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RESEARCH ARTICLE

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YouTube vloggers set the stage: How public (non)compliance with COVID-19 regulations affects adolescents

Maud Hensums[1,3] | **Wouter van den Bos**[2,3,4] | **Geertjan Overbeek**[1,3] | **Helle Larsen**[2,3]

[1]Department of Preventive Youth Care, Faculty of Social and Behavioural Sciences, Research Institute of Child Development and Education, University of Amsterdam, Amsterdam, The Netherlands

[2]Department of Developmental Psychology, Faculty of Social and Behavioural Sciences, Psychology Research Institute, University of Amsterdam, Amsterdam, The Netherlands

[3]Faculty of Social and Behavioural Sciences, University of Amsterdam, Research Priority Area Yield, Amsterdam, The Netherlands

[4]Center for Adaptive Rationality, UCL Centre for Computational Psychiatry and Ageing Research, Max Planck Institute for Human Development, Berlin, Germany

Correspondence

Maud Hensums, Research Institute of Child Development and Education, University of Amsterdam, Nieuwe Achtergracht 127, 1018WS Amsterdam, The Netherlands.
Email: M.Hensums@uva.nl

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Abstract

Introduction: YouTube vloggers may be important socialization figures, yet their influence on adolescents' health-related behaviors and cognitions is largely untested. In this two-study mixed-method project, we first assessed the extent of (non) compliance to COVID-19 regulations by vloggers on YouTube and how viewers reacted to this. Second, we experimentally assessed the effects of vlogger behavior paired with viewer evaluations on adolescents' COVID-19-related attitudes, intentions, and behavior.

Methods: For Study 1, we coded 240 vlogs of eight popular Dutch vloggers on YouTube recorded in the period of February 2020–March 2021. For our 2×2 between-subjects experiment in Study 2, Dutch adolescents ($N = 285$, $M_{age} = 12.99$, $SD = 1.02$, 41.8% girls) were randomly assigned to conditions in which they saw vlogs showing either compliance or noncompliance to COVID-19 regulations, and to conditions in which they saw either supportive or dismissive comments under these vlogs.

Results: Study 1: Vloggers' noncompliance with COVID-19 regulations was not uncommon and received relatively more viewer support than compliance, suggesting that portrayed noncompliance may be potentially influential. Study 2: Adolescents were more worried about COVID-19 after they watched a compliant (vs. noncompliant) vlogger. Also, vlogger noncompliance decreased adolescents' perceived importance of COVID-19 regulations and rule-setting for adolescents who identified strongly with the vloggers they watched.

Conclusions: Vloggers' (non)compliance affects adolescents' COVID-19-related worrying, and attitudes and behavior of adolescents who identify with vloggers strongly. This seems concerning given the sometimes harmful and risky behaviors vloggers portray online but could potentially also be employed to encourage healthy behaviors.

KEYWORDS

adolescence, COVID-19, online peer influence, socialization, vloggers, YouTube

1 | INTRODUCTION

December 2019 marked the beginning of the COVID-19 pandemic (World Health Organization WHO, 2020). Authorities enacted restrictions to prevent the disease from spreading, and debates and initiatives that supported or thwarted COVID-19 restrictions received attention. One online campaign (#I'mOut), in which famous Dutch influencers publicly stated that they stopped complying with the restrictions and also encouraged their followers to stop complying, even went viral (BBC, 2020).

Such statements raise societal questions about influencers' impact on their young followers, but there is little empirical research to provide answers. We conducted two studies with a mixed-method approach. Study 1 featured a content analysis assessing whether vloggers showed (non)compliance to COVID-19 enacted regulations, whether verbal comments of vloggers about COVID-19 supported or dismissed COVID-19 regulations, and how viewers reacted to different types of content. Study 2 featured an experiment, in which we exposed adolescents to compliant or noncompliant content of YouTube vlogs gathered in Study 1, as well as peers' dismissive or supportive evaluations of these behaviors, to test the effects of vlogger (non)compliance and viewer evaluations on adolescents' COVID-19-related attitudes, intentions, and behaviors. As such, Study 1 provided insight into the COVID-19-related vlogger content that adolescents were exposed to in their daily lives, and Study 2 examined whether this (non)compliant vlogger content influenced adolescent viewers positively or negatively.

2 | (ONLINE) SOCIAL LEARNING IN ADOLESCENCE

According to the theory of reasoned action (Fishbein & Ajzen, 1975), (non)compliance with COVID-19 regulations is influenced by the interplay between individuals' attitudes, behavioral intentions, and their perception of social norms. Social norms are group-based standards about appropriate behaviors and attitudes and are communicated in two different ways: descriptively, by how everyone behaves, and injunctively by discussing what should be done (Cialdini, 1988). Social norms can be informative sources for adolescents (Laursen & Veenstra, 2021).

Because adolescents' social lives increasingly take place online—a youth monitor showed that 96% used social media, and 84% of this group (almost) daily (Rombouts et al., 2020)—social norms in the peer context are also communicated online. Adolescents pick up on social norms in online interactions with familiar and unfamiliar peers, like, influencers—influential people on (social) media (Elmore et al., 2017; Strasburger & Wilson, 2002). One popular type of influencer is "vloggers." Vloggers, sometimes having up to millions of followers, regularly upload vlogs—video blogs—showing their daily lives. Vloggers communicate descriptive norms by showing their behavior, and injunctive norms by discussing what behavior is appropriate or should lead to certain evaluations.

Vloggers are popular among adolescents, and adolescents are more likely to copy high-status peers' behaviors compared with low-status peers (Bandura, 1977; Choukas-Bradley et al., 2015; Cohen & Prinstein, 2006; Gradassi et al., 2022). On YouTube, vloggers can receive supportive or dismissive evaluations from their viewers, in terms of (dis)likes and positive or negative comments, which communicates injunctive norms about how behavior is rewarded. When adolescents witness vlogger behaviors as being rewarded with supportive evaluations, adolescents might model these behaviors (Bandura, 1977). Even when these behaviors are dangerous or illegal, supportive online evaluations can lower adolescents' inhibition to partake in these behaviors (Sherman et al., 2018). Especially during early adolescence (Reiter et al., 2021), susceptibility to peer influence and concerns with social rewards both online and offline increase (Laursen & Veenstra, 2021; Sherman et al., 2016). Thus, vloggers are potentially powerful socialization agents because of their popularity, and by providing supportive evaluations of vloggers' behaviors peer viewers can further increase the likelihood of adolescents modeling vloggers' attitudes and behavior.

Few studies investigated online socialization processes related to vloggers and health cognitions and behavior by directly assessing how the content of influential social media figures impacts adolescent followers' health risks (for a review see Alves de Castro et al., 2021). This is important, however, as health-risk behaviors generally increase throughout adolescence (Mahalik et al., 2013), and have been especially concerning during the COVID–19 pandemic (Shroff et al., 2022) which may lead to general deterioration of adolescent health (Hale & Viner, 2012). Experimental evidence that does exist suggested that children who were exposed to influencers promoting unhealthy (vs. healthy) snacks also consumed more unhealthy snacks (Coates et al., 2019). Longitudinal evidence on broader media influencers demonstrated that nonsmoking adolescent girls whose idols smoked (vs. did not smoke) in movies had an increased risk to start smoking (Distefan et al., 2004). It remains to be uncovered whether, to what extent, and for whom vloggers socialize taking health risks during a pandemic. We conducted two studies examining (1) which COVID-19-related norms vloggers convey, and (2) whether vloggers who comply or do not comply with COVID-19 regulations and who receive supportive instead of dismissive evaluations for it evoke similar attitudes, intentions, and behaviors in adolescents.

3 | STUDY 1

In Study 1, we performed an exploratory content analysis of popular Dutch YouTube vlogs during the pandemic, assessing (1) vloggers' compliance and noncompliance with COVID-19 regulations in the Netherlands (descriptive norms), (2) vloggers' statements about COVID-19 and about following COVID-19 regulations (injunctive norms), and (3) how YouTube videos with different levels of (non)compliance and supportive and dismissive comments were evaluated by viewers.

4 | METHODS

4.1 | Participant selection

Ethical approval from the University of Amsterdam was provided for all procedures. Eight Dutch vloggers (four female) were selected (see Supporting Information S1 for more information), their ages ranged from 19 to 34 ($M_{age} = 24.5$, $SD = 4.50$), and their number of subscribers ranged from 148,000–2,560,000 on February 18, 2021.

4.2 | Setting and data collection

We identified five different COVID-19 regulation phases in the Netherlands from February 2020–March 2021, in which COVID-19 severity and enacted regulations were different (Supporting Information S2). Per vlogger we selected six vlogs per regulation phase, to obtain an equal number of vlogs across all regulation phases and vloggers. When a vlogger had more than six vlogs in a particular COVID-19 regulation phase, we randomly selected six vlogs (Supporting Information S1) leading to a total of 240, 30 per vlogger. The vlogs were coded by seven coders each following the codebook (https://osf.io/me8yx), 18% of the vlogs were double-coded.

4.3 | Content analysis

We performed a qualitative content analysis of vlogs (https://osf.io/tpw7z, Krippendorff, 2018; Tong et al., 2007). We derived meaning from the observed content (behavioral and verbal) by categorizing behavior (compliant or noncompliant) and statements (neutral, supportive, and dismissive) of vloggers. We coded the number of likes, dislikes, and views of each vlog and performed a content analysis on the comments under videos, categorizing comments as neutral, supportive, or dismissive. We based our categorizations on previous content analyses on social media platforms (Beullens & Schepers, 2013; Hendriks et al., 2018). Absolute agreement of coding was 74% (range 67%–82%) which was adequate (Hartmann, 1977).

4.3.1 | Vlogger behavior and statements

Vlogger behaviors

Per regulation phase, we coded whether vloggers complied with the respective COVID-19 regulations that were in effect (Table 1; Supporting Information S2) and the frequency of compliance and noncompliance for specific regulations in the videos (e.g., how often a vlogger wore a face mask in different scenes in one video).

TABLE 1 Coded (non)compliance with COVID-19 regulations.

1.	Keeping social distance (in the Netherlands this was 1.5 m)
2.	Working from home
3.	Staying at home and testing when you experience symptoms
4.	The maximum number of people inside (differs per phase)
5.	The maximum number of people outside (differs per phase)
6.	Making use of "contact-jobs," such as going to the hairdresser
7.	Traveling outside of the country (and going in quarantine after returning home)
8.	Wearing a face mask
9.	Going into quarantine after a positive COVID-19 test result
10.	Going to the shops alone
11.	Keeping curfew

Vlogger statements

We coded how vloggers verbally evaluated COVID-19 and the regulations in place, whether statements were neutral ("We cannot go to the cinema because it is closed due to COVID-19."), supportive ("I find the regulations important and I therefore comply with them."), or dismissive ("COVID-19 is just a flu, everybody is lying.").

4.3.2 | Viewer evaluations

Like rate

We subtracted the number of likes, dislikes, and views on February 18, 2021. We calculated a like rate by subtracting the number of dislikes from likes, dividing this by the total views and multiplying this by 100 (Niu et al., 2021).

Comments

We subtracted the COVID-19-related comments from viewers under vlogs on February 18, 2021. We coded comments that concerned the vlogger (in relation to COVID-19), COVID-19, or the enacted regulations. We coded whether comments were neutral, supportive, or dismissive. Comments that were not within one of these categories were coded as ambivalent.

4.4 | Strategy for analysis

We examined how often regulations were violated and complied with and how often neutral, supportive, and dismissive statements were made by vloggers. Next, we compared vlogs with more noncompliance than compliance, and more dismissal than support (and vice versa), examining whether these vlogs received none or at least one supportive or dismissive comment about the vlogger from viewers. Finally, we calculated bivariate correlations between and within vlogger and viewer outcomes.

5 | RESULTS

5.1 | Vloggers' (non)compliance, support, and dismissal of COVID-19 regulations

Across all videos ($N = 240$) and for all regulations combined, the average number of violations per vlog was $M = 4.90$, $SD = 5.37$, and of compliance per vlog was $M = 37.01$, $SD = 29.18$, with an average time per vlog of 28.06 minutes ($SD = 15.08$). Among the three most popular vloggers, who had more than 1 million followers, one was relatively compliant with regulations, one was in the middle on compliance, and one was relatively noncompliant, indicating there was much variation in COVID-19 regulation compliance between the most popular vloggers. The regulation of social distancing was violated in over half of the vlogs (68.4%), working from home was violated in approximately a third of the vlogs (27.1%), and the regulation of wearing a face mask was violated in approximately a fifth of the vlogs (19.2%).

Statements that were related to COVID-19 or the regulations were infrequent; vloggers did not often speak about COVID-19 regulations. Most statements were neutral ($M = 2.53$, $SD = 4.52$), followed by dismissive ($M = 0.81$, $SD = 1.96$), and supportive statements ($M = 0.69$, $SD = 1.50$). For more descriptive information and examples of violations and statements see Supporting Information S3.

5.2 | Linking vloggers' behavior and statements with viewer evaluations

Viewers provided support and dismissal for vlogs that portrayed varying levels of (non)compliance, support, and dismissal (Tables 2 and 3).

Correlations indicated that when vloggers showed more noncompliance, viewers expressed more dismissal of the vlogger. When vloggers showed more compliance, there was a lower like rate. When vloggers were more dismissive *and* when they were more supportive about COVID-19, there was a lower like rate, and viewers expressed more support and more dismissal of the vlogger and of COVID-19. These were small or small to moderate correlations, with the exception of the large correlation between dismissive COVID-19-related statements of vloggers and viewer dismissal of COVID-19. More descriptive information and interpretation of correlations are presented in Supporting Information S3.

TABLE 2 Viewers' support for and dismissal of vlogs.

	Percentage of vlogs with at least 1 supportive comment for vlogger by viewers (%)	Percentage of vlogs with at least 1 dismissive comment for vlogger by viewers (%)
Vloggers' (non)compliance and statements in vlogs		
More compliance than noncompliance ($N = 204$)	38.24	39.71
More noncompliance than compliance ($N = 11$)	54.55	81.82
As much compliance as noncompliance ($N = 25$)	32.00	52.00
More support than dismissal ($N = 45$)	55.56	51.11
More dismissal than support ($N = 46$)	58.70	43.48
As much support as dismissal ($N = 149$)	26.85	40.27

TABLE 3 Bivariate correlations between the main variables of interest.

	1.	2.	3.	4.	5.	6.	7.	8.	9.
Vloggers									
1. Noncompliance	–								
2. Compliance	.114	–							
3. Dismissal	.004	.050	–						
4. Support	−.191**	.094	.390*	–					
Viewers									
5. Like rate	.084	−.377**	−.177**	−.212**	–				
6. Support vlogger	−.034	−.044	.237*	.190**	−.015	–			
7. Support COVID-19	−.028	.066	.130*	.158*	−.119	.454**	–		
8. Dismissal vlogger	.134*	−.081	.243*	.169*	.057	.730**	.571*	–	
9. Dismissal COVID-19	−.005	−.048	.466*	.215**	−.098	.645**	.551**	.610*	–

*Correlation is significant at the .05 level (two-tailed).

**Correlation is significant at the .01 level (two-tailed).

6 | DISCUSSION

Study 1 examined COVID-19-related norms portrayed in popular YouTube vlogs. Both compliance and noncompliance with COVID-19 regulations were modeled by vloggers, and vloggers both supported and dismissed COVID-19 regulations. Although vloggers mostly showed compliance and received relatively more dismissive comments for being noncompliant than vloggers who complied, noncompliant vloggers also received relatively more support from viewers. When vloggers verbally dismissed COVID-19 and the regulations in place, this was reflected in more dismissive comments about COVID-19 made by viewers—signaling a shared vlogger–viewer perspective. These results demonstrated that adolescents have ample opportunity and motivation to learn noncompliance from vloggers, emphasizing the need to unravel to what extent vloggers may influence adolescents' attitudes, intentions, and behavior.

7 | STUDY 2

To test the causal effect of vlogger COVID-19-related behaviors we conducted a 2 × 2 between-subjects experimental study in which we randomly exposed adolescents to either compliant or noncompliant behavior of vloggers, and either supportive or dismissive comments of viewers on vloggers' behaviors. We hypothesized that when adolescents were exposed to vloggers that did not comply (vs. complied) with regulations, adolescents would have (1) less cautious attitudes as indicated by lower

levels of perceived importance of adhering to COVID-19 regulations, (2) less cautious COVID-19-related behavioral intentions, and (3) less cautious behavior as indicated by looser COVID-19 rule-setting. We hypothesized that this effect would be more pronounced in conditions where other viewers provided supportive, instead of dismissive, evaluations of vloggers' noncompliance. Exploratively, we included adolescents' COVID-19-related worrying and identification with the vlogger.

8 | METHODS

8.1 | Participants

In March and April 2022, 285 adolescents (41.8% girls, 0.7% who identified as nonbinary, 0.7% who preferred not to disclose) aged 11–16 years ($M = 12.99$, $SD = 1.02$) from average or higher level (47.4%) secondary education participated. Adolescents came from 19 school classes in two different secondary schools in the northern and eastern parts of the Netherlands. The schools were situated in regions with relatively high income per inhabitant.

8.2 | Recruitment and procedure

All study procedures (Supporting Information S4) were approved by the University of Amsterdam. This study was preregistered on the Open Science Framework (OSF) (https://osf.io/qdjty). Caregivers provided active consent and adolescents provided assent to participate. Data collection took place in classrooms via computers. Adolescents filled in the first set of questionnaires, conducted the experiment, then filled in the second set of questionnaires. Afterward, adolescents were debriefed about the different conditions in our experiment. Schools received information about our general study findings, social media, and adolescent development.

First, adolescents chose one out of four vloggers to watch. Adolescents were then randomized into either a (1) compliant or (2) noncompliant vlogger condition, and a (1) supportive or (2) dismissive viewer evaluation condition. Adolescents then watched three clips from vloggers showing three different occasions in which the vlogger either complied or did not comply with the regulations. One clip focused on social distancing, one on the number of people inside the house, and one on wearing a face mask. The order of clips was randomized within adolescents. After each clip, adolescents saw three comments from other anonymous viewers that evaluated the behavior of the vlogger. Manipulation checks occurred after each clip and after each comments section. Adolescents indicated whether the vlogger complied with the regulation or did not comply and whether the viewers agreed or disagreed with the vlogger. Adolescents "passed" when most of the questions were answered correctly: 99.65% of adolescents interpreted correctly whether vloggers complied or did not comply with the regulations in place, and 92.28% of adolescents interpreted the comments of other viewers correctly.

8.2.1 | Conditions

Vlogger (non)compliance

The vlogger complied with the enacted regulations (compliance condition coded as 0), or the vlogger did not comply with the enacted regulations (noncompliance condition coded as 1).

Viewer evaluations

Supportive evaluated behavior was, for example, "Good that you follow the corona rules!!," or "You give a good example, you should NOT follow the regulations" (coded as 0). Dismissive evaluated behavior was, for example, "Screw you, why would you be mindful of corona, bullshit," or "No respect for you since you don't give a shit about the regulations" (coded as 1).

8.3 | Measures

We asked adolescents: "Imagine that a new variant of COVID-19 comes to the Netherlands. We don't know whether this variant is worse or less bad than the previous variants that we had here. We might need to go into lockdown again. Imagine what your answers would be in that situation."

8.3.1 | Perceived importance of adhering to COVID regulations

This is a seven-item questionnaire about which regulations adolescents find important (I find it important to … "Wear face masks in public places" and "Avoid meeting up with groups of friends"), answered on a four-point Likert scale (0 = strongly disagree; 3 = strongly agree). We derived an average score of perceived importance of regulations, with higher scores indicating greater importance ($\omega = 0.887$).

8.3.2 | Perceived risk of becoming infected, hospitalized, or dying from COVID

For three questions, adolescents indicated on a scale from 0% to 100% how high they think certain chances are regarding COVID-19. An example statement was: "How high do you think the chance is that you get COVID-19?" A total risk perception was derived by averaging the risk perception across the three items, with higher scores indicating a higher risk perception. The questionnaire had an insufficient reliability score of $\omega = 0.502$. Therefore, we only report the preregistered analyses with own-risk perceptions in the Supporting Information S5 and we did not include the risk perception variable in our explorative analyses.

8.3.3 | Intentions to comply with regulations

This was a seven-item questionnaire (e.g., what would you do? "Wear face masks in public places"), answered on a four-point Likert scale (0 = not at all likely; 3 = very likely). We derived an average score of behavioral intentions, with higher scores indicating more cautious behaviors ($\omega = 0.878$).

8.3.4 | COVID-19 rule-setting

This was a seven-item questionnaire where adolescents were asked to imagine that they were the minister who gets to decide the COVID-19 regulations in the Netherlands. They were asked which rules they would set (e.g., "People must wear face masks in public places as much as possible"), and answered on a four-point Likert scale (0 = I would certainly not set this rule; 3 = I would certainly set this rule). We derived an average score for the task, with higher scores indicating stricter rule-setting ($\omega = 0.853$).

8.3.5 | Identification with vlogger

This was a Dutch translation of the Other in the Self scale (Aron et al., 1992). Adolescents were presented with seven pictures showing two circles representing themselves and the vlogger that overlapped to varying degrees, they were instructed to select the one that best described their connection with the vlogger that they chose to watch vlogs from in our study. More overlap in the circles indicated more perceived overlap and a higher level of identification with the vlogger.

8.3.6 | Worrying about COVID-19

This was a four-item questionnaire about COVID-19-related worrying of adolescents based on a similar questionnaire used by Bazzoli et al. (2021; e.g., "COVID-19 is a big threat for the health of people"). The questions were answered on a four-point Likert scale (0 = not at all true; 3 = completely true). Average scores of COVID-19-related worrying were derived, with higher scores indicating greater levels of worrying ($\omega = 0.770$).

8.4 | Statistical analyses

We carried out three separate analysis of variances (ANOVAs), one for each dependent variable: (1) perceived importance of adhering to COVID regulations, (2) intentions to comply with COVID regulations, and (3) advocation of tighter or more relaxed COVID regulations.

To test Hypothesis 1, we conducted ANOVAs with vlogger (non)compliance as the between-subjects variable. Hypothesis 1 was confirmed when the main effect of vlogger (non)compliance was significant, showing significantly

(i) lower perceived importance of adhering to COVID regulations, (ii) weaker intentions to comply with COVID regulation, and (iii) advocating more relaxed COVID regulations after watching a noncompliant vlogger.

To test Hypothesis 2, we conducted ANOVAs with vlogger (non)compliance and viewer evaluations, and their interaction as the between-subjects variables. Hypothesis 2 was confirmed when the (non)compliance × viewer evaluations interaction was significant, showing that the hypothesized main effects of vlogger noncompliance (vs. compliance) on adolescents' perceived importance of the regulations, intentions to comply with regulations, and COVID-19 rule-setting are stronger if vlogger behavior is followed by supportive (instead of dismissive) viewer evaluations.

For all tests, we used two-tailed tests with $a < .05$ as an indicator for significance. We performed one sensitivity analysis regarding the manipulation checks. All analyses were carried out twice, once with the entire sample and once without the adolescents that failed the manipulation checks (Supporting Information S6). Whenever this led to significant differences in any of our analyses, we interpreted the results of the sample without the adolescents that failed the manipulation checks.

9 | RESULTS

9.1 | Descriptive analysis

The conditions were distributed equally (Supporting Information S7). Three adolescents stopped the experiment before the random assignment of conditions and were removed from analyses. Adolescents with higher perceived importance of adhering to regulations also had higher intentions to comply with the regulations and set stricter COVID-19 rules and adolescents with higher intentions to comply with the regulations also set stricter COVID-19 rules (large effects; Table 4).

9.2 | Main analyses

Assumptions for ANOVA were met (Supporting Information S8). None of the analyses showed significant differences between conditions—adolescents watching noncompliant or compliant vloggers—in adolescents' perceived importance of adhering to the regulations, behavioral intentions to comply with the regulations, and COVID-19 rule-setting (Table 5). In addition, the effect of vloggers' behavior on adolescent outcomes was not moderated by other viewers' evaluations.

9.3 | Exploratory analyses

9.3.1 | COVID-19-related worrying

We assessed whether vloggers' behavior affected adolescents' levels of worrying. The behavior of vloggers had a significant effect on adolescents' levels of worrying, $F(1, 275) = 4.018$, $p = .046$, $R^2 = .027$, $\eta^2 = .014$. This small effect (Cohen & Cohen, 1983) indicated higher levels of worrying among adolescents who saw vloggers comply (vs. not comply) with the COVID-19 regulations. There was no moderating effect of the evaluations of viewers $F(1, 275) = 0.654$, $p = .419$.

TABLE 4 Correlations variables of interest.

	M	*SD*	*N*	1	2	3	4	5
1. Perceived importance of adhering to regulations	1.66	0.73	281	–				
2. Intentions to comply with regulations	1.84	0.68	277	.84**	–			
3. COVID rule-setting	1.88	0.65	276	.75**	.71**	–		
4. COVID-19-related worrying	1.11	0.65	279	.53**	.55**	.50*	–	
5. Identification with vlogger	0.71	1.21	285	−.06	.02	−.10	−.10	–

*Significant at the .05 level.

**Significant at the .01 level (two-tailed).

TABLE 5 Analysis of variance main analyses of the effect of vlogger (non)compliance and viewer evaluation on our main outcomes.

	Sum of squares	*df*	Mean square	*F*	*p*	η^2
Perceived importance of adhering to regulations						
$N = 281$, $R^2 = .011$						
Vlogger non(compliance)	0.121	1	0.121	0.121	.728	.000
Viewer evaluation	1.289	1	1.289	1.290	.257	.005
Vlogger non(compliance)* Viewer evaluation	1.734	1	1.734	1.735	.189	.006
Behavioral intentions to comply with regulations						
$N = 277$, $R^2 = .019$						
Vlogger (non)compliance	.016	1	.016	.016	.900	.000
Viewer evaluation	2.314	1	2.314	2.333	.128	.008
Vlogger (non)compliance* Viewer evaluation	2.821	1	2.821	2.844	.093	.010
COVID-19 rule-setting						
$N = 276$, $R^2 = .007$						
Vlogger non(compliance)	.128	1	.128	.127	.721	.000
Viewer evaluation	.103	1	.103	.103	.749	.000
Vlogger (non)compliance* Viewer evaluation	1.642	1	1.642	1.635	.202	.006

*Significant at the .05 level.

** Significant at the .01 level (two-tailed).

9.3.2 | Moderation of identification with vloggers

To investigate whether identification with the vlogger moderated the effect of vloggers' behavior on all outcomes, we used the PROCESS models of Hayes (Model 2; Hayes, 2013). Before conducting the analyses, data inspection revealed skewed data for the variable vlogger identification with low frequencies for the last answer categories. We used truncation and collapsed answer categories 4, 5, and 6 into one.

When identification with the vlogger was higher, adolescents were more likely to perceive lower importance regulation adherence, and to endorse looser rule-setting when they saw a noncompliant vlogger (Table 6 and Figure 1). This was a small effect for perceived importance regulation adherence, $\Delta R^2 = .018$, $f^2 = .018$, $p = .030$, and a large effect for rule-setting, $\Delta R^2 = .029$, $f^2 = .408$, $p = .006$ (Cohen, 1992). As these results were significantly different when we removed data of adolescents who failed the manipulation checks, we reported the results that only included adolescents who passed the manipulation checks.

10 | GENERAL DISCUSSION

In two studies, we applied social learning theory (Bandura, 1977) to an online context, examining whether vloggers were effective socialization agents in times of the COVID-19 pandemic. Our content analysis indicated that vloggers mostly showed compliance, but vloggers' noncompliance was not uncommon, and although receiving more dismissal than compliance, noncompliance also received relatively more support—suggesting that noncompliance may be potentially influential. Our experimental findings showed that although there was no main effect of vlogger (non)compliance on adolescents (except for levels of worrying), explorative analyses indicated that vlogger socialization effects were present for some adolescents; vloggers' behaviors affected the perceived importance of adhering to the regulations and COVID-19 rule-setting for adolescents with higher levels of identification with the vlogger.

10.1 | Opening the black box of vlogger socialization

We did not find much evidence for general vlogger socialization effects, apart from the effect of vloggers' (non) compliance on adolescents' levels of worrying—when vloggers complied adolescents worried more, and when

TABLE 6 Interaction effects with identification with vlogger after manipulation check removal.

	b (SE)	*t*	95% confidence interval	
			Lower	Upper
Perceived importance of adhering to the regulations				
$N = 260$, $R^2 = .036$				
Vlogger (non)compliance	.002 (.194)	0.010	−0.380	0.384
Viewer evaluation	−.294 (.168)	−1.753	−0.625	0.036
Vlogger (non)compliance* Viewer evaluation	.403 (.247)	1.632	−0.083	0.889
Identification	.060 (.078)	0.774	−0.093	0.213
Vlogger (non)compliance* Identification	−.249* (.114)	−2.180	−0.474	−0.024
Behavioral intentions				
$N = 258$, $R^2 = .042$				
Vlogger (non)compliance	−.048 (.195)	−0.246	−0.433	0.337
Viewer evaluation	−.375*,[a] (.169)	−2.221	−0.707	−0.042
Vlogger non(compliance)* Viewer evaluation	.445 (.248)	1.792	−0.044	0.933
Identification	−.003 (.078)	−0.041	−0.157	0.151
Vlogger (non)compliance* Identification	−.202 (.115)	−1.759	−0.427	0.024
COVID-19 rule-setting				
$N = 257$, $R^2 = .047$				
Vlogger (non)compliance	−.018 (.194)	−0.093	−0.340	0.364
Viewer evaluation	−.100 (.168)	−0.597	−0.431	0.231
Vlogger (non)compliance* Viewer evaluation	.378 (.246)	1.536	−0.107	0.864
Identification	.064 (.078)	0.822	−0.089	0.218
Vlogger (non)compliance* Identification	−.315** (.114)	−2.766	−0.540	−0.091
Worrying $N = 258$, $R^2 = .030$				
Vlogger (non)compliance	−.426* (.183)	−2.143	−0.817	−0.034
Viewer evaluation	−.299 (.172)	−1.741	−0.637	0.039
Vlogger (non)compliance* Viewer evaluation	.271 (.252)	1.075	−0.226	0.768
Identification	−.009 (.080)	−0.112	−0.166	0.148
Vlogger (non)compliance* Identification	.041 (.117)	0.354	−0.188	0.271

[a]This significant main effect of viewer evaluations indicated that when adolescents saw negative evaluations (regardless of whether this was a negative evaluation of compliance or noncompliance) adolescents were likely to have lower behavioral intentions to follow the regulations.

*Significant at the .05 level.

**Significant at the .01 level (two-tailed).

vloggers did not comply, adolescents worried less. Worrying about COVID-19 was previously linked with the development of mental health problems in adolescents during the pandemic (Nearchou et al., 2020), which, counterintuitively, also signals a potential threat of modeled compliance and buffer effect of modeled noncompliance.

The theory of planned behavior might provide an explanation for the absence of more general socialization effects, related to perceived behavioral control (Ajzen, 1985). Perceived behavioral control refers to the belief one has that one can engage in specific behavior, depending on resources, opportunities, or lack of obstacles, and was previously identified as a relevant contributor to adolescents' COVID-19 behaviors (Park & Oh, 2022). Adolescents might perceive more obstacles (parental monitoring and control), less opportunities (social gatherings), and less resources (money or social contacts) than they perceive vloggers to have. This may impact whether adolescents believe that what vloggers do holds relevance to their own situation.

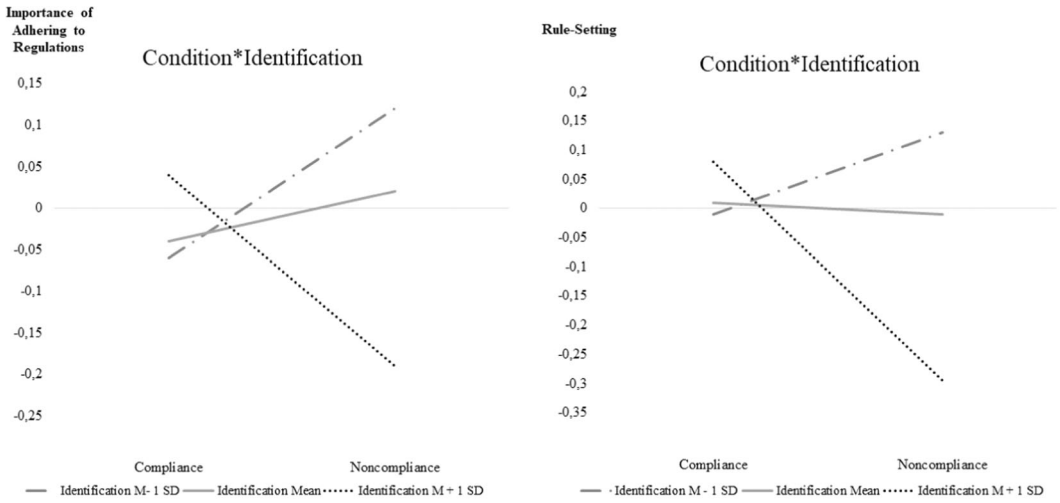

FIGURE 1 Identification by vlogger behavior on the perceived importance of adhering to the regulations and COVID–19 rule-setting. *Note*: We generated regions of significance with Johnson–Neyman intervals for the significant interactions (Hayes, 2013). The intervals indicated that the effect of vloggers' behavior became significant at higher levels of identification with the vlogger (i.e., 3.448 and above for perceived importance of adhering to the regulations, and 1.634 and above for COVID–19 rule-setting). Of the participants, approximately 4% scored above 3.488 on identification, and 18% scored above 1.634 on identification.

Another explanation for the absence of main effects may be that online socialization processes occur more on an automatic (i.e., social reaction) than reflective (i.e., reasoned action) level (Gibbons et al., 2003). According to the prototype willingness model, engaging in health (risk) behaviors might, albeit volitional, not always be intentional (Gerrard et al., 2008). Perhaps, vloggers influence adolescents more subconsciously: when adolescents find themselves in similar situations as the vlogger portrayed, adolescents might have an increased willingness to engage in behaviors because they recall the favorable image of the vlogger engaging in such behaviors (Gerrard et al., 2008).

Our explorative findings, however, did reveal that vlogger socialization effects occurred in subgroups of adolescents with higher levels of identification with the vlogger. Consistent with social learning theory (Bandura, 1977) and previous studies investigating media socialization (Anschutz et al., 2014; Croes & Bartels, 2021), our findings emphasized identification with the referent as an important motivator to model vloggers' behavior. High-identifying adolescents adjusted their perceived importance of adhering to the regulations and COVID-19 rule-setting to the behavior of the vloggers. Interestingly, this effect occurred only when vloggers showed noncompliance, suggesting only negative socialization effects for this subgroup of adolescents. This is especially relevant because even though Study 1 findings showed that vlogs portrayed more compliance than noncompliance, Study 2 indicated that noncompliance affected adolescents with high identification, whereas compliance did not. Additionally, high-identifying adolescents' behavioral intent was not influenced by vloggers (non) compliance, which might point more to a direct social reaction than a reasoned action path (Gibbons et al., 2003).

10.2 | Strengths, limitations, and future directions

By combining a content analysis with an experimental design, we gained insight into the socialization effects of real vlogger content on health-related attitudes, intentions, and behavior of adolescents. Our experimental design allowed us to assess the causal and independent effects of clear, nonambiguous messages of vloggers and peer viewers on YouTube.

However, our studies also have limitations. For one, we operationalized supportive evaluations of other viewers as an attitude and behavior-stimulating variable. However, because other viewers were anonymous, and their evaluations were not tied explicitly to adolescents' own gains or losses, this may have led to an underestimation of true peer viewer effects. Another limitation is that we were not able to fully discount peer selection effects (Laninga-Wijnen & Veenstra, 2021). An especially relevant question with regard to our Study 1 findings is whether viewers select content to watch because they feel similar to the vlogger (selection) or whether viewers become more similar to the vlogger over time because they watch the vloggers' content (influence)? Even in our experiment, we may not have been able to fully eradicate peer selection effects, because adolescents might have had pre-existing beliefs of how specific vloggers complied before our experiment. Additionally, although our behavioral task allowed us to measure behavior in a controlled setting, it may be that, to uncover the true nature of adolescent reactions to vlogger health behaviors and communications, we need to include records of behavior or behavioral observations, instead of using behavioral tasks that might require reflective reasoning. Moreover, we could not

reliably assess adolescents' own risk perceptions in this study, which calls for future studies to develop valid COVID-19-related risk perception measures in adolescents. Another limitation is that the final sample consisted of adolescents from average or higher secondary education, which might have led to an underestimation of population effects as adolescents with varying intelligence levels may differ in how they resist influence (Paus et al., 2008), although this is not always replicated (Wagemaker et al., 2022). Finally, the experiment was conducted relatively late in the pandemic, when regulations were loosened and vaccinations available. This is why we asked adolescents to imagine a new lockdown situation, for which they did not know how severe it would be. We cannot rule out that this may have been less threatening and personally relevant for adolescents, which may have led to an underestimation of effects compared with conducting the experiment at the peak of the pandemic.

Notwithstanding these limitations, our study provided evidence for vlogger socialization effects in adolescents who identify with them—this seems especially relevant in light of the relatively small dosage of content that we exposed adolescents to, in a time in which they most likely were exposed to much more information (Cinelli et al., 2020; Gupta et al., 2022). This provides us with three considerations. For one, we should study the cumulative effects of being exposed to multiple types of influencer content over time. On YouTube, adolescents easily end up in algorithm loops; if they watch certain types of content, they will likely be directed to similar content in the future (Matamoros-Fernandez et al., 2021). Such algorithm biases may lead to a *false consensus effect;* when multiple sources share similar messages, people tend to believe there is consensus on what the majority of people believe or do, even when that consensus is based upon misinformation or inappropriate experts (Höttecke & Allchin, 2020; Yousif et al., 2019). However and second, as shown in our first study, adolescents might also be exposed to mixed messages within vlogs. When adolescents are exposed to content that encourages *and* discourages health-risk behaviors, that is at times rewarded *and* punished by other viewers, (how) does that influence adolescents? Third, future research could expand our findings by experimentally assessing whether vlogger socialization processes are generalizable to health-risk contexts other than the COVID-19 pandemic (e.g., substance use, risky driving, or self-image-related behavior, such as working out or eating patterns).

10.3 | Practical implications

Health-risk behaviors, such as violating COVID-19 regulations, may harm adolescents and the people in their surroundings. Our two studies show that one possible way to diminish these behaviors is by addressing risky vlogger content that adolescents consume online, especially for high-identifying youth. For example, by providing adolescents with media-literacy training in school settings. Such training can provide adolescents with knowledge of media influence and tools to critically evaluate and interpret the content they consume online (Jeong et al., 2012). On a positive note, vloggers mostly showed healthy behaviors in their vlogs. Our findings imply that we may also be able to employ vloggers to target adolescents' emotions positively, which is an opportunity to explore further.

11 | CONCLUSION

Our first study indicated that the majority of vloggers were compliant most of the time, but adolescents have ample opportunity and motivation to also learn noncompliance from vloggers, which emphasized the importance to investigate whether adolescents actually model this (non)compliance in our second study. Although we did not find much direct evidence for vlogger socialization effects on adolescents, except for levels of worrying, subgroup analyses revealed that vloggers *negatively* influence the attitudes and behavior of adolescents who identify with the vlogger strongly. Perhaps, the concerns following the #I'mOut campaign in the Netherlands were legitimate, at least for a portion of adolescent followers. Having opened the black box of vlogger socialization effects in these studies, our findings call for a deeper understanding and a continuation of research on vlogger socialization for different subgroups of youths in various (health-related) contexts.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

All data and syntax are available on OSF: https://osf.io/2kbpz/.

ETHICS STATEMENT

All study procedures were approved by the ethical committee of the University of Amsterdam, Faculty of Social and Behavioural Sciences. This study was performed in line with the principles of the Declaration of Helsinki.

ORCID

Maud Hensums http://orcid.org/0000-0001-6676-9806
Wouter van den Bos https://orcid.org/0000-0002-8017-3790
Geertjan Overbeek http://orcid.org/0000-0002-3812-6480
Helle Larsen http://orcid.org/0000-0003-0117-9252

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