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RESEARCH ARTICLE

The impact of behavioral disorders on the level of custodial school-engagement among detained adolescent boys: an observational cohort study

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Background

The impact of behavioral disorders on custodial school-engagement has not been studied. We investigated the impact of conduct disorder (CD), oppositional-defiant disorder (ODD), and attention deficit/ hyperactivity disorder (ADHD) on the level of school-engagement among detained boys in a youth correctional facility in Lagos, Nigeria.

Methods

A total of 103 boys were assessed, at the point of remand, for the presence or otherwise of behavioral disorders using the DSM-5 version of the Kiddie Schedule for Affective Disorders and Schizophrenia. The level of emotional, behavioral, and cognitive school-engagement among them was also assessed, using the School Engagement Measure, three months after enrolment in the custodial school.

Results

More than half of respondents had at-least one behavioral disorder, with CD being the most prevalent (54.4%). Multiple regression analyses showed that after controlling for perceived autonomy of learning climate, age, and prior level of education at baseline; each of the three behavioral disorders assessed had an independent negative impact on self-reported level of school-engagement three months after enrolment in custodial school. Among the behavioral disorders, ADHD had the largest magnitude of impact (β=-2.78; $p<0.01$).

Conclusions

We concluded that behavioural disorders had negative impact on school engagement in youth correctional settings and constitute potential barrier to successful educational rehabilitation.

INTRODUCTION

As at the point of contact with the youth correctional system, a significant number of juvenile offenders have not had enough educational or vocational exposure to guarantee future employability and self-sufficiency.[1,2] Many of these youth would have had disruptions in their education as a result of family problems and disruptive life events,[3] which are common realities of life for justice-involved youth.[1] Provision of, or enrolment in, developmentally

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appropriate education and skills, are vital to successful rehabilitation of incarcerated youth.[4] Therefore, among the compelling psychosocial needs of justice-involved youth is a need for re-engagement with school in school while in custody.[5]

One of the most significant barriers to educational rehabilitation of juvenile offenders is the high prevalence rate of pre-existing behavioral disorders such as conduct disorder (CD), oppositional-defiant disorder (ODD), and attention deficit/hyperactivity disorders (ADHD). Based on recent systematic reviews, these disorders are about the most common form of psychiatric disorders among justice-involved adolescents worldwide.[6,7] These disorders not only play significant role in the pre-existing poor educational attainment of adolescents who will later be involved with the juvenile justice system,[8] they are also likely to further interfere with efforts at school re-enrolment while within the juvenile justice custody.

One of the most significant ways through which behavioral disorders affects educational outcomes is through their negative impact on *school engagement*, that is, the extent to which a student engages with and committed to school in relation to actualization of the experience of learning, educational accomplishment, and participation in school and social activities.[9] At least one study have established the negative impact of behavioral disorders on school engagement in a sample of adolescents attending mainstream schools.[10] However, there is hardly any published data on the impact of such behavioral disorders on school-engagement within youth correctional settings anywhere. This is a critical omission because behavioral disorders such as CD, ODD, and ADHD are far more common among justice-involved youth than their non-offending counterparts drawn from normative samples.[7,11] In addition, the potential negative impact of these behavioral disorders on school engagement is likely to be more pronounced among detained youth, in view of constraints in educational resources within and the restrictive nature of custodial settings.[12]

The need to understand the impact of behavioral disorders on in-custody school engagement among detained adolescents is even more compelling in Africa and other low- and middle-income countries (LMIC) where shortage of community-based diversion programs have created a situation whereby custodial sentences still remain the predominant form of youth correction.[13] In addition, juvenile justice institutions, including in-custody educational systems, in such regions are severely constrained.[14] There is, therefore, a need for studies looking at the potential impact of behavioral disorders on school engagement among detained adolescents, especially in resource-constrained settings such as Nigeria. Understanding such potential impact of behavioral problems on school engagement in youth correctional settings will facilitate the consideration of behavioral-health interventions as concurrent target of

interventions aimed at improving the success of rehabilitation. This is because successful educational re-engagement is key to future employability, promotes lifelong learning, and reduces the risk of recidivism among detained youth.[15]

The hypothesis in this study is that the presence of a diagnosable behavioral disorder at the point of detention will negatively impact three-months post-enrolment school-engagement scores after controlling for other factors such as the individual perception of the autonomy of the learning environment. We therefore aimed to investigate the association between the presence of behavioral disorders at the point of detention and school-engagement scores three months after enrollment in the correctional school.

METHODOLOGY

The study is an observational cohort study by design and uses quantitative assessments as the main measure of outcome.

Setting

The study was conducted at the Youth Correctional Centre for Boys, Oregun Lagos. This is the entry-point facility for arrested young males between the ages of 12 and 17 years. Arrested adolescents are remanded in this facility while awaiting trial or sometimes after custodial sentence. On the average, detained adolescents spend anytime between three months and three years in the facility. There are two main categories of 'inmates' in the facility, namely status offender and young offender categories. Status offenders are adolescents who were arrested/sentenced for infractions that were categorized as offences only because the perpetrator is a minor. Such 'offences' include truancy, curfew violations (essentially living on the streets), underage smoking/drinking, and being declared as 'beyond parental control' by reason recurrent violation of domestic rules at home. Young offenders are those who committed every other category of crime including theft, assault, engaging in gang violence, trespass, and others criminal misdemeanors. In line with the stated goal of the facility, which is for rehabilitation and reformation, the facility has a correctional school within the premises. All adolescents remanded in the facility are normally registered in the in-custody educational facility irrespective of age or prior educational history.

Participants

The participants consist of adolescent males aged between 12 and 17 years who were remanded in the facility for various forms of reasons ranging from status offenses to juvenile crimes.

Procedure

The study was conceived as part of an ongoing (since January, 2018) mental-health evaluation and treatment project within the youth correctional facility, being funded by the Institutional-Based Research Fund of the Nigerian Tertiary Education Trust Fund. In this ongoing project, which is a

collaboration between the university department of the researchers and the youth correctional system in Lagos, all offending adolescent males brought to the facility for remand during the study period were assessed for social and mental-health problems, for the purpose of holistic planning of rehabilitation. A collaborating official of the facility notified the research team whenever a new adolescent is remanded and the interviews were conducted within the first week of entry into the facility. Assessed parameters include socio-demographic characteristics, educational history, and ongoing behavioral and substance use disorders. In the present study, a cohort of the adolescents remanded in the facility between February and September, 2019 were further assessed for their school experiences (precisely school engagement) three months after they have been enrolled in the correctional school.

There are two forms of engagement in the present study: clinical interview and questionnaire surveys. The clinical semi-structured clinical interview, which was meant to establish the presence or otherwise of behavioral disorders were conducted by the principal researchers, within the first week of remand in the correctional facility. The overall impression of the presence or otherwise of behavioral were recorded immediately after the clinical interviews. On the other hand, the questionnaire-based surveys were conducted with the assistance of trained research-assistants who read out the questions and provided further explanations when necessary. However, to maintain anonymity, the respondents were allowed to respond in private by ticking the appropriate response.

Measures

SOCIO-DEMOGRAPHIC CHARACTERISTICS AND EDUCATIONAL HISTORY

Basic social and demographic characteristics such as age, offence category, and primary support system (prior to detention) were extracted using a socio-demographic questionnaire. We further extracted information about education history including whether the adolescent was still attending school as at the point of arrest or had dropped-out. Among those who had dropped-out, we extracted information about the total years of schooling they have had before dropping-out.

BEHAVIORAL DISORDERS

The Kiddie Schedule for Affective Disorders and Schizophrenia[16] was used as clinical-interview guide to collect data on the presence or otherwise of behavioural disorders, that is, conduct disorder, oppositional defiant disorder, and attention-deficit hyperactivity disorder. The instrument is a semi-structured diagnostic clinical interview designed to assess episodes of psychopathology in children and adolescents aged 6-18 years. It is the most widely used diagnostic instrument for child and adolescent mental and behavioral disorders worldwide and it generates psychiatric diagnosis in line with the 5th edition of the American Psychiatric Association's Diagnostic and

Statistical Manual (DSM-5).[17] The instrument was administered by two of the authors (OA and GA), who are practicing child and adolescent psychiatrists with extensive training and experience with the instrument and have established good inter-rater reliability long before the present project, in the course of working together.

SCHOOL ENGAGEMENT

In the present study, we used the School Engagement Measure (SEM)[18] to determine the level of school engagement among respondents after three months of enrolment within the in-custody school. The SEM is a 19-item self-administered questionnaire which assesses all the three domains, that is, behavioral, emotional, and cognitive domains of school-engagement. The responses to the 19-item questionnaire survey were on a five-point Likert scale scored from 1 (minimum; not at all) to 5 (maximum; always). Items 1-5, 6-12, and 12-19 respectively assess the behavioral, emotional, and cognitive aspects of school engagement. Although there is no consensus on the dimensions of school engagement, conceptualizing school engagement as a multidimensional construct is recommended and the three dimensions of cognitive, behavioral, and emotional function, as contained in the SEM, is the most widely used.[18] Good psychometric properties have been established for the instrument among school-going adolescents elsewhere.[19] Though originally designed to be used among younger children (8-10 years), the scale has successfully been used among adolescents.[20] Higher scores on the scale suggests lower problems with school engagement.

LEARNING CLIMATE

In view of the fact that the setting of our study is a restrictive environment, we controlled for the respondents' perception of the degree of autonomy of the learning environment. Learning autonomy refers to a group of classroom behaviour of teachers which promotes motivation to learn by offering students meaningful choices, being cognizant of their perspectives, deliberately providing rationales for task engagement, facilitating joint decision making in learning objectives, and providing opportunities for self-initiated behavior.[21] We measured these using the *perceived autonomy* section of the Learning Climate Questionnaire.[22] This is a 14-item self-reported questionnaire survey with a 7-point Likert Scale. Questions that were framed negatively are reversed scored in such a way that the higher the total score, the higher the perceived autonomy.

Ethical Considerations

The protocol of the original project from which the present study was conceived was submitted to the Ethical Review Board of the affiliated university teaching hospital of the corresponding author and an approval was granted (Ref no: LREC/06/10/1542). In addition to that, permission was granted by the authorities of the juvenile facility to interview respondents.

In recognition of the vulnerability of children in a restrictive environment, we made sure that all respondents were protected from all forms of coercion, abuse, and breach of confidentiality. We made sure to exclude the staff of the facility from the interviews as much as possible. All data collected were made anonymous and kept in the custody of researchers, without any other person having access to them.

Data entry and statistical analyses

The statistical package for social sciences (SPSS) software 20th edition was used for data entry and statistical analysis of the generated data. Descriptive statistics was used to present the social and demographic characteristics, the pre-contact educational history, and the prevalence rates of behavioral disorders among respondents. Multiple logistic regression analysis was used to determine the impact of behavioral disorders on 3-month post-enrolment school engagement scores among respondents after controlling for controlling for age, pre-incarceration educational status, and level of perceived learning autonomy in the correctional school. Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinearity, and homoscedasticity. In the preliminary analyses, it was first determined whether the sample size is adequate for the type of analysis. Adequate sample size for analysis was determined using the formula by Tabachnick and Fidel,[23] which states that for accurate regression analysis, sample size must be greater than 50 + 8m; where m = number of independent variables. In this case, we had six independent variables and as such, our sample size must be greater than 50 + 48 = 98. We used a sample size of 103 in the present study.

RESULTS

Sociodemographic, forensic, and behavioral-health profile

A total of 103 boys with mean age 14.9 ±1.8 years completed the study. Table 1 shows the sociodemographic, forensic, and behavioral-health characteristics of respondents. As shown, more than two-thirds were status offenders. There were significant pre-incarceration educational problems among respondents, as none of the respondents had completed high school as at the time of arrest and detention. Furthermore, as much as two-thirds (64.9%) of respondents had dropped out of school for at least one year prior to arrest and detention. The mean total number of completed years of schooling before dropping-out was 6.6 ±2.3 years. The most common behavioral disorder among respondents was conduct disorder (54.4%) followed by oppositional defiant disorder (39.8%), and ADHD (26.3%).

School engagement score and correlates

The School Engagement Measure (SEM) as used in the present study achieved good internal consistency based on a Cronbach α score of .72 for the total scores and .77, .71, and .79 for the behavioral, emotional, and cognitive subscales respectively. The total mean SEM scores (adjusted to 5 points) was

Table 1. sociodemographic, forensic, and behavioral profile of respondents

Variable (n=103; 100%)	Proportion
Mean age	14.9 ±1.8
Forensic characterization	
Status offender[ǂ]	n=72; 69.9%
Juvenile offender[ǂǂ]	n=31; 29.1%
Pre-contact educational status	
Dropped out of school for at least one year prior to arrest	n=66; 64.9%
Total number of completed years of schooling before dropping out	6.6 ±2.3 years; range 2-11 years
Behavioral Disorders*	
Conduct disorder	n=56; 54.4%
Oppositional defiant disorder	n=41; 39.8%
Attention deficit hyperactivity disorder	n=27; 26.2%

[ǂ]*Include truancy, wandering the streets, hawking wares on the streets, living in the streets having ran away from home, recurrent violation of age-appropriate home rules, other unruly behaviors*

[ǂǂ]*Property crimes (theft, burglary, and trespass) and violent crimes (physical/sexual assault and manslaughter)*

**Met the DSM-5 criteria for diagnosis within 12 months preceding arrest and detention*

2.86 ±.98. There was statistically significant moderate positive correlation between perceived autonomy scores and total SEM scores (r = .54; p=.001) as well as with the subscale scores of emotional engagements (r = .67; p<.001); behavioral engagement (r = .48; p=.022), and cognitive engagement (r = 0.37; p=.035), implying that an increase in perceived autonomy is associated with increased school engagement score in all domains.

Independent impact of behavioral disorders on school-engagement scores

In other to determine the magnitude and direction of the impact of behavioral disorder diagnosis (independent variable) on the total and domain-specific SEM scores (dependent variable) while controlling for the potential confounding effect of age, total length (in years) of education received before incarceration, and perceived autonomy scores (all as continuous co-independent variables). Table 2 (a-b) shows the results of multiple regression analyses. As shown in Table 2(a), the entire model explained 29% of the variance in total SEM scores of respondents. All the three behavioral disorders assessed independently impacted negatively on total SEM scores, with ADHD having the largest magnitude of negative impact (β=-2.78; p<.01). In the same model, perceived autonomy of learning environment and total length of years of prior schooling also independently contributed to the variance in total SEM scores in the positive direction generally and in the cognitive and behavioral domains of school-engagement specifically (see Table 2b). Further shown in Table 2(b) is that ADHD contributes significantly (p<.05) to the overall

Table 2(a). Multiple regression analyses of the impact of behavioral disorders on total school engagement after controlling for age, prior education level, and perceived learning autonomy

variables	Total SEM scores		
	β	t	p
Conduct disorder	-2.57	-7.88	**.008**
Oppositional defiant disorder	-2.19	-5.78	**.010**
ADHD	-2.78	-9.67	**.001**
Age	-1.89	-2.89	.065
Perceived autonomy	2.26	8.55	**.007**
Total length of pre-incarceration schooling (in years)	1.86	6.55	**.003**
Constant	11.94	16.76	.009

R^2 = 0.29, F = 7.87, p<0.05,

SEM: school engagement measure; ADHD: attention deficit hyperactivity disorder; β: standardized co-efficient, t: Student T-test

Table 2(b). Multiple regression analyses of the impact of behavioral disorders on different domains of school engagement after controlling for age, prior education level, and perceived learning autonomy

variables	Emotional domain scores			Behavior domain scores			Cognitive domain scores		
	β	t	p	β	t	p	β	t	p
Conduct disorder	1.77	2.23	.182	-3.10	-9.29	**.001**	-2.66	-.98	.476
Oppositional defiant disorder	-1.99	-.88	.110	-1.98	-2.65	.066	-1.61	2.01	.071
ADHD	3.02	1.67	.551	-2.23	-8.99	**.001**	-2.33	5.45	**.013**
Age	2.59	4.55	**.022**	-2.86	-2.21	.059	2.54	.87	.152
Perceived autonomy	1.96	1.45	.027	3.26	8.89	**.001**	1.77	2.73	**.003**
Total length of pre-incarceration schooling (in years)	-4.46	0.55	.353	2.97	7.78	**.004**	2.11	7.29	**.005**
Constant	12.54	11.37	.009	11.54	2.99	.063	13.32	9.29	.001

R^2 = 0.12, F = 2.87, p<0.05 for emotional model; R^2 = 0.35, F = 10.16, p<0.05 for behavior model; R^2 = 0.28, F = 5.07, p<0.05 for cognitive model

SEM: school engagement measure; ADHD: attention deficit hyperactivity disorder; β: standardized co-efficient; t= Student T-test

variance in the cognitive and behavioral domains of SEM while conduct disorder contributed significantly (p<.05) to the overall variance in the behavioral domain.

DISCUSSION

The key finding of the present study is that behavioral disorders such as conduct disorder, oppositional-defiant disorder, and ADHD are common among detained adolescent boys and that their presence at the point of remand independently impacted school engagement three months after enrolment in correctional school. The largest negative independent contribution to the variance in total school engagement scores was contributed by ADHD. Likewise, in the specific domains, the diagnosis of ADHD at the point of incarceration independently impacted negatively on the scores on both the behavioral and cognitive domains of school engagement. Conduct disorder independently contributed significantly to the variance in the behavioral domain scores while none of the behavioral disorders assessed contributed independently to the variance in emotional domain of school engagement.

This finding is in line with our main hypothesis that the presence of a behavioral-disorder diagnosis at the point of contact with the juvenile correctional center will impact negatively on the level of school engagement three months after re-enrolment in correctional school. Though there is hardly any study conducted among youth correctional samples to compare our findings with, at least one study conducted among normative samples in the United States of America has also demonstrated an association between psychological difficulties, including behavioral disorders, and poorer school engagement.[24] This is not surprising as symptoms of some of the behavioral disorders, including inattention, impulsivity, aggression, and defiance; are known to enduringly interfere with the learning process and environment.[10] In addition, adolescents with these symptoms tends to adjust more negatively to the detention experience[25]; a poor adjustment that can interfere with their settling down to learn. The slightly higher impact of ADHD on school engagement scores in the present sample is partly corroborated by one previous study which have established that ADHD had higher contribution, among other mental and behavioral disorders, to the variance in school-related constructs such as educational attainment and school engagement among young people in normative samples.[26]

Turning to the specific domains of school engagement, the negative impact of ADHD was most seen in the behavioral and cognitive domains while that of conduct disorder was mostly through the behavioral domain mainly. Behavioural dysregulation, attention-deficits, and cognitive insufficiencies associated with ADHD, can interfere with positive learning behaviours such as personal motivation, self-direction, self-regulation, organization and planning, and sustenance of attention during and after classes.[27,28] These attributes are, precisely, the components of the cognitive and behavioural domains of the school engagement measure.[29] This may be the pathway through which ADHD independently impacted negatively on the cognitive and behavioural domains of school engagement in the present study. Likewise, conduct and oppositional disorders are associated with poor motivation for learning, as well as defiant, negativistic, and hostile attitudes towards classroom or school norms, including expectations and rules. The independent impact of conduct disorder on behavioural domain of school engagement, as found in the present study, may have acted through such pathways.

There are a few important negative findings in the relationship between school engagement scores and behavioural disorders in the present study. For instance, the model assessing the impact of behavioural disorders on emotional domain of SEM was not significant. It is possible that since emotional school engagement relates to feelings towards school, sense of belonging, and quality of peer relations; emotional disorders such as depression and anxiety, which we did not assess in the present study may have had more better bearing on emotional engagement perhaps,[30,31] more than behavioural disorders could have. At least one study has also found that the presence of some behavioural

disorders such as ADHD correlates with cognitive engagement without corresponding correlation with emotional engagement in normative samples.[32] Equally worthy of mention is the observation that oppositional defiant disorder did not contribute significantly to the variance in the behavioural domains of school engagement in our model, even when conduct disorder, a closely related disorder, significantly did. and behavioural engagement disappeared after controlling for perceived autonomy. The nature of the symptoms of oppositional defiant disorder (intolerance to authority figures) may have led to more overlap with other significant independent variables in the model such as perceived classroom autonomy.

Aside the main findings of the study, we also found that aside behavioural disorders, other variables in the models, that is, perceived autonomy of learning environment and total number of years of education before incarceration, also explained a significant part of the variance in SEM scores. In other words, even in the presence of behavioural disorders, self-reported level of autonomy of the learning environment and the total number of years of education that a detained adolescent had had also contributed independently to school engagement. In the models, a higher level of perceived autonomy of learning environment impacted positively on school engagement scores. The core components of an autonomous school environment such as flexibility, respect for preferred learning choices, opportunities self-directed learning, are all expected to have a direct bearing on level of school engagement. Literature among normative samples has also found positive correlation between perceived autonomy and school engagement.[33] Also, the total completed school years before detention also independently contributed to the variance on school-engagement scores such that a lower number of completed years impacted negatively on the 3-month post-enrolment school engagement scores of respondents. It is possible that the personal factors that contributed to early termination of education before incarceration continues to independently interfere with attempts at educational rehabilitation even after arrest and detention.

The low school engagement scores in the present study must, however, be understood within the context of other realities in the study setting beyond perceived autonomy. Granted, the setting is a restrictive environment for reformation and as such, education was a secondary objective; a lot of efforts may not have also been put into establishing the kind of student-teacher relationship which was needed to promote school engagement, especially among children who had mostly disengaged from school several months earlier. The attempt at school re-engagement within the youth correctional facility was not voluntary, it was enforced based on extant policy. Therefore, detainees may not have been interested or psychologically prepared for the re-engagement.

Policy Implications

The main policy implication of the present study is that there is need for an integrated behavioural-health screening and intervention program into the rehabilitative program of the youth correctional facility where the present study took place and perhaps, other similar facilities around the country. This policy recommendation stemmed from the observation in the present study that the presence of common behavioural disorders at the point of detention impacted negatively on level of cognitive and behavioural school engagement three months after re-enrolment in correctional school. The recommendation is very germane in the background of the fact that many of the youth correctional facilities in Nigeria, including the one where the present study took place, have not been able to evolve any meaningful capacity for screening or intervention programs for behavioural disorders as part of their rehabilitation programs.[34] If unidentified and unaddressed, behavioural disorders will continue to interfere in rehabilitation (including educational rehabilitation) efforts. This will be in addition to the pre-existing barriers to educational rehabilitation such as poor educational resources and operational constraints, in the youth correctional facilities in the country.[35] The important multi-systemic steps needed to reposition the Nigerian juvenile justice system as a whole to be able to respond to the mental- and behavioural -health needs of justice-involved children and youth has been holistically reviewed elsewhere.[36]

Strengths and limitations

Aside from being the first study, to the best of the authors' knowledge, to document the impact of behavioural disorders on school engagement measure among re-enrolled incarcerated adolescents anywhere; the observational nature of the assessment allows for some opportunity to establish causality. However, the results and recommendations of the study must be understood within the context of some limitations, chief of which is that the study was conducted in a male-only juvenile facility, which limits the generalizability. Furthermore, we relied on self-reports in the assessment of the presence of behavioural disorders as well as school engagement measure. It has been established that adolescent research participants often introduce bias when responding to sensitive questions, such as those related with behaviours.[37] In addition, while the potential effect of the learning climate, particularly perceived autonomy, was factored as a potential confounder of the impact of behavioural disorders on school engagement; other potential confounds within the school environment such as competence and quality of interaction of teachers, natural cognitive abilities of respondents, and the physical learning environment were not captured. In the same token, the potential impact of other emotional disorders such as anxiety and depression, which may be co-morbid with behavioural disorders was also not tested. These additional data could have served as further moderators of the variance in the outcome measure. Despite these limitations, the present study provides a good template for more robust studies in this novel but important area in the future.

CONCLUSIONS

In conclusion, the present study has shown that behavioural disorders have negative impact on school engagement in correctional school, even after controlling for perceived autonomy. Therefore, these disorders constitute potential barriers to the success of educational rehabilitation among detained youth. There is need to develop a formal framework and capacity to identify and respond to behavioural disorders at the correctional school within the study setting.

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Conflict of Interest

All authors declare no conflict of interest.

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