PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	A multilevel population-based cross-sectional study examining school substance misuse policy and the use of cannabis, mephedrone and novel psychoactive substances amongst 11-16 year olds in schools in Wales.
AUTHORS	Midgley, Luke; Murphy, Simon; Moore, Graham; Hewitt, Gillian; White, James

VERSION 1 – REVIEW

REVIEWER	Tracy Evans-Whipp MCRI/Melbourne University, Australia
REVIEW RETURNED	08-Jan-2018

GENERAL COMMENTS	General comment: This research paper tests cross-sectional associations between secondary school drug policies and student use of cannabis, mephedrone and NPSs. This is a potentially interesting avenue of research; school drug policy research to date has largely focussed on tobacco and alcohol use and studies on other substance types are therefore welcome. The paper is clearly structured and generally well written (although there are a few typos and poorly structured sentences). A key strength of the study are the large school and student sample sizes which provide statistical power to detect small effects. Despite these positives, I have some concerns about the paper as listed below. Specific comments and concerns: 1. The major concern with the paper (and acknowledged by the authors in the limitations section) is the cross-sectional design. Even if associations had been observed it would be very difficult to make conclusions about the impact of policy on substance use. For instance, do schools with more substance use in their student body implement more, or different types of, policies? A longitudinal design would allow control for prior substance use and provide stronger causal evidence. An experimental design would be the most effective and the authors should acknowledge this. 2. The background section fails to provide the reader with a clear sense of why these particular substances have been selected for study and why these particular aspects of school policy (and not others) have been tested. For example, it does not provide sufficient background information about findings from previous school policy research papers. It states incorrectly that there have not been any evaluations of policy in Europe – there have been several e.g.

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	Desousa, C., et al. (2008). "School policies and binge drinking behaviours of school-aged children in Wales a multilevel analysis." Health Educ. Res. 23(2): 259-271; Maes, L. and J. Lievens (2003). "Can the school make a difference? A multilevel analysis of adolescent risk and health behaviour." Social Science & Medicine 56(3): 517-529; Moore, L., et al. (2001). "School smoking policies and smoking prevalence among adolescents: multilevel analysis of cross-sectional data from Wales." Tobacco Control 10: 117-123. 3. The near universal presence of secondary school drug policies in developed countries has been reported previously and the authors could probably have expected that nearly all schools would have had a policy. This renders objective 1 somewhat perplexing. 4. The coding of actual school policy documents is valuable although it is disappointing that these were obtained from less than half of participating schools. There is some existing evidence to say that student substance use is less related to the policy content than to implementation practices and student awareness and perceptions of the policy. An improved design would also assess policy implementation (in the form of external observation and/or teacher and student report of implementation). 5. Student involvement in policy development is an interesting avenue for research and is potentially one of the important pathways by which policy might influence student behaviour. This was only examined at a very superficial level using binary responses to teacher-reports of student involvement. It would have been preferable to determine from the students themselves their level of involvement and sense of ownership of the policy. Parent involvement in drug policy development would also be of interest but is not tested here.

REVIEWER	David M. Ndetei University of Nairobi/Africa Mental Health Foundation, Nairobi, Kenya
REVIEW RETURNED	17-Feb-2018

GENERAL COMMENTS	A very well written paper. Although it is about a High Income Country, it will be of interest even in Low Middle Income Countries which face exactly the same problems highlighted in this paper

VERSION 1 – AUTHOR RESPONSE

Response to reviewers' comments

Editors

E1.1 The strengths and limitations section on page 3 could be improved. Are there any further strengths relating to the methods/design of the study that you can add here?

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OUR RESPONSE: Thank you for pointing this out for us and allowing us to improve on the strengths of the methods and design of the study. As directed, we have added to the description of the strengths and limitations section. Here is the additional text:

"The large school (n=66) and student sample (n = 18,939) sizes meant we had statistical power to detect small effects." (page 3)

Reviewer 1

R1.1 This research paper tests cross-sectional associations between secondary school drug policies and student use of cannabis, mephedrone and NPSs. This is a potentially interesting avenue of research; school drug policy research to date has largely focussed on tobacco and alcohol use and studies on other substance types are therefore welcome. The paper is clearly structured and generally well written (although there are a few typos and poorly structured sentences). A key strength of the study are the large school and student sample sizes which provide statistical power to detect small effects.

OUR RESPONSE:

Thank you for these positive comments.

R1.2 The major concern with the paper (and acknowledged by the authors in the limitations section) is the cross-sectional design. Even if associations had been observed it would be very difficult to make conclusions about the impact of policy on substance use. For instance, do schools with more substance use in their student body implement more, or different types of, policies? A longitudinal design would allow control for prior substance use and provide stronger causal evidence. An experimental design would be the most effective and authors should acknowledge this.

OUR RESPONSE: We agree a longitudinal or preferably randomised design would be preferable to examine the effect of school drug policy. Unfortunately, the School Health Research Network did not track participants over time and as we note school policies were implemented in 96% of schools, such that recruitment to a trial is likely to be difficult as nearly all schools already had a policy. We have added text to the discussion section highlighting the limitations of the cross-sectional design and need for longitudinal research. Here is the additional text:

Discussion:

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"Future research should employ a longitudinal design which would allow for control of prior substance use and provide stronger causal evidence." (Page 18)

R.1.3 The background section fails to provide the reader with a clear sense of why these particular substances have been selected for study and why these particular aspects of school policy (and not others) have been tested. For example, it does not provide sufficient background information about findings from previous school policy research papers. It states incorrectly that there have not been any evaluations of policy in Europe- there have been several e.g. Desousa, C., et al, (2008). "School policies and binge drinking behaviours of school-aged children in Wales a multilevel analysis." Health Educ. Res. 23(2):259-271; Maes, L. and J. Lievens (2003). "Can the school make a difference? A multilevel analysis of adolescent risk and health behaviour." Social Science & Medicine 56(3):517-529; Moore, L., et al. (2001) "School smoking policies and smoking prevalence among adolescents: multilevel analysis of cross-sectional data from Wales." Tobacco Control 10: 117-123.

OUR RESPONSE: We apologise that we have not made it clear why these particular substances have been selected. The School Health Research Network Pupil Wellbeing Survey is a general purpose survey and is not designed specifically to test the hypothesis of this paper. We chose to investigate associations with drug use as there have not been evaluations of school drug policy in Europe whereas there have for tobacco and alcohol [1-4]. Here is the additional text:

Background

"that have gone beyond alcohol and tobacco" (page 5)

R1.4 The near universal presence of secondary school drug policies in developed countries has been reported previously and the authors could probably have expected that nearly all schools would have had a policy. This renders objective 1 somewhat perplexing.

OUR RESPONSE: Although other high-income countries like the USA and Australia [5] have found universal presence of school policies, we are unaware of any studies in the UK or Europe. As there is no statutory requirement for schools to have a policy on drug use in Wales, there was some uncertainty on whether this finding would be replicated.

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R1.5 The coding of actual school policy documents is valuable although it is disappointing that these were obtained from less than half of participating schools. There is some existing evidence to say that student substance use is less related to the policy content than the implementation practices and student awareness and perceptions of the policy. An improved design would also assess policy implementation in the form of external observations and/or teacher and student report of implementation).

OUR RESPONSE: We agree. In the discussion section we note that an avenue for future research will be to validate teacher reports against observed practices:

> "Second, school reported policy measures require further validation with observed practices." (page 18)

R1.6 Student involvement in policy development is an interesting avenue for research and is potentially one of the important pathways by which policy might influence student behaviour. This was only examined at a very superficial level using binary responses to teacher-reports of student involvement. It would have been preferable to determine from students themselves their level of involvement and sense of ownership of the policy. Parent involvement in drug policy development would also be of interest, but is not tested here.

OUR RESPONSE: We agree. As part of the lead authors thesis, he is conducting qualitative research interviewing students, teachers and senior management teams, investigating how the school polices are implemented, their sense of ownership if involved in development, how aware staff and students are of school drug polices, how substance misuse incidents are managed and how rigorously is the policy is adhered to.

Reviewer 2

R2.1 A very well written paper

OUR RESPONSE: Thank you for this positive comment.

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R2.2 Although it is about a High Income Country, it will be of interest even in Low Middle Income Countries which face exactly the same problems highlighted in the this paper.

OUR RESPONSE: We agree that this paper will be of interest to schools in Low and Middle Income countries.

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1. Hallingberg B, Fletcher A, Murphy S, et al. Do stronger school smoking policies make a difference? Analysis of the health behaviour in school-aged children survey. *European Journal of Public Health* 2016;26(6):964-68. doi: 10.1093/eurpub/ckw093
2. Moore L, Roberts C, Tudor-Smith C. School smoking policies and smoking prevalence among adolescents: multilevel analysis of cross-sectional data from Wales. *Tobacco Control* 2001;10(2):117-23. doi: 10.1136/tc.10.2.117
3. Desousa C, Murphy S, Roberts C, et al. School policies and binge drinking behaviours of school-aged children in Wales—a multilevel analysis. *Health education research* 2008;23(2):259-71. doi: 10.1093/her/cym030
4. Maes L, Lievens J. Can the school make a difference? A multilevel analysis of adolescent risk and health behaviour. *Social Science & Medicine* 2003;56(3):517-29. doi: 10.1016/S0277-9536(02)00052-7
5. Evans-Whipp TJ, Plenty SM, Catalano RF, et al. Longitudinal Effects of School Drug Policies on Student Marijuana Use in Washington State and Victoria, Australia. *American Journal of Public Health* 2015;105(5):994-1000. doi: 10.2105/AJPH.2014.302421

VERSION 2 – REVIEW

REVIEWER	Tracy Evans-Whipp Murdoch Children's Research Institute, Centre for Adolescent Health, Royal Children's Hospital, Melbourne, Australia
REVIEW RETURNED	05-Apr-2018

GENERAL COMMENTS	The authors have addressed the concerns raised in the first review in their covering letter and with minor modifications to the text. This has improved the manuscript to a level I would now recommend for publication. As a very minor point, I notice that on page 13 the ICC is described as the interclass correlation when in fact it is the intra-class correlation.

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