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The Prevalence and Targets of Cyberbullying Behaviours: An Observational Approach

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Abstract

The online environment has few boundaries and is evolving quickly, which may enable a greater prevalence of negative behaviour, like cyberbullying. Most cyberbullying researchers have used self-report methodologies, focussed on young people, and have had limited ability to explore contextual factors such as whether messages were retaliatory. Using stratified sampling, we selected a total of 40 YouTube® clips showing singing or dancing performances by young girls and boys. We conducted an exploratory content analysis using the first 20 comments for each of these clips (n = 800), coding eight quantitative factors and identifying themes for each comment. The key measure was the degree of positivity of each comment towards the performer in the clip, and if applicable, the degree of positivity towards the other commenters. Negative comments were directed at performers in 20% of the observed cases, whereas 74% of the comments directed at other commenters were negative, suggesting that commenters are most at risk of receiving negative comments online. Male performers received more negative comments than female. About a third of commenters appeared to criticise users for posting negative comments towards others, which is of continued interest because bystander intervention may mitigate some of the harmful effects of cyberbullying.

Introduction

With social communication increasingly aided by technology, a large proportion of the population are at risk of cyberbullying, or bullying that occurs online [1]. A number of negative outcomes are associated with being a target of cyberbullying. Similar to being a target of other forms of bullying, cyberbullying appears to increase rates of social anxiety [2,3], depression [2,4,5], suicide ideation [6,7], alcohol misuse [8], self-harm [9], as well as lowering an individual's self-esteem [10]. Additionally, being a target of cyberbullying is associated with increased anger levels and an increased likelihood of retaliation [11,12], which, in school contexts, contributes to a poor relational climate among students [13].

The Online Environment

The open and relatively boundary-less online environment in which cyberbullying occurs means that behavioural consequences are often not immediate, or that these consequences can be displaced. For example, a person leaving a comment on another person's online profile may not see the reaction to that message for some time, whereas in a face-to-face encounter, a negative reaction is immediately recognisable. Additionally, retaliations against the initial cyberbully may be made more easily, blurring the traditional definitions of "bully" and "target" [12,14,15]. Therefore, it is important that researchers consider acts of cyberbullying in context, where the whole conversation is reviewed for instances of negative behaviour, including retaliation. Understanding the contextual factors related to the online environment is key in approaching the issue of cyberbullying [16,17]. For example, the wider audience plays an important role as bullying is often motivated, though not exclusively, by an individual seeking a higher status within a social group context. Without an approving audience, there are fewer rewards for bullying behaviour and so the reactions of those witnesses (or perhaps, the lack thereof) can be important reinforcing factors [15,17]. It may be important in discerning the meaning of a comment to know whether an online comment is an initial post or whether it was a response, perhaps by a bystander, to an existing conversation [17].

Methodological Considerations

Researchers using predominantly self-report methods have been very effective at forming an overview of cyberbullying. However, researchers have reported various prevalence rates of cyberbullying victimisation over recent years [1,19]. Juvonen and Gross [20] found that 72% of their sample of 12- to 17-year-olds had personally experienced online bullying at least once in the previous year. Conversely, Hinduja and Patchin [21] found a much smaller prevalence, specifically 35% of under 18-year-olds, who had been victims of cyberbullying. Gradinger et al. [22] appear to have reported the lowest prevalence rate, with 5.3% of their sample reporting having experienced online bullying. Kowalski et al. [1] conducted a meta-analysis to synthesise the various prevalence rates and suggested a range of 10 to 40%, while other researchers suggested that 15% of young people are involved in cyberbullying [23]. Gahagan et al. [24] used an older sample (Mage = 21) and found that 19% had experienced bullying, while 46% reported witnessing cyberbullying. Phizacklea and Sargisson [25] reported that 95% of their sampled university students reported experiencing cyberbullying in the last year while 82% admitted to perpetrating cyberbullying.

It is possible, however, that self-report methodologies misrepresent cyberbullying behaviour in important ways that influence research on prevalence rates [26]. Some researchers have characterised cyberbullying as an act of social deviance due to the potential for negative social outcomes of such interactions [27,28]. When participating in research about cyberbullying, young people may

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respond with what they believe are the "correct" responses. Social desirability bias may distort the literature on cyberbullying prevalence [29] in a similar way to reports of discrepancies between self-reported and actual alcohol consumption [30]. In addition, self-report methods usually measure behavioural intentions, or remembered events, rather than actual behaviour [31]. Much of the research linking intentions to actual behaviour is correlational and so it is difficult to infer that intentions are the cause of any behavioural changes. When asked about our own behaviour retrospectively it may be that we incorrectly attribute our actions to a prior intention, do not accurately remember how we behaved, or that a third factor not considered has caused both the intention and the behaviour. Additionally, Webb and Sheeran's [32] meta-analysis of studies that experimentally assessed the impact intentions had on actual behaviour found only a weak link between these, particularly if the behaviour was of social consequence. Additionally, in a recent review of cyberbullying research, Vismara et al. [33] noted that almost all research using self-report measurement instruments has been conducted in the United States and other western countries.

Observation-based research methodologies could contribute to research on cyberbullying behaviour, and perhaps enhance its ecological validity. Behaviour analysts frequently use observational methods, as a first-step [34]. When a client presents with a problem behaviour, a behaviour analyst conducts a functional analysis assessment where they observe and describe problem behaviour and relevant environmental factors. Environmental factors could include the antecedents and consequences of the particular behaviour. Information that then informs an intervention program [35]. The context or environment in which a behaviour occurs is pivotal, so this type of analysis retains ecological validity [36]. Elements of functional analysis, though most often conducted at a micro-level, could be useful in understanding problem behaviour that affects a wider group of people, such as with cyberbullying [37,38].

In order to pinpoint a problem behaviour, its definition must be specific, observable, and measurable [34]. The definition of traditional bullying is three-pronged: intention to cause harm, repetition of the harmful behaviour, and presence of a power differential between the bully and the bullied [39]. While this definition is useful for understanding offline bullying behaviour, adaption to the online environment requires further consideration and research [19,40,41]. In the interim, an option for overcoming the varied interpretation of "cyberbullying" is to reduce the definition to its simplest form [34,38], the degree of positivity or negativity of interactions. By focusing on the degree of negativity in social interactions, which is the core component of cyberbullying, we hope to create a specific and measurable construct on which to compare observable online behaviour.

Our Research

YouTube® is a Social Networking Site (SNS) established in 2005 [42]. Male internet users report that they are more likely than female to have an active YouTube® profile, though both groups are well-represented on this SNS overall [43,44]. There are many SNS available online, but because YouTube® combines the ability to share personal video content alongside a (usually) public comment feature, it is possible to observe instances of cyberbullying behaviour. Due to its comparative longevity, YouTube® is well placed to provide material for a content analysis of online behaviour, helping to broaden understanding of cyberbullying beyond self-reported information. In addition,

YouTube® content is not limited to western populations, so may better reflect the experiences of users regardless of their place of residence.

Our main aim was to report on the overall prevalence of negative behaviour in a semi-random sample of YouTube® comments in response to video clips showing solo singing or dancing performances of young people. We reduced the construct of cyberbullying to an assessment of the degree of positivity or negativity of a comment, to test a more concise measurement of cyberbullying behaviour. A comparison of the yielded prevalence rates to those in the reviewed literature will help determine the efficacy of our approach. Additionally, we sought to assess whether an observation-based approach elucidates any gender or age differences in behaviour, or any differences in how various YouTube® users interact with one another. For example, if a commenter directs a negative comment at someone in an online and public forum, how do other users generally respond? Our research was exploratory and we aimed to supplement the existing techniques used by researchers to add to understanding of cyberbullying.

Method

Sample

We created a population of 188 YouTube® videos, showing young people singing or dancing, using a snowball sampling method. We used search phrases such as "young people singing", "am I a good dancer?", and "me singing" to find suitable videos in the first instance. We found subsequent videos through the "recommended videos" feature displayed alongside the initial videos until the point of data saturation, where few new videos that fit our criteria were emerging. Within this population database, 100 videos showed female performers, 88 videos showed male performers, and all performers appeared to be 18-years old or younger. We included videos in the population that had a minimum of 500 views, 20 or more comments, and focused on an individual performer. We used an Excel® spreadsheet to compile this information and to allocate each video a number. We then randomly selected 20 videos showing male performers and 20 videos showing female performers (n = 40), ensuring that the selection equally represented younger (below 12-years old) and older (12- to 18-years old) performers. Then for each of these videos, we selected the first 20 comments for analysis (n = 800).

Apparatus

We viewed YouTube® material on a standard Windows 7® desktop computer running Internet Explorer 8®. YouTube® had not been used on the computer prior to our data collection and we found the videos without a user account. We used the default settings throughout our data collection so that comments were displayed by popularity ("Top comments" as opposed to "Newest first"). We then transferred information from YouTube® into Microsoft Excel 2013® spreadsheets for coding.

Procedure

We recorded a web address for each of the 40 YouTube® videos (list available from the first author). We noted the number of comments, views, and votes received for the videos, as well as when the video was first published online.

We defined a comment as any response on the video's page that was publicly viewable. We recorded the commenter's YouTube® username alongside the analysis of their comment.

For each comment, we recorded nine factors; gender, anonymity, relevance, degree of positivity toward the performer, comment type, votes received, number of swear words, degree of positivity toward the other commenters, and emergent themes. We coded gender as male, female, or unknown and the commenter's level of anonymity as anonymous, partially anonymous (real name without a photo), recognisable (real name with a non-identifying photo), or identifiable. We considered relevance in relation to the video commented on to exclude instances of trolling (e.g., user's repeatedly posting content unrelated to the conversation thread) and categorised comments as either not relevant (e.g., "How do we know your not pervert?"), somewhat relevant (e.g., What are the names of these songs??"), or relevant (e.g., "looks like he's trying too hard"). We rated degree of positivity/negativity towards the performer on a 5-point Likert scale (1 as the most negative, 3 as neutral, and 5 as the most positive). Comment type referred to whether each comment was an initial post, or a subsequent reply. For votes received, we counted both the number of "Up-votes" and the number of "Down-votes" each comment had received (these are YouTube® features used to indicate positive and negative appraisal). We also rated positivity/negativity to other commenters on a 5-point Likert scale, (1 = negative, 3 neutral, 5 positive, or we left blank if no reference to other commenters was made). Emergent themes referred to the thematic analysis aspect of our study, where we attributed up to three themes (broadly categorised as supportive or not supportive) to each comment.

Intra- and Inter-Rater Reliability

To test the reliability of the rating of positivity (to performers as well as to other commenters), we re-coded a randomly selected 10% (4 videos; 80 comments) of the total sample. Two new raters independently coded the selected comments for ratings of positivity. Due to the possible subjectivity in defining swear words, the count of swear words was also included in the reliability checks. Intra-rater percent agreement for each of the three variables was satisfactory (swear words: 92.5%; rating of positivity toward performers: 85.0%; and toward other commenters: 87.5%). Table 1 shows the percentage agreement between independent raters. "One" refers to the codes we attributed during the initial coding phase. "Two" refers to the codes given by a young woman, and "Three" to the codes given by a young man. All coders worked independently of one another and of the researchers. Table 1 shows percentage agreement for the 5-point rating of positivity, as well as a condensed, 3-point rating. We will discuss the inclusion of the 5- and 3-point scales, as well as the variance in obtained percentage agreement values, in a later section.

		Raters		
	n points	One-Two	Two-Three	One-Three
Swear Words		97.50%	98.75%	98.75%
Performers	5	73.75%	86.25%	75.00%
	3	87.50%	87.50%	87.50%
Other Commenters	5	73.75%	60.00%	81.25%
	3	86.50%	81.25%	87.50%

Table 1: Percentage Agreement on the Frequency of Swear Words, and the Degree of Positivity Toward Performers as well as Commenters, for the Same 10% of Comments by Three Independent Raters
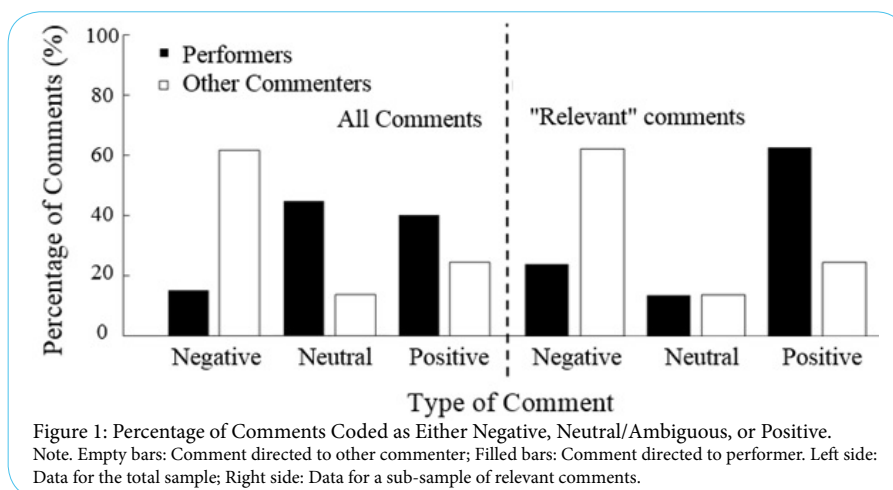
Results

Prevalence

To assess the overall prevalence of negative online behaviour, we categorised the degree-of-positivity ratings into "positive", "negative", or "neutral/ambiguous". Comments rated as "1" or "2" on a 5-point Likert scale were coded as negative, "4" or "5" as positive, and "3" as neutral or ambiguous. The leftmost panel of Figure 1 shows a higher percentage of negative comments (62%) in comments directed at other commenters compared to those directed at the performers in the clips (15%). Performer-directed comments were more often positive (40%) and neutral (45%) than those directed at commenters (25% and 14%). At the time of coding, we categorised comments as "irrelevant", "somewhat relevant", or "relevant" to this conversation because the actors involved are less likely to interpret off-topic comments as bullying. The sub-sample of relevant comments is shown on the right of Figure 1 for comparison and subsequent analyses was conducted on these data ($n = 470$). When we omitted irrelevant or somewhat relevant comments, performers received a comparable percentage of positive comments (63%) to the percentage of negative comments that other commenters received (74%). Conversely, other commenters received a similar percentage of positive comments (20%) as performers did negative (24%).

Gender Differences

The degree of positivity of the comments directed to performers in YouTube® clips was significantly related to the gender of that performer, Mann-Whitney $U = 24562.0$, $z = -2.135$, $p = .02$, $r = -.10$. Overall, male performers received comments that were more negative ($M = 3.46$, 95% CI [3.30, 3.62]), than female performers ($M = 3.69$, 95% CI [3.52, 3.86]). Comments directed at male performers were also

Figure 1: Percentage of Comments Coded as Either Negative, Neutral/Ambiguous, or Positive.
Note. Empty bars: Comment directed to other commenter; Filled bars: Comment directed to performer. Left side: Data for the total sample; Right side: Data for a sub-sample of relevant comments.

more likely to be irrelevant or somewhat relevant, therefore the sample size for comments to male performers (n = 182) differed from that for female performers (n = 229). We found no significant relationship between gender (of the performer) and the degree of positivity of comments that were directed at other commenters (U = 441.5, z = -1.250, p = .211, r = -.15).

Age differences

We found a relationship between age and the degree of positivity of comments directed to the performers, yet no relationship between these variables for comments toward other commenters. We carried out two Mann-Whitney U tests to assess any relevant links to the age of the performer in the YouTube® clip. First, the degree of positivity of the comments to performers differed significantly by the age of that performer (U = 24198.0, z = -2.4, p = .016, r = -.11). The comments directed at younger performers (under 12-years old) were more negative (M = 3.45, 95% CI [3.29, 3.61]) than for their older peers (M = 3.70, 95% CI [3.53, 3.87]). The second Mann Whitney U analysis, on the positivity of comments directed to other commenters, also differed significantly according to the age of the performer (U = 324.0, z = -3.0, p = .003, r = -.37). If the video clip being commented on showed a younger performer, comments exchanged between commenters were more negative (M = 1.76, 95% CI [1.48, 2.05]) than when an older performer was shown (M = 2.63, 95% CI [2.20, 3.05]).

Other commenters

Comments towards other commenters fit the "critical towards other commenter" category if they were coded as a "1" (n = 61) or "2" (n = 81) on the 5-point Likert scale of positivity. Of the total sample of comments (n = 800), 19% of comments were critical towards other commenter, and these were 1.3 times more likely to be in response to clips featuring female performers rather than male. For the majority of critical-towards-other-commenter comments, it is unclear whether these are in support of the performer or not. That is, 59% of comments were neutral towards the performer. However, 36% of the comments that were critical towards other commenters were positive towards the performer that may represent supportive bystander intervention. Conversely, a much lower percentage (5%) of comments were both critical towards other commenters and negative towards the performer.

We attributed up to three themes to each comment, and coded the various themes into two broader categories, "supportive" or "not supportive". Information about the thematic categories that co-occurred with the theme of critical towards other commenter are included in Table 2. Thematic analysis made it possible to discern how many of the comments that were critical to other commenters directly referred to the performer in the clip (n = 73) and not just to other commenters exclusively (n = 53). We could then better assess whether commenters who were critical of other commenters were supportive of the performer. Most comments categorised as critical-of-other commenter, and that referred to the performer, were supportive of that performer. There were two instances where comments were supportive of some commenters, while being critical of others.

Discussion

Prevalence

Our focus was to trial an observation-based approach to measuring the prevalence of negative online behaviour, as well as reviewing any apparent gender or age differences, or any patterns in how users interact with one another. Overall, 20% of the comments directed at YouTube® performers in our sample were negative, compared to 74% of comments towards other commenters.

Prevalence rates of cyberbullying reported in the wider literature, from self-report measures, generally range between 10 and 40% [1,23,24] which align with our observed rate of 20% for comments directed at performers. We also separately quantified the occurrence of subsequent behaviours, such as comments directed to other commenters. In self-reported data, researchers typically combine such comments into a single measure of cyberbullying, such as "Have you been cyberbullied?" [45]. In our study, we were able to separate the initial instances of negative behaviour (comments directed at the performer) from the subsequent negative comments (comments directed at another commenter).

The two prevalence rates for initial (20%) and subsequent (74%) negative comments differed, perhaps reflecting that different events motivate and maintain the two behaviours [33,36]. Although the observed prevalence rate of negative comments directed at other commenters (74%) is greater than the average range suggested by Kowalski and colleagues [1], it is not unique in the cyberbullying literature. Juvonen and Gross [20] reported that 72% of their sample had experienced cyberbullying, while other researchers [11] found a 79.3% prevalence rate. Future research using this distinction could help explain why initial comments and subsequent comments differed so markedly in their degree of positivity.

Gender

To date, researchers have found mixed results regarding whether boys or girls are more at risk of cyberbullying [1,45]. Some researchers report that girls are most at risk [46,47], or that there are no gender differences [48]. In the communication we observed, male performers received a higher proportion of negative comments and a lower proportion of positive comments than female performers.

One possible explanation for the gender difference is that self-report cyberbullying literature underrepresents male targets of cyberbullying. Chan [49] and others [50] have discussed that, when men are targeted by other modes of aggressive behaviour, they are less likely than female targets to seek help. Similarly, the norms and gender expectations placed on boys may lead to a reluctance to report being affected by cyberbullying [47]. However, it may also be that boys interpret online comments as less threatening than girls do and therefore do not consider them an instance of cyberbullying. The gender difference reported in our study (as well as those in the wider literature) may be a result of boys and girls interpreting events differently. That is to say, reported gender differences could be an artefact of the self-report research methodology, rather than the frequency of cyberbullying behaviour [21,50]. Future research of any differences between boy and girls' interpretations of comments highlighted as negative, by the degree of positivity measurement used in this study, would help clarify the observed gender difference.

Age

Several cyberbullying researchers have suggested that adolescents are the most vulnerable to cyberbullying [52], although adolescents are also most represented in the literature [53] and are likely to spend the greatest amount of time on SNS where cyberbullying

occurs [44,54,55]. Our results show that younger performers (under 12-years old), rather than adolescent performers, received comments that were more negative. However, we used a stratified sampling method to ensure that younger and older performers were represented equally in the dataset, and that may not reflect the make-up of online communities. That is, young people under the age of 12 may have comparatively less opportunity to engage online [44], so as a group might be less at risk of cyberbullying involvement than adolescents might.

Cyber-Bystanders

The bystander effect has been observed in a number of different situations [56,57] and is of particular interest when reviewing interventions for cyberbullying behaviour [58,59,60]. Gahagan et al. [24] found that nearly half (46%) of their sample (M age = 21) had witnessed cyberbullying. In addition, many researchers have noted the potential for large audiences to witness online incidents, therefore anti-cyberbullying programmes focussed on the behaviour of bystanders may be worthwhile [15,40]. By observing the public behaviour of users on YouTube®, our results indicate that users sometimes responded negatively to other commenters to support the performer who was initially criticised. Of the comments that were critical towards another commenter, 36% appeared to support the performer. On the other hand, our results also show that negative comments are often directed at other commenters (74% of the time) seemingly regardless of whether they have praised, criticised, or remained neutral about the performer in the clip. While some researchers have suggested that witnesses to cyberbullying can play an important mitigating role [40,58], our observations indicate that by simply posting a comment, users could be increasing their own vulnerability to cyberbullies.

Method and Reliability

The wide range of reported cyberbullying prevalence rates hinders researchers and suggests that cyberbullying is a highly subjective phenomenon [51]. We measured the degree of positivity in comments directed at other internet users. In using observation, it was key that we defined the behaviour of interest, cyberbullying, in a way that allowed for replicable quantitative measurement [34].

Table 1 showed that our initial positivity ratings were sufficiently similar, according to the percent agreement values, to those of both Rater 2 and Rater 3. We report the percent agreement for all combinations of the three independent raters, in addition to the percent agreement using both the 5- and 3-point Likert scales. The 5-point Likert scale contained separate codes for "Very Positive" comments compared to simply "Positive" comments, as well as the converse for those comments interpreted as negative. Our results show there were greater discrepancies between raters when the different levels of positivity or negativity were included. Therefore, our approach has led to a reliable categorisation of negative compared to positive YouTube® comments, though subjectivity regarding the intensity of the comment remained between independent raters. Further research investigating whether demographic attributes, such as gender and age, affect an individual's perception of online behaviour could help refine our measure of cyberbullying prevalence.

Limitations & Future Research

We were unable to investigate every type of bystander behaviour in our study, as some of these behaviours are covert and not publicly observable, although we did observe several cyber-bystanders attempting to mitigate or stop negative behaviour. The first of several steps in witnesses deciding whether to act is noticing that an incident is occurring [59]. While YouTube® shows the number of "views" a clip has had, it is not possible to discern how many of these views represent individual users. In addition, we could not gauge the level of engagement users had with the comments section or the way they perceived the comments [42].

We selected the first 20 comments that appeared when the YouTube® setting was "top comments". As we were interested in how witnesses to negative online behaviour react, we sampled the comments that other users were most likely to see. By selecting the most popular comments, we were more likely to include comments to which multiple other users had viewed, responded to, and up- or down-voted. However, sampling comments according to their popularity has limitations. As several researchers have discussed [12,55], the online environment appears to enable retaliation, as the consequences for such behaviour are often not immediate or clear. Therefore, other users may respond more often to negative comments. For that reason, sampling the first 20 "top comments" may have biased our sample, so that a disproportionate number of negative comments were included.

Future research could extend understanding of how bystander behaviour functions in the online environment. As noted, cyber-bystanders might aid in the reduction of cyberbullying behaviour, but also risk becoming cyberbullied themselves [16,48,58]. Researchers could experimental manipulate the conversations and contexts observed by us to investigate factors that influence the behaviour of cyber-bystanders, which could lead to interventions aimed at creating a more supportive public online environment on websites such as YouTube®.

Summary

Our research was exploratory, with the focus to establish an alternate way to research cyberbullying behaviour. We observed that 20% of comments directed at performers and 74% of comments directed at other commenters were negative, figures that are comparable to the prevalence rates from researchers using self-report. In our sample, male performers were more likely to be targeted by negative comments, compared to their female peers; a finding that runs contrary to much of the extant literature and may be a result of the novel methodology used. Additionally, users who comment on YouTube® clips appear to be at greater risk of negative comments than the performers in those clips. However, in 36% of cases, other commenters were in fact being criticised for posting an initially negative comment. That is to say, some users chose to intervene in cases of apparent cyberbullying. Such interventions may mitigate some of the impact on targets of cyberbullying and so cyber-bystander behaviour warrants further research.

Competing Interests

The authors declare that they have no competing interests.

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