Pilot Multimethod Trial of a School-Ethos Intervention to Reduce Substance Use: Building Hypotheses About Upstream Pathways to Prevention


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Abstract

Purpose: Interventions to improve school ethos can reduce substance use but “upstream” causal pathways relating to implementation and school-level changes are uncertain. We use qualitative and quantitative data from a pilot trial to build hypotheses regarding these.

Methods: The Healthy School Ethos intervention involved two schools being provided with facilitation, training, and funding to plan and implement actions (some mandatory and some locally determined) to improve school ethos over one year. The evaluation involved a pilot-trial with two intervention and two comparison schools; semi-structured interviews with facilitators, staff, and students; and baseline and follow-up surveys with students aged 11 to 12 years.

Results: Student accounts linked participation in planning or delivering intervention activities with improved self-regard and relationships with staff and other students. Some activities such as re-writing school rules involved broad participation. Students in receipt of actions such as peer-mediation or motivational sessions reported benefits such as improved safety and relationships. Some student accounts linked improved self-regard and relationships with increased engagement and aspirations, and reduced substance use. At 9-month follow-up, students in intervention schools reported less hurting and teasing of others and feeling unsafe at school. Other outcomes suggested intervention benefits but were not significant.

Conclusions: School-ethos interventions may reduce substance use through upstream pathways involving the aforementioned factors. Future phase-III trials should quantitatively model the extent to which these mediate intervention effects. © 2010 Society for Adolescent Health and Medicine. All rights reserved.

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The article aims to build hypotheses about the “upstream” pathways through which “school-ethos” interventions might reduce students’ substance use (SU), drawing on a multimethod pilot-trial involving two intervention and two comparison schools. In this study, we define “upstream pathways” as the parts of a causal pathway from intervention implementation and receipt to intermediate outcomes such as self-regard and attachment to school (discussed further in the text). In contrast, we define “downstream pathways” as running from these intermediate outcomes to the intervention’s end outcomes.
The effects of school-based SU-prevention education are small and rarely sustained [1–3]. Recent evidence suggests the effectiveness of another approach: interventions which promote positive school social environment [4,5] or “ethos” [6–8]. The U.S. “Aban Aya” project aimed to promote a socially-inclusive and engaging ethos in schools serving poor, African American communities. It used a standardized process whereby a school action-team comprising staff, students, and others was convened to plan and undertake various actions (e.g., improving policies and teaching practices) to foster an inclusive climate. The trial reported a 34% reduction in boys’ SU (p < .05). Secondary analysis suggested that intervention combining such action with a social-development curriculum was more effective than curriculum-only in reducing risk-behaviors [5].

The Australian “Gatehouse Project” aimed to impact on SU and other outcomes through promoting an ethos maximizing students’ security, positive regard, and communication. Delivered in various types of school and neighborhood, it also involved an action-team–reviewing policies and determining actions, supported by an external facilitator and student survey. It also included a social- and emotional-skills curriculum. The trial reported reductions in various measures of SU [4,9,10].

Existing evidence suggests “downstream” pathways through which such interventions might work. Social psychology theory [11–14] suggests that the effects of such interventions might be mediated by increasing attachment and social support in schools, leading to improvements in student SU-related normative beliefs, attitudes, self-regard, and self-efficacy. Analyses by Aban-Aya investigators indeed suggest that effects were mediated by improved normative beliefs and attitudes [15]. Other research suggests that improving social support may reduce students’ use of substances as “self-medication” for anxiety; increasing engagement may reduce SU as an anti-school status marker; and promoting students’ sense of security might reduce pressures to use substances to develop protective friendships with substance-using peers [16]. Research has not examined “upstream” pathways: how interventions might impact on a school to influence such intermediate factors.

We aimed to build hypotheses concerning upstream pathways drawing on our pilot trial of the Healthy School Ethos intervention. This was delivered in two “intervention” schools during the year 2007–2008. Each intervention school instituted an action-team (comprising staff, students from various year-groups, and parents) to plan and deliver various actions (some mandatory, some locally determined—see Results) to improve students’ relationships with teachers and other students, security, social support, self-regard, and engagement, so as to reduce SU. We provided a facilitator (plus manual), staff-training, funding, and surveyed student needs. There was no curriculum element. Two comparison schools continued with normal practice. Further details are provided elsewhere [17].

Methods

We aimed to undertake a multimethod matched-pair randomized pilot-trial. Our qualitative research explored in-depth accounts of selected participants to explore what factors pathways might involve and how these inter-relate. To complement this, our quantitative research provided a broader view of possible intervention intermediate effects [18].

From a pool of 20 schools interested in participation, we identified two pairs matched on rating by national school-inspectors and proportions of black/minority-ethnic and disadvantaged students (Table 1). From each pair, one was randomly allocated to intervention and one to comparison arm. Soon after allocation, our “satisfactory” intervention school decided not to undertake the intervention, after poor exam results. Because our study mainly focused on process and we lacked other matched “satisfactory” schools, we swapped the “drop-out” school with its matched school initially allocated to the comparison arm.

We undertook qualitative research in our two intervention schools (pseudonyms “Woodbridge” and “Hillside,” Table 1) to explore implementation and possible effects. We sampled purposively to ensure diversity of interviewees on factors likely to be associated with differing perspectives. We interviewed our facilitator and two trainers, and, in each school, head-teachers and various action-team members. In Woodbridge, these comprised three senior and one junior staff, and one student; in Hillside, one senior and two junior staff, and two students. All were invited for interview by our researchers, and all accepted.

We also interviewed two staff per school (one senior and one junior) participating in training, and other students (including three from Woodbridge and five from Hillside who had participated in various intervention actions, and 17 students in each school who had not). To recruit these, we explained our sampling strategy to action-team members who introduced our researcher to relevant individuals, all of whom accepted invitations to interview.

Interviews were semi-structured, conducted on-site in private during school-hours, exploring accounts of the school and intervention. Guides were tailored for each type of interviewee, listing themes (e.g., experience on action team) that researchers raised as they saw fit. Guides featured sub-theme probes (e.g., how experience on action team affected views on school) used as required, dependent on what the interviewee had already said. Interviews were audio-recorded and transcribed.

In all four schools, we undertook baseline surveys of year-7 students at the start of the school year and follow-ups approximately 9 months later, to examine intermediate outcomes concerning relationships with teachers, social support, self-regard, security, engagement, and SU intentions. We focused on year-7 students entering the school at age 11 to 12 years because we expected them to have less-fixed attitudes about school and be more receptive.
Questionnaires were piloted in other schools. Surveys were conducted in private in class-rooms supported by two field-workers. Across all four schools, 798 year-7 students were registered, of whom 614 (76.9%) completed baselines and 735 (92.1%) follow-ups. Increased participation reflected field-work modifications (better explanation, teachers present but not able to read responses). As a pilot primarily focused on process, it was not powered to detect pre-hypothesized effects.

Participants gave informed, written consent. Parents were sent a letter explaining the study and enabling them to withdraw their child if they wished. The study was funded by the UK Medical Research Council and approved by the ethics committees of the London School of Hygiene and Tropical Medicine, and Institute of Education.

A thematic-content analysis of qualitative data was undertaken using NVivo (QSR International, Doncaster, Australia), focusing on major themes across accounts. Two researchers coded transcripts in duplicate, drafting memos explaining codes and links between these. Constant cross-comparison and examination of deviant cases were used to refine analysis. Researchers met regularly to compare codes, resolve disagreements, and develop agreed codes, used by one researcher in a second analysis of transcripts.

Survey data were analyzed using Stata 10.0 (StataCorp, College Station, TX). Table 2 lists our overall categories of outcome and the individual measures used, alongside the questionnaire-items used to construct them, their source, and how categorical responses were collapsed to provide binary variables. Other than our measure of “teased or threatened weekly or more and/or hurt ever,” which drew on three items, our measures drew on single questions. We used more than one outcome measure for examining the categories of security, engagement, and intention to use substances (see Table 2), rather than multi-item scales for each category, to maximize transparency in hypothesis-building. We examined Cronbach’s alphas to assess within-category inter-item consistencies.

We undertook intention-to-treat analyses (including individuals regardless of intervention receipt) of intervention effects, adjusting for clustering by school. We report unadjusted and adjusted odds ratios with 95% confidence intervals, using multivariate logistic regression to adjust for potential confounders (gender, housing-tenure, and baseline measure of outcome). For SU intentions, we also adjusted for baseline use. Our small sample prevented further adjustment for other potential confounders (which would lead to a lack of convergence if too many variables were included in models) or sub-group analyses.

Results

Intervention outputs

We report elsewhere what activities occurred in each school [17]. Some were mandatory (e.g., revising school policies and rules). Others were locally determined: both
schools developed “safe-spaces” for younger students and trained older students as peer-mediators, resolving disputes and preventing bullying. Woodbridge worked with a charity to develop other strategies to counter bullying, and commissioned a motivational-facilitator to work with disaffected students. Hillside revised their reward policy, broadening what was rewarded, and purchased electronic notice-boards edited by students.

Qualitative data on possible impacts

Accounts from each intervention school were similar and themes are presented for both schools together. Italics are used to highlight inter-relationships between themes.

Participation, relationships, and communication

Staff and student accounts repeatedly emphasized the project enabling students to participate in the action-team or delivery of resulting actions. This was said to produce various benefits, including a sense that students were listened to and had “power to change” aspects of the school:

The kids are noticing the difference because they’re... for example, the main thing was the [safe-spaces]... that was a massive issue, and it got introduced. So the kids are seeing that they are saying things and it is getting done... which is a fantastic thing for the kids.
[Female teacher, Hillside]

It felt very good ‘cause it was like we never get any real power to change stuff and I thought the people on that committee had, like, power to change the rules and what they— their opinions were heard.
[Male, year-11, Woodbridge]

Accounts linked participation to better relationships and constructive communication between staff and students. This was not restricted to action-team members but could involve large numbers of students, for example, in rewriting school-rules:

Table 2
Outcome measures and derivation from questionnaire items

<table>
<thead>
<tr>
<th>Category</th>
<th>Outcome measure</th>
<th>Questionnaire item(s) informing this variable</th>
<th>Response options and how collapsed to provide binary variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationships</td>
<td>Got on well with &gt;1 teacher in this school</td>
<td>How many teachers do you get on well with?</td>
<td>None of them/ Only one versus A few/ About half/ All or most of them</td>
</tr>
<tr>
<td>Social support</td>
<td>Ever worried couldn’t do work in this school</td>
<td>How often have you felt worried that you could not do your work at this school?</td>
<td>Never versus Sometimes/ Most of the time/ All the time</td>
</tr>
<tr>
<td>Self-regard</td>
<td>Felt sense of achievement in any area in this school</td>
<td>Do you feel like you have achieved some success at this school in any of the areas below?</td>
<td>School work/ Sports/ Art/ Music/ Drama/ Other clubs at school (any one of)</td>
</tr>
<tr>
<td>Security</td>
<td>Teased/threatened weekly or more and/or hurt ever in this school</td>
<td>Has anyone teased you or called you names at this school? and Has anyone at this school said they would hurt you? And Has anyone at this school actually hurt you?</td>
<td>No, never/ Yes, less than once a week versus Yes, about once a week/ Yes, most days</td>
</tr>
<tr>
<td></td>
<td>Teased others in this school</td>
<td>Have you teased or called other students names at this school?</td>
<td>“”</td>
</tr>
<tr>
<td></td>
<td>Hurt others in this school</td>
<td>Have you actually hurt another student at this school?</td>
<td>No, never versus Yes once/ Yes, a few times/ Yes, often</td>
</tr>
<tr>
<td></td>
<td>Feels safe in this school</td>
<td>Do you feel safe at this school overall?</td>
<td>No versus Yes</td>
</tr>
<tr>
<td></td>
<td>Been in fight at this school</td>
<td>Have you ever been in a fight (with hitting or kicking) at this school?</td>
<td>“”</td>
</tr>
<tr>
<td>Engagement</td>
<td>Likes school not much/not at all</td>
<td>In general, do you like school?</td>
<td>Not at all/ Not much versus Quite a lot/ Very much</td>
</tr>
<tr>
<td></td>
<td>Truants quite/very often</td>
<td>Have you truanted (“skipped off” or “bunked off”) from this school?</td>
<td>Never/ Sometimes versus Quite often/ Very often</td>
</tr>
<tr>
<td>Intention to use substances</td>
<td>Believes will try illegal drugs in future</td>
<td>In the future, do you think you will go to university or college?</td>
<td>Definitely will/ Probably will versus Probably will not/ Definitely will not</td>
</tr>
<tr>
<td></td>
<td>Believes will try smoking cigarette in future</td>
<td>Do you think in the future you might try any kinds of illegal drugs?</td>
<td>No versus Yes</td>
</tr>
<tr>
<td></td>
<td>Believes will get drunk before age 16</td>
<td>Do you think you will get drunk before you turn 16?</td>
<td>No versus Yes, I will get drunk a few times a year/ Yes, I will get drunk a few times a month/ Yes, I will get drunk a few times a week</td>
</tr>
</tbody>
</table>

* Adapted from: Scottish Office Education Department (1992).
* Adapted from: Not applicable.
* Adapted from: Bond et al (2004).
* Adapted from: NatCen/NfER (2007).
Where we’ve had the benefit from is being able to have that opportunity to talk about school, in a controlled setting with their tutor-[groups] and amongst themselves, so I think that has been a benefit.

[Male senior teacher, Woodbridge]

Enhanced mutual understanding was referred to as one way in which improvements in relationships could occur. Two Hillside students suggested that participation had improved their relationships with teachers because they better “appreciated” teachers’ difficult roles and the complexity of school decision-making. For example:

I now know what goes on behind the scenes and how much hard work [teachers] actually put into all of this and why, when you suggest things at [school]-council meetings and stuff, it takes so long because this is the, kind of, process you have to go through. And I think that… made me appreciate the things that they did more.

[Female, year-10, Hillside]

Other aspects of the intervention were repeatedly referred to as improving staff-student relationships. For instance, receipt of the new group-based motivational sessions targeting some of Woodbridge’s disaffected students was said to have led some to appreciate teachers’ efforts to help them:

I was thinking… oh, they’re just trying to get [our] grades up and everything, but when I actually went to the meeting… it was so different…because at first I used to be rude to teachers a bit, but now, after the meetings I, kind of, changed and thought this is my life that I’m, kind of, messing up so these teachers are trying to help me.

[Male, year-10, Woodbridge]

Some students at Hillside commented how activities such as re-writing schools rules could also build better relationships between students in different cliques or year-groups:

I think it got me talking to more students… in different years, ‘cause you don’t really mix with year-seven, year-eight, but there was someone from, like, each year on the committee [that collated the new rules]… So you got to hear what, like, the year-eights thought and you got to talk to other people that you wouldn’t normally talk to… I think it’s a good idea because it gets more people to mix, like… With me and my friend… it made me, ‘cause I never really spoke to her before, not a lot anyway, but now I think it made us, kind of, get on the same page… and we, kind of, knew each other and understood each other and we, kind of, realised we had the same views and things.

[Female, year-10, Hillside]

Other benefits were said to flow from participation and improved relationships. Staff on action-teams suggested that participating students could experience improved self-regard:

One of the kids is in my history class, and he can be a bit of a pain in the backside, but seeing him having a job [on the action-team] and being an expert…and having a role, just brought the best out in him.

[Male teacher, Woodbridge]

A recurring theme was that better staff-student relationships could also improve engagement and aspiration. For example, our earlier quote from the student receiving motivational sessions suggested a link between increased awareness of teachers’ efforts to help him and increased aspirations.

Some teachers suggested that the training had improved their communication with students:

I think I’ve been a lot more open with my, certainly my [tutor-group]. I think it’s helped more in my [tutor-group] than anywhere else. I’ve brought ideas to them and said, “What’s your perception?”

[Female teacher, Hillside]

Experienced staff less often reported this.

Security and support

Students involved in certain actions, such as peer-mediation, suggested that this could make younger students feel safer and “settled”:

It was quite good ‘cause you felt, like, people could, like, talk to you and you could help out people…what we’ve done, I think that was, like, good for the younger students…I think if they did it in, like, when we come to the school I think it would have been much easier for us to, like, settle in.

[Female, year-11, Woodbridge]

This view was shared by most of the younger students we interviewed.

Some staff suggested that the creation of safe-spaces could contribute to a happier and “calmer” atmosphere. A minority were skeptical about impact but supported implementation because they thought it important that students’ ideas were implemented regardless of immediate impact:

You know, I’m not sure… the bit at the end of the field that they’re going to make into a pleasant, safe area. I’m not sure how effective that’s gonna be, but it’s an idea that’s come from the group, therefore it has to happen.

[Female senior teacher, Woodbridge]

Self-regard and pride

As reported previously, staff suggested that some students participating in the action-team or activities such as peer-mediation improved their self-regard. This was echoed in students’ accounts:

[Sitting on the action team] gave me this, kind of, ‘cause I always have a confidence issue. Being there and having people listen to you, and having people do, and they’re people who are seen above you in school, that made me, that gave me that confidence which I think my friends saw as well with the fact that I was a lot more outspoken than I normally am. So I think it had a good effect on me actually.

[Female, year-10, Hillside]

I think I’ve become more confident [since becoming a peer-mediator] and, like, can talk to people more than before. I think it’s, like, a really good idea.

[Female, year-11, Woodbridge]
Some accounts also linked such improvements to receipt of actions arising from the intervention, such as Woodbridge’s motivational sessions:

Student: I felt really privileged to be part of [the motivational sessions]. Really good. Like, learnt so much stuff it’s unbelievable.

Interviewer: Okay, and do you feel like that in itself changed your relationship with the school?
Student: That changed my life.
Interviewer: Really?
Student: My life, yeah.
Interviewer: In what ways?
Student: It just helped me change to be a better person.
[Male year-10, Woodbridge]

Engagement and aspiration

Some students participating in the action-team or delivering resultant actions reported that involvement had given them a greater sense of “ownership” of the school and engagement with learning:

When stuff like that happens, it’s just, it’s our school, it’s not the [head’s] school, it’s not the teachers’ school, it’s our school. And if we’re doing something, we should do it as a school and contribute together. This definitely brings more determination to do well in the school as well. It’s because it, you feel like you’re a part of something and because you have a say in it as well. Especially the school-rules, I was speaking to some younger students, they felt so happy about it, especially year-7 students, they said, “I can’t believe this is happening and we’re having a say in the rules.”
[Male, year-12, Woodbridge]

Staff who collaborated with students rewriting school-rules suggested that this might improve behavior and engagement:

I’m very pleased about the changing of the school-rules into something which we can all actually follow… which are applicable to grown-ups and children. Very pleased about that. The, sort of, increased engagement, as I say, of the students.
[Male senior teacher, Hillside]

Some students involved in re-writing school-rules agreed that this collaborative approach would encourage students to “stick” to the rules and work harder in classes:

Now, them people that come up with their rule, they’re sticking to it, and it’s making classes a lot calmer, and they’re learning a lot more. My favorite [rule] is ‘focus in lessons’ ‘cause when I come here I wasn’t focusing in lessons, and I was just playing around and just talking, and stuff like that, and then when we, the rules come up, and then I just started listening to what the teacher had to say.
[Male, year-7, Woodbridge]

A few were more skeptical:

Interviewer: And what did you think about the changing the rules?
Student: I thought, there’s no point ‘cause it’s still going to be exactly the same. Just we’ve chosen them.
[Female, year-7 student, Woodbridge]

Overall impact

Although the year-7 students we interviewed had limited experience of, and negative attitudes to, SU, they frequently suggested that young people who smoked did so to become popular or appear “hard”; factors that our intervention aimed to address:

You don’t really know, like, what you’re doing and you follow the crowd, like, ‘cause you’re unsure of yourself like them. So you just, like, follow the crowd and if, like, you’re in a big gang of people, and they said, “You’ve got to do this to, like, impress us.” Then they’d do it and then they’d get into the habit of [smoking]… So I think they just do it to follow the crowd, but I don’t think they’d really want to, and I think they’d just do it ‘cause they desperately want to be in this group to be popular and stuff.
[Female, year-7, Woodbridge]

Kids [who smoke] think they’re all big and the best and, like, they think that, like, hard to describe, but, like, kids that think that they’re the best and they’re big, but really they’re not and they think that smoking’s cool… [they] think that they’re big and think that they can be boss and be known to everyone and have a reputation.
[Female, year-7, Woodbridge]

A recurring theme among the staff was that the intervention had the potential to “change” the school and students’ behaviors:

You will see nothing very much to begin with and then, you know, two months down the line, three months down the line, six months down the line you will actually see a big change. I thought it was interesting to take part in, I thought it was something a bit different… [The actions] are things that are there, you know, permanent. You know, they’re going to be there, sort of, forever. It made us think in different ways.
[Female teacher, Hillside]

Some staff suggested such changes could contribute to reducing SU and/or other risk-behaviors by increasing student engagement with school rather than risky peer-groups and behaviors:

It is possible that a student’s engagement with school and sense of being part of a school community for want of a better word will have knock-on consequences for the extent to which they manage their investment in things like gangs, or peer-groups as we now must call them, and the sort of behaviours that are associated with membership of some of these groups.
[Female senior teacher, Woodbridge]

Quantitative data on intermediate outcomes

There were baseline differences between intervention and comparison schools regarding housing tenure, reporting
hurting others at primary school, feeling safe at school, and smoking. Groups were comparable on other measures (Table 3). Cronbach’s alphas for the items comprising our measure of ‘‘teased and/or threatened weekly or more and/or hurt ever’’ were high; .74 at baseline and .69 at follow-up. Cronbach’s for our individual measures within the overall category of security were lower; .54 at baseline and .61 at follow-up. This was also the case for engagement, at .44 and .37 respectively; and for intention to use substances, at .56 and .38.

At follow-up, in adjusted analysis, those in intervention schools were around three-times more likely to feel safe at school (p < .001, Table 4). They were also less likely to hurt others or to tease others (associations of borderline significance p = .075, .055 respectively). In unadjusted analysis, our intervention group was significantly more likely to report some sense of achievement (p = .045), after adjustment this was not significant (p = .561). All other outcomes, including intention to use substances, tended in the direction of intervention benefits but were not statistically significant (p > .05), and we checked for but did not find a significant effect for a composite SU measure.

Discussion

Summary of key findings

Ours was a small, multimethod pilot aiming to develop new hypotheses about the ‘‘upstream” pathways by which school-ethos interventions might impact on schools and student intermediate outcomes, complementing previous research which has focused on downstream pathways of effect on SU [15,16,25]. Our qualitative data suggest the following hypotheses: (1) students participating in planning and/or delivering school-ethos interventions might experience improvements in self-regard and relationships with teachers and other students; (2) in some cases (e.g., re-writing school-rules), participation may be sufficiently widespread to allow school-wide improvements in self-regard and relationships; (3) students receiving actions arising from school-ethos interventions (such as peer-mediation or motivational sessions) may experience benefits such as improved safety, social support, or self-regard; and (4) improvements in self-regard and/or relationships may be linked to improved engagement and aspirations (and ultimately reduced SU). This pilot study was not designed to detect differences in SU outcomes. Nonetheless, our quantitative findings suggest that the intervention may have benefited students’ own safety and their conduct toward others, and possibly their self-regard.

Although the students interviewed were generally not engaged in SU, their accounts (and those of teachers) associated SU with peer-group sorting and school disengagement, in line with the previously reported research. Most staff felt the intervention had brought substantial benefits, which in the longer term could contribute to reduced student SU.
Limitations

Our study complements previous research as explained previously. It did not set out to test hypotheses concerning the upstream impacts of school-ethos interventions both because such hypotheses have not previously been formulated and because it lacked the sample size to do so with precision. It did not aim to examine downstream pathways of influences on SU both because this has previously been researched and because our focus was on younger students who, though apparently responsive to our intervention, were not very involved in SU.

Our analysis adjusted for various potential confounders but residual confounding is possible. Swapping an intended intervention and comparison school is likely to have biased the evaluation to overestimating benefits. Information bias may have arisen where students in intervention schools over-reported benefits. Finally, the generalizability of findings from this English pilot to other contexts is uncertain and requires further study.

Implications for research and policy

Our findings regarding the plausibility of intervention benefits and earlier finding that the intervention was feasible and acceptable [17] suggest that it should be subjected to a larger trial in English schools. Our finding that benefits might particularly accrue to students participating in planning and/or delivery suggests that student participation should be maximized.

Any future trial should use pathway modeling to test the hypotheses described earlier in the text. In doing so, our tests of inter-item reliability appear to support use of various individual measures rather than multi-item scales to examine the various aspects of concepts such as safety and engagement.

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