Meyers, Gamst, & Guarino, 2017).

INSERT FIGURE 2 ABOUT HERE

Study 4: Predictive validity

In this study, we assess the predictive validity of our ASB measure by testing two hypotheses pertaining postulated by a path model linking ASB variate to Machiavellianism as well as

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narcissism. ASB is considered a measure of psychopathy (Bo et al., 2019; Hare & Neumann, 2005; Klimstra et al., 2014). Hare & Neumann (2005, p. 57) specifically argue that antisocial behaviour is not a mere ‘downstream’ manifestation of more central traits but evidences reciprocal interaction between trait and individual’s deed. In this perspective, the Dark Triad construct closely related to ASB which Hare & Neumann (2005) and a number of theoretical frameworks view as a factor of psychopathy. There is research evidence (Kernberg, 1997; Klimstra et al., 2014; Sijtsema et al., 2019) linking the dark triad of personality (Machiavellianism, psychopathy, and narcissism) to ASB. However, such studies have been largely outside of higher education. We seek to investigate this correlation in the context of higher education and therefore we hypothesise the following:

H4-1: Anti-social behaviour positively predicts Machiavellianism

H4-2: Anti-social behaviour positively predicts narcissism

Method, participants and procedure

To assess the predictive validity of our scale, we tested a path model linking the ASB variate to *Machiavellianism* and *narcissism* using a new sample. Therefore, we constructed a self-administered questionnaire that contained, alongside our ASB measure, the short measure of narcissism, i.e., NPI-16 (Ames, Rose, & Anderson, 2006), and the subscales of Machiavellianism, i.e., amorality, desire for control, desire for status, and distrust of others developed by Dahling, Whitaker, & Levy (2008). We followed the same sampling method as in study 3 and within the same context. We had 287 returned and usable responses out of 400 distributed. Most of our sample were females (58%) at an average age of 20 years. Measures were scored based on the instructions of their original authors. All measures were of sufficient validity and reliability, i.e., $AVE_{\text{Amorality}} = .59$, $CR_{\text{Amorality}} = .81$, $AVE_{\text{Desire for Control}} = .54$, $CR_{\text{Desire for Control}} = .78$, $AVE_{\text{Desire for Status}} = .68$,

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CR_{Desire for Status} = .86, AVE_{Distrust of Others} = .52, CR_{Distrust of Others} = .84, Cronbach's Alpha_{NPI} = .74, AVE_{IAB} = .59, CR_{IAB} = .895, AVE_{IDB} = .7, CR_{IDB} = .9 (Fornell & Larcker, 1981; Hair et al., 2010; Nunnally & Bernstein, 1994). Inter-correlations were also calculated as shown in Table 4. Before proceeding with the path analysis using an SEM via Amos 23, we utilised the Common Latent Factor (CLF) to assess the Common Method Bias (CMB), i.e., we tested a null hypothesis concerning variance that might be caused by the measurement approach rather than the variates the measures epitomise (Podsakoff et al., 2003). In this regard, we assessed CMB using Gaskin and Lim's (2017) *equal specific bias test* plugin (See Table 5 and Table6). The chi-square test for the zero constrained model was significant (i.e., measurable bias was detected). Therefore, a bias distribution test was made (of equal constraints). The chi-square test was significant on that test as well (i.e., unevenly distributed bias); thus, we retained the CLF for the subsequent path analysis.

INSERT TABLE 4 ABOUT HERE

INSERT TABLE 5 ABOUT HERE

INSERT TABLE 6 ABOUT HERE

Results and discussion

We ran a path analysis to assess the predictive validity of our ASB measure and controlled for common method variance. Both Figure 3 and Table 6 show the results of study 4. We find that all of the tested paths are significantly positive. Additionally, the values of the main fit indices show that the model is an excellent fit to our data, i.e., $\chi^2/df = 1.314$ Between 1 and 3, CFI = .968 > 0.95,

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SRMR = .076 < 0.08, RMSEA = .056 < 0.06, PClose = .353 > 0.05. Hence, we judge that hypotheses H4-1 and H4-2 are valid. Thus, we conclude that our ASB measure is of a sufficient level of predictive validity.

INSERT TABLE 7 ABOUT HERE

INSERT FIGURE 3 ABOUT HERE

Overall Discussion

This research offers a new ASB measurement model, the Antisocial Behaviour - University Level Scale (ASBULS), specifically designed and validated for assessing ASB in higher education. The ASB scale is a two-factor multi-dimensional structure composed of Interpersonal Antagonistic Behaviour (six items) and Indirect Distractive Behaviour (four items). The predictive validity of the proposed measurement model has been verified. This suggests significant bearing on learning activities in higher education, particularly as antisocial behaviour is shown to be linked to psychopathy and significantly disruptive behaviour and could cause serious issues with regards to integrity in HE. In this section, we offer implications for both practice and scholarship.

Educational implications

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The ASBULS offers several benefits to universities and students. First, for a variety of reasons, western universities are having to cope with increasing numbers of students exhibiting mood disorders (Lukianoff & Haidt, 2018). With this trend likely to continue, the ASB instrument can identify more challenged students so they can be helped before they cause problems. One way to achieve this would be to give the ASBULS to all entering freshmen during orientation.. Perhaps students who score high on the scale might be given free counselling or communication training to help them learn to react and respond in more socially appropriate ways. Second, higher education in the west continues to become more important and more competitive for career success. Ensuring that students perform at their peak at university is paramount to career success. Hence, making the ABS instrument available to counselling centres in universities would offer a way to more specifically determine any ABS issues facing troubled students. Third, higher education stands as a final checkpoint for students preparing for a successful future. Making sure that ABS issues are handled before students graduate and become employed is important not only for a student's future but also a university's reputation.

The ABSULS can also be used to guide and shape policy regarding antisocial behaviour on campus. For example, universities could use the ABSULS to assess the effectiveness of programs aimed at ensuring civility among students. It could also help universities identify where they need to design environments more conducive to prosocial behaviour. Moreover, the ABSULS could be used to alleviate or mitigate ASB reactions to misunderstandings and miscommunications among increasingly diverse student bodies. Not only could universities use the ABSULS to help predict which student group(s) are likely to respond antisocially but they could also use it to help all student groups better understand appropriate on campus behaviour. At the very least using the

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ABSULS might serve as a pre-emptive defence strategy for universities facing legal action resulting from on-campus ASB.

Research implications and limitations

The key strength of our ABS measure is that it was based on a robust four-study investigation where each study was conducted utilising data from a different sample. Additionally, controlling for the common method bias in study 4 added more rigour to our ABS scale towards its predictive validity. A limitation of our study is its focus on one major developed country, the United States. The research has yielded some interesting results about the manifestations of ASB in higher education. The study offers insights on which future research could build to address an issue of increasing importance in higher education. However, in order to increase the generalisability of the findings, future research could consider drawing on more western countries and more specifically attempt a comparison between them. For instance, the USA, UK, Canada and Australia, etc. are all developed nations but could have degrees of variations in the prevalence and intensity of antisocial behaviour depending on several factors, e.g. ethnic mix, size of the international student population, economics and cultural factors, etc. Future studies could also consider an investigation of the prevalence of ASB among diverse groups of students (e.g. by ethnicity, gender, level of study, socio-economic backgrounds, etc.) and assess the impact on these groups. Moreover, research to determine whether the ABSULS might be useful in a context other than higher education is also needed. Because it measures adult-level ASB, it might be applied in workplace settings to identify employees with ASB. Our scale was developed within an English-speaking context. Thus, we highly recommend future replication studies to validate our ASB scale in languages other than English where face validity procedures, such as double translation and adding contextually based new items, should be applied. ASB appears to be part of a chain of

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violence. For example, in June 2019, Pew Research Centre published a report showing that 78 per cent of Americans believed heated rhetoric from elected officials makes violence against targeted groups more likely (Pew Research Center, 2019). Thus, we suggest that further research uses ABSULS to test the potential effects of heated or aggressive rhetoric from politicians on ASB amongst students in higher education. Finally, we strongly endorse future cross-cultural studies where the ASB measurement model would be assessed for its invariance across, hypothetically, different cultures.

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Appendix 1: Study 1 paragraph question

Please answer the following question by typing in your answer within the corresponding space. Then click 'Submit' to deliver your response.

Based on your personal experience, would you please type in as many examples as possible of students' anti-social behaviors in a university/college context? *

Your answer

Back

Submit

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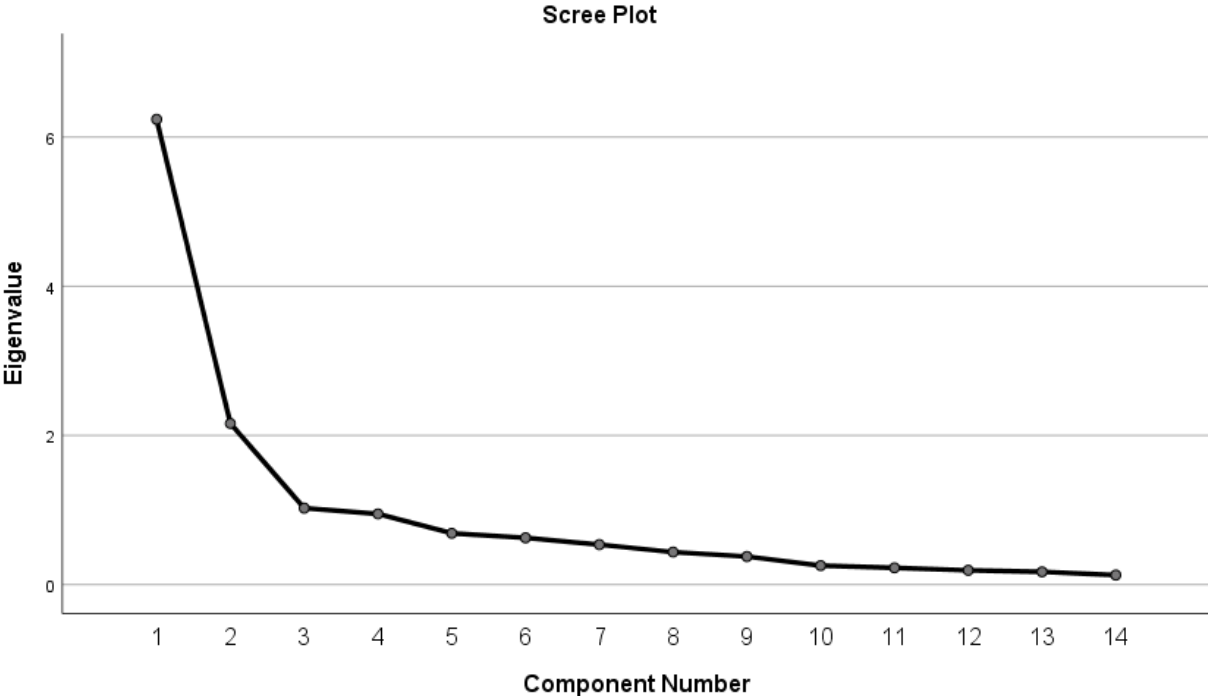
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Appendix 2: The dropped items during EFA

- Talking whilst other students are contributing.
- Clicking pens during lecture/seminar.
- Being consistently late for a class.
- Sleeping during the lecture/seminar.

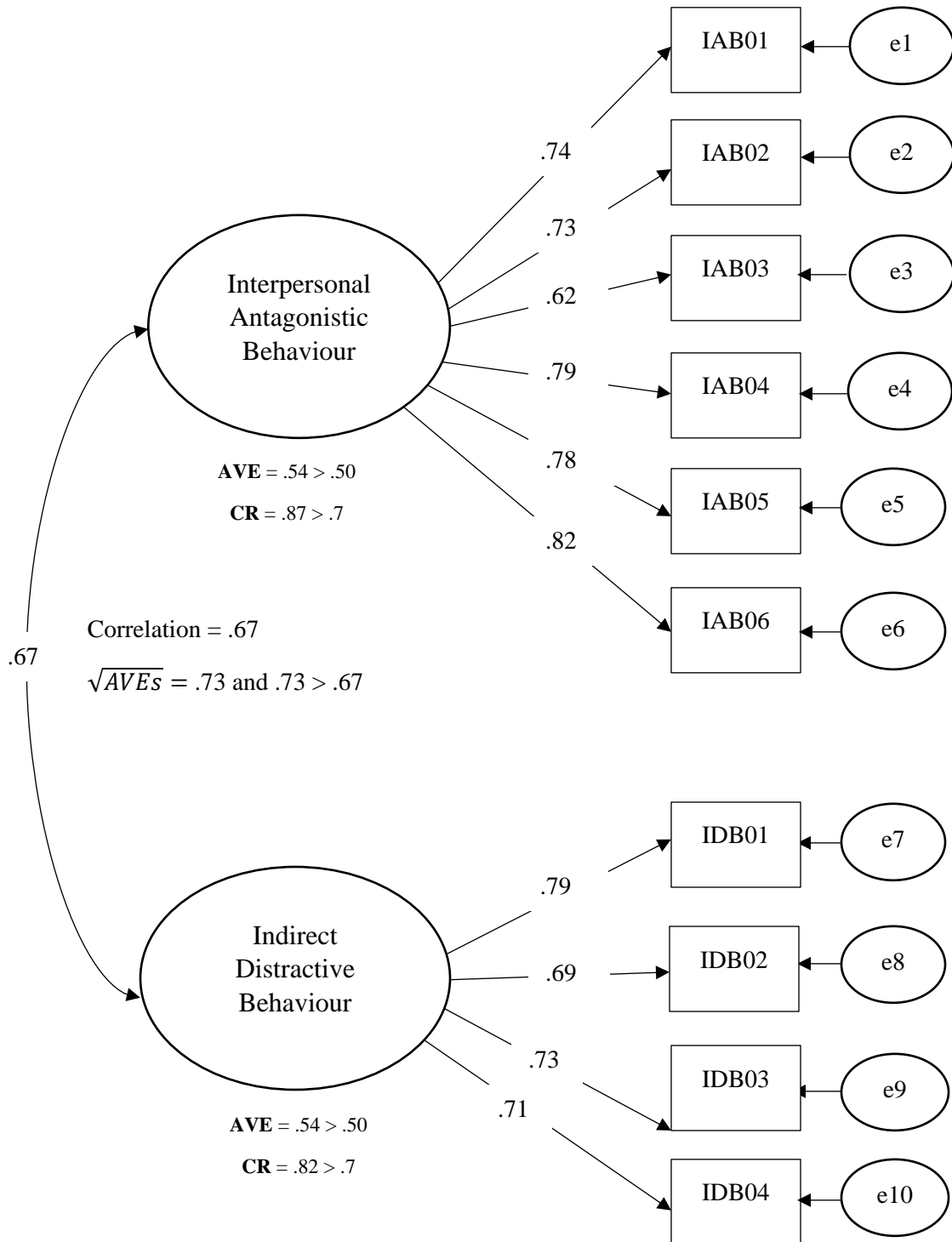
Figures

Figure 1: Scree test



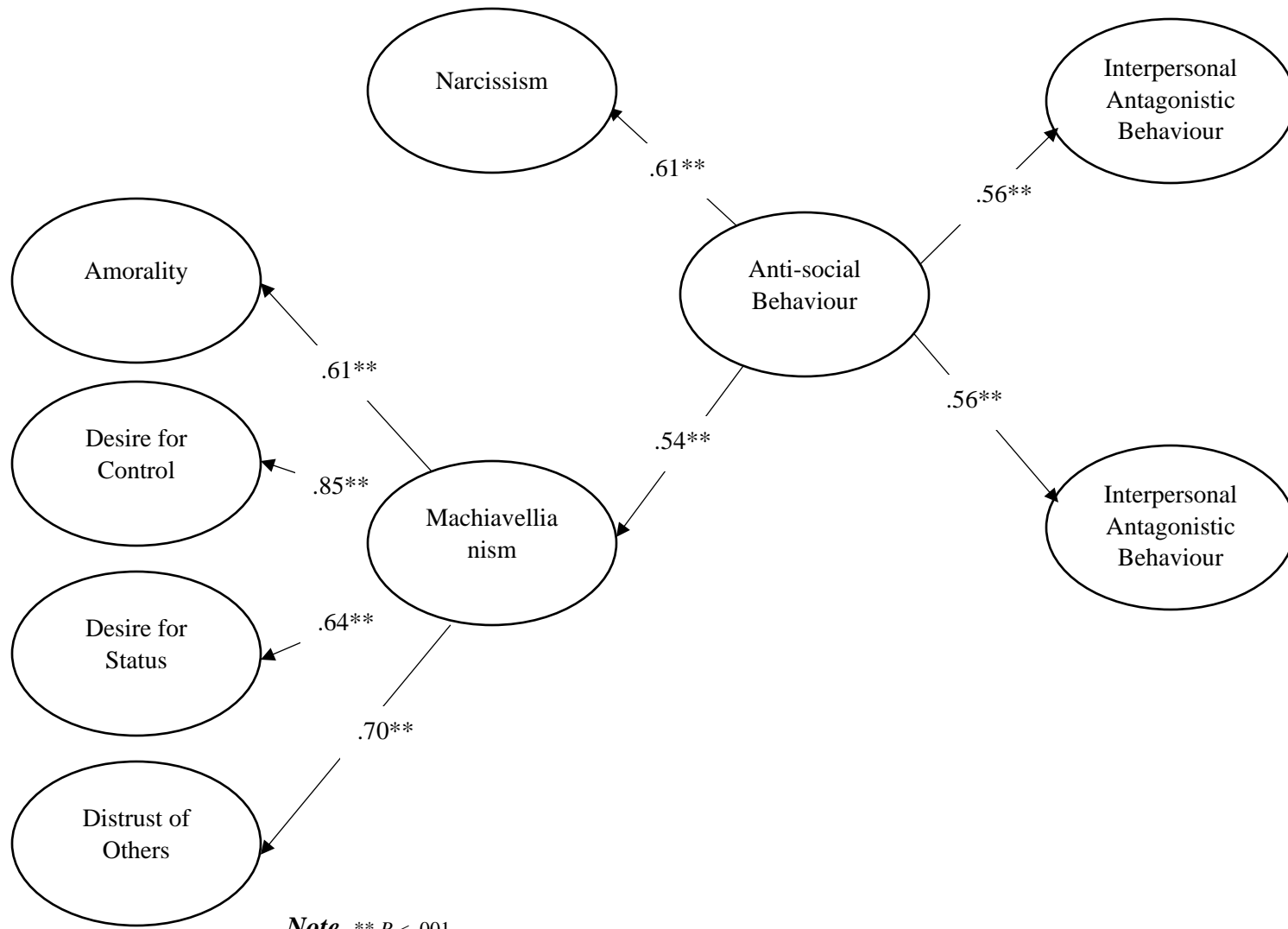
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Figure 2: Study 3 - Confirmatory factor analysis



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Figure 3: Study 4 – Path model



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Tables

Table 1: ASB examples/themes

ASB examples/themes	% of the sample
Talking whilst lecturer/others is/are talking	50
Interrupting teacher	41
Clicking pens	3
Making noises	10
Using mobile phone during lecture	38
Turning up late	1
Being disrespectful	19
Vandalising property	4
Abusive language/swearing	20
Bullying	6
Ignoring someone	3
Not participating/lack of engagement	9
Being disruptive in class	18
Turning up drunk or under influence of drugs	1
Consistently late	2
Being aggressive	7
Turning up to class drunk or on drugs	1
Sleeping during lecture	1

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Table 2: Parallel analysis

Component	Observed Eigenvalues	Random Eigenvalues
1	6.238	1.819067
2	2.160	1.611614
3	1.025	1.473275
4	.948	1.373550
5	.688	1.243225
6	.627	1.146729
7	.536	1.067403
8	.435	1.006939
9	.376	.915287
10	.254	.821069
11	.224	.765574
12	.191	.677045
13	.171	.610218
14	.127	.507140

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Table 3: Study 2 results

Rotated Component Matrix		
Item	Component	
	Indirect Distractive Behaviour	Interpersonal Antagonistic Behaviour
IAB01	Interrupting lecturer whilst they are teaching	.669
IAB02	Ignoring lecturer when they're talking to you or asking you to do something	.720
IAB03	Bullying other students or lecturer	.785
IAB04	Behaving aggressively towards lecturer or fellow students	.548
IAB05	Being disrespectful by presenting racist thoughts and/or attitudes	.866
IAB06	Distracting other students when they're trying to listen to the lecturer	.772
IDB01	Using mobile phone during session (when not due to an emergency)	0.697
IDB02	Using abusive language/swearing	0.683
IDB03	Turning up late for class	0.730
IDB04	Dressing inappropriately for class	0.846
Eigenvalue		2.201
AVE		.550
CR		.829
		3.991
		.538
		.872

Note. Extraction Method: Principal Component Analysis; Rotation Method: Varimax with Kaiser Normalization; AVE = Average variance Extracted; and CR = Composite Reliability.

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Table 4: Zero Constraints Test

Is there specific bias?				
Model	χ^2	<i>df</i>	Delta	p-value
Unconstrained Model	109.153	24	$\chi^2 = 139.984$	< .0001
Zero Constrained Model	249.137	34	<i>df</i> = 10	

Table 5: Equal Constraints Test

Is bias evenly distributed?				
Model	χ^2	<i>df</i>	Delta	p-value
Unconstrained Model	109.153	24	$\chi^2 = 92.995$	< .0001
Equal Constrained Model	202.148	33	<i>df</i> = 9	

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Table 6: Inter-correlation Matrix

	M	SD	Interpersonal Antagonistic Behaviour	Indirect Distractive Behaviour	Narcissism	Amorality	Desire for Control	Desire for Status
Interpersonal Antagonistic Behaviour	1.60	1.08						
Indirect Distractive Behaviour	2.44	1.76	.395**					
Narcissism	5.78	3.14	.310**	.215**				
Amorality	2.99	1.89	.292**	.142*	.345**			
Desire for Control	4.02	2.16	.157**	.191**	.348**	.538**		
Desire for Status	5.11	2.41	.170*	.140*	0.160*	.333**	.541**	
Distrust of Others	4.15	2.01	.166**	.307**	.158**	.347**	.589**	.560**

Note. ** $P < .01$; * $P < .05$

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Table 7: Study 4 results – Standardized Regression Weights

Path		Estimate β
Interpersonal Antagonistic Behaviour	<---	Anti-social Behaviour .559**
Indirect Distractive Behaviour	<---	Anti-social Behaviour .599**
Machiavellianism	<---	Anti-social Behaviour .535**
Amorality	<---	Machiavellianism .607**
Desire for Control	<---	Machiavellianism .846**
Desire for Status	<---	Machiavellianism .642**
Distrust of Others	<---	Machiavellianism .701**
Narcissism	<---	Anti-social Behaviour .609**

$\chi^2/df = 1.314$ Between 1 and 3
 CFI = .968 >0.95
 SRMR = .076 <0.08
 RMSEA = .056 <0.06
 PClose = .353 >0.05

Note. ** $P < .001$