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

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) generated a pool of potential measuring items of ASB following an exploratory design. 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 a structural equation modelling (SEM) approach. 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 a SEM procedure. In total, our research findings concluded 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). Research and practical implications are discussed.

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

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). While a considerable amount of research deals with identifying the causes of ASB and suggests strategies to mitigate negative emotional, societal, and personal implications of such behaviour, much of the research findings are context specific. Education has received a lot of 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. While 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), no pre-existing measures of assessing ASB in higher education exist.

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). While students gain the status of a customer, it may enhance their levels of self-esteem (Tait, 2003) and in turn, produce false expectations such as feeling amused, comfortable, and putting forward little effort (Delucchi and 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 (Naidoo and Jamieson, 2005) .

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, the aim of this research is 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. While some authors link it to criminal behaviour (Andrews and Bonta, 2010; Liau, Barriga, & Gibbs, 1998), others perceive it as a cognitive distortion that causes individuals to behave contrary to acceptable norms (Barriga, Morrison, Liau, & Gibbs, 2001; Wallinius, Johansson, Larden, & Dernevik, 2011). Such cognitive distortion can be the result of family breakdown, unsatisfactory relationships, etc. (McCrystal, Percy, & Higgins, 2007). In this perspective, individual externalized actions such as delinquency and aggression would be considered antisocial behaviour as they deviate from social standards. This deviation can be categorised as misbehaviour.

While the causes of anti-social behaviour (ASB) are multifaceted (Barriga, et al., 2001), 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, 191).

In the context of this study, we define ASB as anomalous responses to stimuli associated with shared norms which cause individuals to operate 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 and Bonta, 2010; Liau, et al., 1998) because it does not view ASB only in relation to violent behaviour and aggression (LeBlanc, Swisher, Vitaro, & Tremblay, 2008; Malik & Khan, 2015), but encapsulates also non-violent repressive behaviour.

We define ASB in higher education as a set of acts that brings on an upset (physical or emotional) or involves loss of attention for the comfort of others (e.g., academic or administrative members of staff, classmates, etc.) in a way that breaches the essential rights of another individual and any action that is deemed to be deliberately antagonistic and/or disruptive directly or indirectly to others.

ASB in modern society

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. 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, et al., 1997). Thus, the remedies for ASB are believed to reside in socio-psychological interventions. Morrison, Robertson, Laurie, & Kelly

(2002) advocate teacher support, parental support and greater attempt to engage young people as critical predictors of the diminution of ASB. However, these authors do not sufficiently probe the root causes of ASB; nor do they provide a systematic approach to dealing with persistent recidivism of ASB even when the suggested parental and teacher supports are in place (Rubin, Rabinovich, Hallsworth, & Nason, 2006). Monahan, Steinberg, & Cauffman (2009) provide further practical intervention as they look at peer support as a valid strategy for young people to deal with ASB. In some cases, when communication has broken down within the family and with teachers, peers can provide valuable insight into the behaviour of the offender. The information that peers bring, the informal advice and emotional support as well as the role model they present, can all be powerful remedies (Godenzi, Schwartz, & Dekeseredy, 2001).

Anti-social behaviour in higher education

While there is a sizeable body of literature on anti-social behaviour in education at primary and secondary level, research on ASB in higher education is limited. 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 effectively deliver the curriculum.

More recently, Malik and Khan (2015) examined the ASB of students who become addicted to social media such as Facebook and Instagram, etc.. 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 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, et al's (2001) study. Other authors (e.g. Gutman and Vorhaus, 2012; Webb, Ashton, Kelly, & Kamali, 1996) found bullying as well as alcohol and drug use to be the key resulting manifestation of ASB among students. Webb et al.'s findings were particularly alarming as they noted that 61 percent of students exceeded the acceptable level of alcohol consumption, 15 percent were involved in harmful drinking and up to 60 percent reported using a drug such as cannabis.

It is widely acknowledged that ASB has serious consequences for the learning process. Schwartz and 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 and 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 quantification (i.e. measuring the phenomena that our research interests lie in) (DeVellis, 2017) . The measurement mechanism and the wider 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 sub-specialty 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, 2018). If it is multidimensional, the measurement model will need to be ultimately split into subscales that embody one composite measure (Carpenter, 2018). Researchers usually imitate methods reported in previous research in order to conduct empirical studies concerning scales development (e.g., Conway and Huffcutt, 2003). 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 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 ASB in higher education setting.

Study 1: Item pool generation

Method, participants and procedure

Based on our literature review, we saw the need to strike out a 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 (with examples). That was assigned as an individual activity during student's seminars. This pilot study's intent was 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 had been informed of our intentions for using their answers in further scholarly investigation, i.e., the current

study, before the task was initiated. Utilising the procedures discussed earlier and based on the students' responses, we concluded the verbatims and transformed them into themes. Finally, we generated the items and had them face validated by experts in relevant areas, e.g. education studies, sociology and psychology, etc.

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, 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.

Study 2: Exploring dimensionality

Method, participants and procedure

The themes generated in study 2 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 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 clarity and consciousness of the statements. We also consulted with the panel about the relevance of the items to the overall variable. Secondly, we constructed an online survey that contained the refined items followed by a few demographic questions (Nunnally and 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. Employing SPSS V.23, the main analysis included running an exploratory factor analyses 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. 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 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 and 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, Black, Babin, & Anderson, 2010). Thus, we judge the ASB measurement model to be valid and reliable at this stage.

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 and Greiff, 2017) and using a structural equation modelling approach (DeVellis, 2017). We used maximum likelihood (ML) 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 and 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 and 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 and 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 and Bernstein, 1994).

Out of 1,000 distributed *paper-and-pencil* self-administered questionnaires, we received 654 valid responses that 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 the respondent's identity. The majority of our sample were females (54%) and aged 20 years or less (62%).

Results and discussion

We ran a confirmatory factor analysis, as shown in Figure 1, 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 and 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 1). 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).

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 narcissism. There is research evidence (Kernberg, 1997; Klimstra, Sijtsema, Henrichs, & Cima, 2014; Sijtsema, Garofalo, Jansen, & Klimstra, 2019) linking the dark triad of personality (Machiavellianism, psychopathy, and narcissism) to ASB. However, such studies have been largely within adolescence studies. We seek to investigate this correlation in the context of higher education and therefore we hypothesize 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 (2009). 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 20 years. Measures were scored based on the instructions of their original authors. All measures were of sufficient validity and reliability, i.e., $AVE_{\text{Amorality}} = .59$, $CR_{\text{Amorality}} = .81$, $AVE_{\text{Desire for Control}} = .54$, $CR_{\text{Desire for Control}} = .78$, $AVE_{\text{Desire for Status}} = .68$, $CR_{\text{Desire for Status}} = .81$.

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 and Larcker, 1981; Hair, et al., 2010; Nunnally and Bernstein, 1994). Inter-correlations were also calculated as shown in Table 3. 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, MacKenzie, Lee, & Podsakoff, 2003). In this regard, we assessed CMB using Gaskin and Lim's (2017) *equal specific bias test* plugin (See Table 4 and Table 5). 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.

Results and discussion

We ran a path analysis to assess the predictive validity of our ASB measure while controlling for common method variance. Both Figure 2 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, 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.

Overall Discussion

This research offers a new ASB measurement model, the Antisocial Behaviour - University Level Scale (ASBULS), specifically designed and validated for assessing implications of ASB in higher education. The findings conclude that the proposed ASB measurement model is a two-factor multi-dimensional structure comprising of Interpersonal Antagonistic Behaviour (six items) and Indirect Distractive Behaviour (four items). The predictive validity of the proposed measurement model has been verified. In this section, we offer implications for both practice and scholarship.

Managerial implications

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 and 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. Perhaps a university could give all freshmen the ABSULS during orientation. Second, higher education in the west continues to become more important and more competitive for career success. Ensuring that students perform at their peak while at university is paramount to career success. Hence, making the ASB instrument available to counselling centres in universities would offer a way to more specifically determine any ASB issues facing troubled students. Third, higher education stands as a final checkpoint for students preparing for a successful future. Making sure that ASB 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 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 ASB 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 rigor to our ASB 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 international student population, economics and cultural factors, etc. Future studies could also consider an investigation into 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.

These specific areas of investigation could then engender targeted and judicious action towards those involved in and those affected by ASB. Our scale was developed within an English-speaking context. Thus, we highly recommend future replication studies to validate our ASB scale in non-English speaking spheres where face validity procedures, such as double translation and adding contextually based new items, could be applied. 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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