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Using culturally-grounded, animation narratives to encourage undocumented and U.S.-born college students to talk to a mental health professional

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ABSTRACT

This study extended the Narrative Engagement Theory by testing culturally-grounded, animation narrative videos designed to reduce undocumented students' perceived barriers to talking to a mental health professional (MHP). Students were randomly assigned to view one of four conditions: a control video, a Confidentiality & Stigma video, a Procedural Knowledge video, or both intervention videos. Undocumented students who strongly identified with the characters in the Confidentiality & Stigma video or both intervention videos reported greater intentions to talk to an MHP at the immediate post-test and one-month later. For highly stressed undocumented students, viewing the Procedural Knowledge video or both intervention videos led to seeing an MHP more since baseline. The findings were mixed for the U.S.-born sample.

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Cultural grounding; narrative engagement theory; health belief model; undocumented immigration; mental health

In the United States, undocumented college students have reported significantly higher levels of depression, anxiety, isolation, and alienation than students with U.S. citizenship, naturalized citizenship, or permanent residency (Alif et al., 2020). This health inequity is attributed to a host of stressors including fear of deportation for themselves or their family members; discrimination at interpersonal, institutional, and policy levels; and limited employment opportunities, especially if students do not have Deferred Action for Childhood Arrivals¹ (DACA; a policy that allows eligible undocumented youth to temporarily reside in the United States and obtain a work permit; Enriquez, 2019; Golash-Boza & Valdez, 2018). With undocumented students experiencing depression, anxiety, and other mental health strains at a greater rate than students with documentation (Alif et al., 2020), many undocumented students may benefit from talking to a culturally-responsive² mental health professional (e.g., counseling or clinical psychologist, therapist, social worker; MHP). Yet, undocumented students may hesitate to do so, even in situations where campus mental health services are available to students at no

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out-of-pocket costs (Cha et al., 2019). Studies (e.g., Cha et al., 2019) that have examined undocumented students' barriers to talking to an MHP or using other mental health services have been essential to laying the groundwork for developing MHP help-seeking interventions. To further enhance undocumented students' health equity with regard to mental health services, researchers and practitioners need to develop and evaluate interventions designed to address undocumented students' psychological barriers to talking to a culturally-responsive MHP.

Addressing this need, the current study draws from Narrative Engagement Theory (NET; Miller-Day & Hecht, 2013), the principle of cultural grounding (Hecht & Krieger, 2006), and the Health Belief Model (HBM; Rosenstock, 1974) to develop and evaluate the effects of two animation intervention videos. Although other approaches to narrative engagement exist (e.g., Busselle & Bilandzic, 2009; Cohen, 2001), NET draws from narrative communication theory (Fisher, 1984) and emphasizes the principle of cultural grounding (Hecht & Krieger, 2006) in its approach of enlisting lived experiences to design narrative health messages. Narrative, in this case, is defined as "talk organized around significant or consequential experiences with characters undertaking some kind of action within a context with implicit or explicit beginning and end points, and significance for the narrator or her/his/their audience" (Miller-Day & Hecht, 2013, p. 658). Narratives can be effective because people engage in storytelling daily. Given people's familiarity and affinity for storytelling, narrative-based health messages can be especially persuasive when people are highly engaged in the narrative (Shin et al., 2023).

NET (Larkey & Hecht, 2010; Miller-Day & Hecht, 2013) suggests that high-quality health narratives will lead to greater engagement, and in turn, more positive attitudes, beliefs, and norms toward the recommended action, as well as actual behavior change. Yet, few studies (only one to our knowledge, Shin et al., 2023) have actually tested this proposed mediation within a NET framework. Thus, we extend NET by examining engagement as a mediator for narrative persuasion. We also extend NET in two additional ways. First, we offer a more comprehensive conceptualization of engagement based on the constructs, perceived relevance and negative cognitions. Second, we evaluate engagement as a potential *moderating* influence in the narrative persuasion process. Overall, our goal is to extend NET in multiple ways, while also testing whether the animation videos increase favorable views of talking to a culturally-responsive MHP, intentions to talk to an MHP, and actual behaviors.

Extending narrative engagement theory

NET conceptualizes engagement as consisting of: (1) *interest* (i.e., the extent to which the narrative captures the audience's attention and involvement), (2) *realism* (i.e., the extent to which the narrative represents the audience's lived experiences), and (3) *identification* (i.e., the extent to which the audience feels similar to a character) (Miller-Day & Hecht, 2013). We extend theoretical understandings of how NET operates by elaborating on NET's conceptualization of narrative engagement. We argue that (4) *relevance* is an additional crucial indicator of engagement that is essential to participating in the recommended action. Relevance refers to the extent to which the audience believes the narrative topic, for example, mental health, is pertinent to them (Frank et al., 2015). Undocumented students may be interested in the health narrative, find it realistic, and

identify with the characters, but they may not be motivated to talk to an MHP if they do not feel highly stressed and in need of such services (Cha et al., 2019).

Whereas narrative engagement can increase message persuasiveness, various other psychological factors can undermine it. Extensive work on psychological reactance (Dillard & Shen, 2005; Quick & Stephenson, 2007), for instance, suggests it can be a hindrance to the persuasiveness of health promotion messages. Because our video narratives were not designed to include freedom-threatening language, we did not assess psychological reactance (i.e., negative cognitions and anger) stemming from a freedom threat. Yet, we do see *negative cognitions* as important to consider and therefore conceptualize it as a fifth component of engagement. Specifically, we argue that engagement is most likely to occur when there are *low levels* of negative cognition. Negative cognitions here refer to the extent to which the audience – upon being exposed to a message – has thoughts that undermine or run counter to message adherence (Dillard & Shen, 2005). Low negative cognitions, in short, should allow for greater engagement and less message resistance.

NET suggests that engagement is multidimensional, which means people might not score uniformly high or low across all five components of engagement. People can score high in negative cognitions and still be interested in the message and identify with the characters; however, the reactance literature (e.g., Dillard & Shen, 2005; Quick & Stephenson, 2007) would lead us to anticipate negative cognitions as possibly undermining the positive effects of the other engagement components. Viewers might be distracted by their negative thoughts about the videos, and in turn, find the message less persuasive, even if they are interested in the message or find it relevant to them. According to NET, a narrative is more persuasive as people score higher on multiple components, but scoring high in one component does not guarantee that people will score high in other components (Lee et al., 2011). Thus, each engagement component – interest, realism, identification, relevance (in the form of perceived stress), and low negative cognitions – are crucial to consider, as they each can play a key role in explaining why message exposure yielded certain effects. Using NET, then, this study developed and tested the effects of two short animation narratives, using a culturally-grounded approach.

A culturally grounded approach to developing the intervention videos

To create narratives that address the NET components, Hecht and colleagues (Hecht & Krieger, 2006; Larkey & Hecht, 2010) suggest taking a culturally-grounded approach. Cultural grounding means developing health messages that are “derived from the culture with cultural group members as active participants in message design and production” (p. 306). A culturally-grounded approach is likely to be an effective way of creating health messages that have their intended effects because the messages are based on the targeted audience’s lived experiences, and the targeted audience can be involved in the creation of the messages. A culturally-grounded approach informed the design of the intervention videos to reach undocumented students.

As the first step of cultural grounding, we started by conducting semi-structured interviews with 24 Latina/o/x/e undocumented students, using the Health Belief Model (HBM, Rosenstock, 1974) to understand students’ perceived susceptibility to experiencing mental health strain, the severity of experiencing mental health strain, the perceived

benefits to talking to an MHP on campus or in the community, and the perceived barriers to talking to an MHP on campus or in the community, paying close attention to students' cultural and undocumented experiences. Based on our interview data (Kam et al., 2023), we identified concerns with *low self-efficacy* (i.e., limited confidence in their ability to obtain an MHP appointment in a timely manner), *low response efficacy* (i.e., the belief that talking to an MHP would not make them feel better), *low disclosure efficacy* (i.e., limited confidence in knowing how to talk to an MHP about their undocumented experiences and what information to disclose), *low procedural knowledge* (i.e., limited familiarity with how to schedule an appointment, how many sessions are allowed, whether they can talk to the same MHP each time, that MHP services are included in their student fees), *low perceived MHP understanding* (i.e., doubt that MHPs would understand their experiences with undocumented immigration), and *self-stigma* (i.e., "the personally held belief that seeking psychological help would make one undesirable and socially unacceptable"; Keum et al., 2018, p. 661). The narratives were created to address the above factors, which for brevity, we refer to as promoting *pro-mental-health perceptions* (i.e., greater self-efficacy, response efficacy, disclosure efficacy, procedural knowledge, and perceived MHP understanding, but lower self-stigma).

We had undocumented students involved in developing the semi-structured interview guides, conducting the interviews themselves, and conducting the thematic analysis (Kam et al., 2023). We then used the qualitative findings to write the narratives (video scripts) in collaboration with undocumented students, Undocumented Students Services, and Counseling & Psychological Services. We collaborated with undocumented students to co-create the video scripts and content, visuals, and even aspects of the video production itself by having undocumented students provide the characters' voice overs in the videos. Campus photos were taken of the University's Counseling & Psychological Services rooms where therapy sessions occur, and they were used as backgrounds in the videos to increase realism.

Although one long video could have been designed to capture all the perceived barriers and benefits, two shorter videos were created instead. When we thematically analyzed the semi-structured interview data, we identified over 20 themes or subthemes that reflected perceived barriers and benefits to talking to an MHP (Kam et al., 2023). All of the perceived barriers and benefits were important to highlight, as they could contribute to reducing undocumented students' barriers to accessing mental health services. The challenge, however, was addressing the perceived barriers and benefits in one narrative without threatening engagement. In an educational context, Guo and colleagues (2014) found that shorter videos up to three minutes led to the highest student engagement. Thus, we created two short animation videos – each three minutes and 15 seconds long – to address the perceived barriers and benefits, with each video including different student characters and campus backgrounds.

Both videos overlapped by discussing stressors that undocumented students often report experiencing and by suggesting that talking to an MHP could help students feel better, but the videos differed in the perceived barriers that they emphasized. The Confidentiality & Stigma Video discussed the stigma associated with talking to an MHP; concerns about confidentiality and hospitalization; disapproval from family and their culture; and myths about how undocumented students should handle mental health strain. The Procedural Knowledge Video focused on the therapy appointment (e.g.,

scheduling, number of sessions, affordability, and clarifying myths). The control video was a short, non-animation video (the same length as the intervention videos) that the University's Counseling & Psychological Services had previously created that did not draw from NET, the HBM, or cultural grounding.

Testing the effects of the video animation narratives

In this study, we test if the intervention videos, relative to the control video, have any direct effect on the key outcomes. Given that two culturally-grounded animation videos were created, we were interested in the unique effects of each video, as well as the combined effects. We anticipated that viewing both videos would provide the most comprehensive information and would likely have the strongest effect. Nevertheless, if one video can have significant positive effects, it would suggest that once introduced to the larger population of undocumented students, students might not need to watch both videos to have the desired effects. Thus, we hypothesized:

H1: Undocumented students who watch one or both intervention videos will report greater pro-mental-health perceptions, intentions to schedule an on- or off-campus MHP appointment, and talking to an MHP at the immediate post-test and the one-month follow-up than participating students who watch the control video.

NET (Miller-Day & Hecht, 2013; Shin et al., 2023) suggests that through engagement, narrative exposure will indirectly increase knowledge, promote more favorable attitudes toward the health topic, and encourage behavior change. Limited research (see Shin et al., 2023) has tested NET's proposed mediation. Instead, NET research has primarily examined engagement's direct associations with different types of health perceptions or intentions (e.g., Lee et al., 2011; Rey et al., 2024; Shin et al., 2023), has examined narrative quantity and quality's direct associations with engagement (Miller-Day & Hecht, 2013), or has identified different types of narratives and their characteristics (e.g., Miller-Day & Hecht, 2013). Thus, we hypothesize:

H2: Undocumented students who watch one or both intervention videos will report greater engagement, and in turn, will report greater pro-mental-health perceptions and intentions to schedule an on- or off-campus MHP appointment, and talking to an MHP at the immediate post-test and the one-month follow-up than students who watch the control video.

In addition to examining NET's proposed mediation, this study also examines an alternative hypothesis that positions engagement as a moderator of the video's effects on undocumented students' mental-health perceptions and intentions. Although the role of identification, for example, has been acknowledged in communication literature on narratives (Cohen, 2001), its function is typically proposed as a mediator of narrative persuasion. Because engagement is usually measured directly following narrative exposure, not *during* narrative exposure, it might be best to examine whether narrative exposure has an effect on mental-health perceptions and intentions for students who report being highly engaged, while watching the video(s) compared to students who report low engagement while watching the video(s). Moderation may reflect students' engagement while watching the video(s) rather than after watching the video(s). Narratives should spark interest in resistant audiences; however, narratives do not uniformly increase engagement for all viewers. There will still be some people in an audience

who do not experience engagement when watching a narrative. Indeed, Muchiri et al. (2021) found support for identification as a moderator of narrative exposure and outcome variables. Thus, our proposed moderation does not contradict past research that suggests narratives can reach resistant audiences. Instead, it suggests that for the students who are highly engaged, the narrative works, but the for students who are not highly engaged, additional steps may be needed to further understand those students. Thus, we hypothesized:

H3: The videos' effects on pro-mental-health perceptions, intentions to schedule an on- or off-campus MHP appointment, and talking to an MHP – at the immediate post-test and the one-month follow-up – will be stronger and more beneficial for undocumented students who score higher in engagement than students who score lower in engagement.

Although the intervention videos were created for undocumented students at a University of California campus, most universities have small undocumented populations, which means U.S.-born students will likely see the videos if Counseling & Psychological Services or other student services widely distribute the videos on their website, social media pages, and on campus. Houston (2002) cautions against the examination of “difference” in marginalized communities by comparing them to a dominant group (often White samples), which we generally follow. In the present context, however, we believe it is appropriate to explore the effects of the videos on a U.S.-born student sample. Because the intervention videos spoke to some perceived barriers and benefits that may be relevant to college students universally, we anticipated that the videos would have a positive effect also on U.S.-born college students. Thus, we inquired:

RQ1: Will the hypothesized effects in H1, H2, and H3 apply to the U.S.-born college students?

Lastly, because the two intervention videos differ in the types of perceived barriers that they emphasize, they may vary in their effects on pro-MHP perceptions and behaviors. All the barriers that undocumented students reported in Kam et al. (2023) are crucial to address when reducing the impediments to talking to an MHP; however, it is possible that certain perceived barriers may be of greater importance than others for undocumented students. Thus, this study offers interesting theoretical insights into whether a video narrative that addresses stigma, concerns with confidentiality and hospitalization, and culture has a stronger or weaker effect than the video that explains how to schedule an appointment, the affordability of talking to an MHP, and other procedural concerns. To fill this gap, the following research question was developed:

R2Q: Which intervention video, if any, is most effective above and beyond the control video condition?

Methods

For this study, participants completed a pretest, and were then randomly assigned to one of four conditions: (1) control video, (2) Confidentiality & Stigma video, (3) Procedural Knowledge video, and (4) both intervention videos. Directly afterwards, they completed the post-test survey questions. The pretest and immediate post-test took approximately 20–25 min to complete. One month later, they completed a 10–15-min follow-up survey.

Participants & recruitment

Table 1 includes participants' demographic information. At the University of California campus, the Interim Director of Undocumented Student Services reported that there were approximately 450 undocumented students enrolled for the 2022–2023 academic year. We recruited 122 undocumented students to participate in the study ($N_{\text{Video 1}} = 34$, $N_{\text{Video 2}} = 36$, $N_{\text{Videos 1 \& 2}} = 32$, $N_{\text{Control}} = 20$), which was approximately one-third of the undocumented population at the University.³ Although a larger sample of undocumented students was desirable, it took an entire academic year to recruit 30% of the undocumented student population at the University, and it was not feasible to recruit students for a second academic year. By contrast, we were able to recruit 650 U.S.-born students ($N_{\text{Video 1}} = 162$, $N_{\text{Video 2}} = 180$, $N_{\text{Videos 1 \& 2}} = 145$, $N_{\text{Control}} = 163$), which

Table 1. Participants' demographic information.

Demographic Characteristics	Undocumented ($N = 122$)	U.S.-Born ($N = 650$)
Mean age	21 years old ($SD = 3.75$)	20 years old ($SD = 2.40$)
Education	94% undergraduate 6% graduate	100% undergraduate
First-generation college status	89% first-gen	23% first-gen
Gender identity	70% cisgender women 25% cisgender men 4% gender nonconforming or nonbinary 1% "I don't know"	76% cisgender women 21% cisgender men 2% gender nonconforming or nonbinary 1% transgender woman or transgender man
Sexual identity	75% heterosexual 18% bisexual 2% lesbian or gay 3% unsure 2% pansexual or asexual	77% heterosexual 13% bisexual 4% lesbian or gay 4% unsure 2% pansexual or asexual, fluid, or queer
Racial & ethnic identity	85% Latina/o/x/e or Hispanic 6% East Asian 2% Native Hawaiian or Pacific Islander 2% Southeast Asian 1% South Asian 1% White 3% Multiple races/ethnicities	44% White 15% Latina/o/x/e or Hispanic 11% East Asian 3% Southeast Asian 2% Middle Eastern or North African 2% Native Hawaiian or Pacific Islander 2% South Asian 1% Black, African, or African American <1% Native American 19% Multiple races/ethnicities
Country born (undocumented only)	66% Mexico 10% El Salvador 7% Guatemala 4% South Korea 3% Philippines 2% China 2% India 4% Other (e.g., Argentina, Canada, Germany, Honduras, Uruguay)	USA
Time lived in the U.S. (undocumented only)	73% > 15 years 12% 11–15 years 12% 6–10 years 3% 1–5 years	N/A

Note. The undocumented and U.S. born samples significantly differ on age [$t(140.21) = 4.18$, $p < 0.001$, $d = 0.55$], education [$\chi^2(1) = 37.64$, $p < 0.001$], and first-generation college status [$\chi^2(1) = 202.34$, $p < 0.001$].

was approximately 3% of the University undergraduate student population (~23,460 undergraduate students at the University).⁴

Upon receiving approval from the Institutional Review Board (12-22-0471), we recruited undocumented and U.S.-born students from the end of September 2022 (Fall Quarter) to May 2023, near the end of Spring Quarter 2023. U.S.-born students were recruited from the Department of Communication research pool, which consisted of pre-major communication students. They received course research credit for completing the different study components. At the end of data collection, 20 U.S.-born students were randomly selected from the sample of 650 U.S.-born students to receive a \$50 Amazon e-gift card in addition to the course research credit. The gift card was meant to encourage completion of the one-month follow-up survey.

Undocumented students could participate as long as they were 18 or older, identified as undocumented, and were enrolled at the University of California campus. The University's Undocumented Student Services (USS) distributed the flyer through its email list-serv and social media. We also advertised the study in person at undocumented students' events and the University's Basic Needs Resource Center throughout the year. Participating students were also asked to share the recruitment flyer with other eligible students. The flyer described the purpose of the study – ("to improve students' access to campus mental health services"), what students would need to do when participating in the study, who is eligible to participate in the study ("Latina/o/x, Asian, Black, and other undocumented students 18 or older"), the amount of money they would earn, a confidentiality statement, and how to access the study.

Undocumented students received \$25 through Venmo or an Amazon e-gift card for completing the first part of the study (pretest, intervention and immediate post-test) and another \$20 for completing the one-month follow-up test. Among the students who completed both parts, 20 students were randomly selected at the end of data collection to receive an additional \$50. The gift card was meant to encourage completion of the one-month follow-up survey. Students' e-mail addresses and payment information were kept separate from their survey responses. A Certificate of Confidentiality through the National Institutes of Health was also obtained to further protect the identity of the participating undocumented students.

Description of the intervention videos

To create the videos, we shared our video scripts, audio-recorded voice overs, and campus photos with KindeaLabs – a company that specializes in creating animation infographic videos to summarize academics' research findings. We shared photos of campus locations that might be familiar to undocumented students at our campus. For character images, we invited undocumented students from our research team to submit photos of themselves – only if they wanted to – and KindeaLabs based the characters on some of our students, making sure that facial features were not realistic enough to personally identify any of our students. Because past research (e.g., Enriquez, 2019) has found that undocumented immigration is highly racialized and associated with Latine immigrants, we intentionally included characters from several different racial backgrounds: East Asian, Black, and Latine. To improve the videos, various iterations were shared with Undocumented Students Services (including the undocumented student interns),

Counseling & Psychological Services, and our team of research assistants who were nearly all undocumented, and we incorporated their edits at each stage of revision.

The videos were animated – as opposed to using “real-life” students or actors – because undocumented students have a highly vulnerable identity. Public disclosure of their undocumented status could threaten their safety and their family’s safety, including risking discrimination and deportation (Enriquez, 2019). Having “real-life” undocumented students in the videos would require them to disclose their vulnerable identity, and past research (Cha et al., 2019; Enriquez, 2019) has found that undocumented students and their families often do not feel safe disclosing their immigration status. As an alternative, the videos could have included “real-life” actors, but actors could be perceived as outgroup members because they have not experienced the stressors that are unique to undocumented immigrants (e.g., fear of deportation). This choice is also supported by Feeley et al.’s (2023) recent meta-analysis that found exposure to animation videos increased viewers’ learning in a number of health contexts. Videos, animated or otherwise, do not eliminate the structural barriers that undocumented students face, but they can help address students’ psychological barriers to accessing mental health services.

The intervention videos involved first-person conversations between two or three friends, all of whom are undocumented. Each conversation centered around a significant experience – one friend had talked to a culturally-responsive MHP through their school – and the other friend(s) had not talked to one. Based on stressors shared in the interviews, the friends who have not talked to an MHP start by venting about being overwhelmed and stressed with work, the uncertainty of DACA, or the uncertainty of finding employment without DACA. The friend who has talked to an MHP acknowledges that talking to an MHP might not directly solve the problem (e.g., being undocumented), but it might make students feel better. In each script, the friends share their concerns and hesitations about talking to an MHP, and the friend who has talked to an MHP empathizes but also provides information and insights that are meant to address the friends’ concerns. The narrative ends with the friends having intentions to talk to an MHP.

When translating the findings from the semi-structured interviews to the written narratives, we first created a list of perceived barriers and benefits based on our thematic analysis. As we wrote the two video scripts, we checked off the perceived barriers and benefits, making sure to address each one. The Confidentiality & Stigma Video addressed stigma, confidentiality, hospitalization, needing someone to confide in, undocumented resilience, family approval and disapproval (a reflection of students’ culture), culturally-informed therapy, and benefits of talking to an MHP (see Supplemental Materials for a description of how the scripts were written based on the interview findings). The Procedural Knowledge Video clarified how to make an appointment, the costs of therapy, the number of sessions students are permitted, and other questions students commonly had about talking to an MHP. The control video was a short, non-animation video that the University’s Counseling & Psychological Services had previously created, using a video-recorded Zoom session where one undergraduate mental health peer and three student interns working toward their doctorate in psychology described how to schedule an appointment. The video had been posted on the counseling services website for over a year; therefore, we used a “real world” control condition, representing the default of mental health information that students normally receive. Using the

counseling services video allowed us to determine how our culturally-grounded, animation intervention videos, rooted in core communication theories and concepts, compare to what is already available to students.

Measures

For means, standard deviations, and reliability values, see Table 2. Students answered survey questions during the pretest, immediate post-test, and one-month follow-up. To avoid fatigue and obtaining low-quality data (Menon & Muraleedharan, 2020), we used a few items per measure, particularly because students had to complete the pretest survey, watch one to two videos, and then complete an immediate post-test survey. Unless noted otherwise, the variables were measured using 5-point scales (i.e., 1 = strongly disagree/very much like/never, 2 = disagree/somewhat like/almost never, 3 = undecided/moderately like/sometimes, 4 = agree/very little like/fairly often, and 5 = strongly agree/not at all like/very often).

Pretest, immediate post-test, and one-month follow-up outcome measures

For the three types of efficacy, we adapted survey measures from Bandura (2006), Witte (1992), Afifi and Steuber (2009), and Kam et al. (2022, 2023). We measured *self-efficacy* with two items: “It would be easy for me to make an appointment with a therapist at the university’s Counseling & Psychological Services (CAPS)” and “I’m confident I could get an appointment in a timely manner to talk to a therapist at the university’s CAPS.” *Response efficacy* was measured with three items (e.g., “Talking to a therapist would probably make me feel better” and “Talking to a therapist would probably help me better manage my stress”). *Disclosure efficacy* was also based on three items (e.g., “If I talked to a therapist, I would not know if I could talk to them about my undocumented experiences” and “If I talked to a therapist, I would feel uncomfortable talking to them about my situation as an undocumented student”). For U.S.-born students, “undocumented experiences” were changed to “my experiences.” Disclosure efficacy was reverse coded; higher scores represented greater disclosure efficacy.

Drawing from Vogel et al. (2006), we measured *self-stigma* using three items (e.g., “Talking to a therapist would make me feel weak” and “Talking to a therapist would make me feel like something’s wrong with me”). To assess the full range of information covered in the second intervention video that focused on scheduling an appointment with a campus MHP, we developed eight items to assess *procedural knowledge* (e.g., “I feel like I have a good sense of how to schedule a therapy session through the university’s CAPS” and “I feel like I have a good sense of what happens in a therapy session at the university’s CAPS”). The measures were based on semi-structured interviews conducted with undocumented students (Kam et al., 2023).

For perceived *MHP understanding of undocumented experiences*, only undocumented students completed the two items that were developed for this study, drawing on the interview findings (Kam et al., 2023): “If I talked to a therapist through the university’s CAPS, they would not understand my situation as an undocumented student” and “If I talked to a therapist through the university’s CAPS, they would have little familiarity with undocumented student’s experiences.” U.S.-born students did not complete this measure.

Table 2. Scale and item descriptive statistics and reliabilities.

Scale	Baseline						Immediate Post						One Month Post					
	U.S. Born			Undocumented			U.S. Born			Undocumented			U.S. Born			Undocumented		
	<i>M</i> (<i>SD</i>)	α/ω or <i>r</i>	<i>M</i> (<i>SD</i>)	α/ω or <i>r</i>	<i>M</i> (<i>SD</i>)	α/ω or <i>r</i>	<i>M</i> (<i>SD</i>)	α/ω or <i>r</i>	<i>M</i> (<i>SD</i>)	α/ω or <i>r</i>	<i>M</i> (<i>SD</i>)	α/ω or <i>r</i>	<i>M</i> (<i>SD</i>)	α/ω or <i>r</i>	<i>M</i> (<i>SD</i>)	α/ω or <i>r</i>	<i>M</i> (<i>SD</i>)	α/ω or <i>r</i>
Outcomes																		
Self-Efficacy	3.09 (0.97)	0.66	3.11 (0.94)	0.69	3.74 (0.80)	0.70	3.70 (0.91)	0.66	3.65 (0.87)	0.66	3.67 (0.77)	0.64	3.65 (0.87)	0.66	3.67 (0.77)	0.64	3.67 (0.77)	0.64
Response Efficacy	3.84 (0.74)	0.85/0.85	3.89 (0.76)	0.84/0.84	4.00 (0.72)	0.89/0.90	4.05 (0.77)	0.91/0.91	3.96 (0.65)	0.87/0.87	3.96 (0.71)	0.91/0.92	3.96 (0.65)	0.87/0.87	3.96 (0.71)	0.91/0.92	3.96 (0.71)	0.91/0.92
Disclosure Efficacy	3.26 (0.96)	0.81/0.81	2.56 (1.06)	0.87/0.87	3.47 (0.94)	0.87/0.87	3.02 (0.99)	0.85/0.86	3.36 (0.93)	0.87/0.87	2.93 (0.88)	0.79/0.80	3.36 (0.93)	0.87/0.87	2.93 (0.88)	0.79/0.80	3.36 (0.93)	0.87/0.87
Self-Stigma	2.10 (0.96)	0.87/0.88	2.12 (0.92)	0.84/0.85	1.89 (0.88)	0.89/0.89	1.98 (0.97)	0.89/0.90	1.95 (0.83)	0.89/0.89	1.85 (0.80)	0.86/0.86	1.89 (0.88)	0.89/0.89	1.85 (0.80)	0.86/0.86	1.89 (0.88)	0.89/0.89
Procedural Knowledge	2.76 (0.88)	0.90/0.92	2.98 (0.91)	0.91/0.93	3.87 (0.62)	0.87/0.91	3.99 (0.60)	0.89/0.93	3.90 (0.62)	0.89/0.93	3.96 (0.60)	0.91/0.94	3.87 (0.62)	0.87/0.91	3.96 (0.60)	0.91/0.94	3.96 (0.60)	0.91/0.94
Intentions to schedule an appointment with a campus MHP for general stress/concerns	2.23 (1.10)	—	2.70 (1.19)	—	2.60 (1.02)	—	3.11 (1.08)	—	2.49 (1.08)	—	2.96 (1.14)	—	2.60 (1.02)	—	2.96 (1.14)	—	2.96 (1.14)	—
Intentions to schedule an appointment with a campus MHP for undocumented experience stress	—	—	2.60 (1.16)	—	—	—	3.04 (1.09)	—	—	—	2.89 (1.05)	—	—	—	2.89 (1.05)	—	—	—
Intentions to schedule an appointment with a community MHP for general stress/concerns	—	—	2.51 (1.14)	—	—	—	2.85 (1.07)	—	—	—	2.88 (1.15)	—	—	—	2.88 (1.15)	—	—	—
Intentions to schedule an appointment with a community MHP for undocumented experience stress	—	—	2.72 (0.76)	0.51	—	—	3.22 (0.95)	0.74	—	—	3.12 (0.08)	0.53	—	—	3.12 (0.08)	0.53	—	—
Perceptions of MHP understanding of the undocumented experience	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Moderators																		
Identification	—	—	—	—	3.02 (0.80)	0.56/0.70	3.51 (0.83)	0.69/0.76	—	—	—	—	—	—	—	—	—	—
Interest	—	—	—	—	3.33 (0.85)	0.87/0.87	3.83 (0.76)	0.86/0.85	—	—	—	—	—	—	—	—	—	—
Realism	—	—	—	—	3.48 (0.83)	0.85/0.84	3.82 (0.69)	0.77/0.75	—	—	—	—	—	—	—	—	—	—
Negative Cognitions	—	—	—	—	2.01 (0.80)	0.61	1.93 (0.75)	0.50	—	—	—	—	—	—	—	—	—	—
Stress	3.44 (0.90)	0.67	3.93 (0.74)	0.56	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Covariate																		
Video Views	—	—	—	—	—	—	—	—	1.32 (0.64)	—	1.44 (0.78)	—	—	—	1.44 (0.78)	—	—	—

Note. α and ω were calculated for scales with three or more items. Pearson's r was calculated for scales with only two items. Reliabilities are based on raw, unimputed data.

Intentions to talk to a campus mental health professional (MHP) included: “In the next month, I intend to schedule an appointment with a therapist through the university’s CAPS for general stress or concerns,” and “In the next month, I intend to schedule an appointment with a therapist that the university’s CAPS to talk about the stress that I experience from being undocumented.” *Intentions to talk to a community MHP* included: “In the next month, I intend to schedule an appointment with a therapist in the community outside of the university for general stress or concerns,” and “In the next month, I intend to schedule an appointment with a therapist in the community to talk about the stress that I experience from being undocumented.” Items were adapted from Kam et al. (2022, 2023) and informed by Ajzen and Fishbein (1969).

Talking to an MHP included: “Since participating in the first portion of this study where you watched a video(s), how many times have you talked to a therapist in person or over Zoom through [campus] Counseling & Psychological Services (CAPS)?” and response options ranged from 1 = 0 times to 12 = more than 10 times. Students also reported on seeing an MHP in the community, “Since participating in the first portion of this study where you watched a video(s), how many times have you talked to a therapist in person or over Zoom in the community (outside of [campus])?” and using other mental health services, “Since participating in the first portion of this study where you watched a video(s), how many times have you used any other mental health services (e.g., mental health peers, school anxiety workshops, or other forms of resources) at [campus] Counseling & Psychological Services (CAPS)?” using the same 12-point response options. These were only measured at the one-month post timepoint. Baseline levels of talking to a MHP were measured using the item “How many times have you used any other mental health services (e.g., mental health peers, school anxiety workshops, or other forms of resources) at [campus] Counseling & Psychological Services (CAPS)?” and the same 12-point response options as above. Responses were then dichotomized as 0 “never used [campus] CAPS mental health services” and 1 “have used [campus] CAPS mental health services.”

Moderators

Although other measures of identification and additional engagement components exist (e.g., Cohen, 2001), we used the measures from NET to assess engagement. Based on Lee et al.’s (2011) Perception of Narrative Performance Scale, which was developed to test NET, *identification* was measured using three items, asking students to rate how much the characters in the video(s) are like the following people: “Me,” “My friends,” and “[University Name] undocumented students.” *Interest* was assessed with three items (e.g., “I was interested in what was happening in the video(s)” and “The video(s) held my attention”). *Realism* was assessed with three items (e.g., “The students in the video(s) were realistic” and “The dialogue in the video(s) seemed pretty likely to happen”). For *perceived stress*, we used two items from Cohen et al.’s (1983) Perceived Stress Scale, to indicate how often, “in the past 14 days”, they have “Felt stressed” and “Felt difficulties were piling up so high that [they] could not overcome them.” *Negative cognitions* were measured using two items based on Quick and Stephenson (2007): “I had negative thoughts about the video(s), while watching it” and “The video(s) was annoying.”

Manipulation checks

To ensure the two intervention videos communicated the desired messages, they were first evaluated by a group of 60 U.S.-born college students. Students were recruited in Summer 2022 by sending the manipulation-check study flyer to several instructors who were teaching upper-division communication courses. Students were randomly assigned to watch one of the animation videos, and then they completed a series of questions asking whether the video they watched included certain information (e.g., procedural knowledge or stigma, 10 min total). The two videos had some intentional overlap (e.g., emphasizing response efficacy); however, one video was designed to address concerns about confidentiality and stigma, whereas the other video was designed to highlight misperceptions about scheduling an appointment and other procedural issues. The results provided support for the distinction between videos (see Supplemental Table 1 for results). Students each received \$10 Amazon e-gift for completing the manipulation check, but they were not included in the current main study.

Data analysis

Missing data

See Supplemental Table 2 for detailed information about missing data. At pre-manipulation and immediate post, less than 5% of data was missing for the undocumented sample. At one month post, between 12.3% and 14.8% of data was missing. Among the U.S.-born sample, less than 1% of data was missing at the pre-manipulation and immediate post. At one month post, 21.7%–22% of data was missing. Missing data were addressed through data imputation using the “MICE” package in R (van Buuren & Groothuis-Oudshoorn, 2011). Forty imputed datasets were generated using the “MICE” package for both samples. Continuous and ordinal variables were imputed using predictive mean matching, while binary categorical variables were imputed using logistic regression. The imputation models included all dependent variables, independent variables, moderators, and covariates. Scores for each imputed value in the 40 datasets were averaged (in the case of continuous variables) or the mode was found (in the case of categorical variables) to create a complete dataset used in all subsequent analyses.

Addressing possible type I error

Given the large number of statistical tests required to investigate our predictions, we took steps to minimize the possibility of making a Type I error. Specifically, we conducted a series of multivariate multiple linear regressions and only investigated condition and interaction effects on outcomes when the multivariate test indicated a significant effect. We chose to use multivariate tests to minimize the risk of Type 1 errors in place of *p*-value adjustments because of the large number of statistical tests required to investigate our predictions. Even using less conservative *p*-value adjustment methods would result in unreasonable significance requirements.

Analytic strategy

For H1 and H3, we began by conducting multivariate multiple linear regressions testing for a main effect of condition (H1; 0 = Control Video) as well as two-way interactions between condition and identification, interest, realism, negative cognitions, and stress (H3) on the outcome variables immediately after viewing the videos and, separately, one month later. These multivariate tests were conducted for both the undocumented sample and the U.S.-born sample.

Baseline levels of all outcome variables, BIPOC status (0 = White, 1 = Non-White), how many times a student watched the video for their condition, whether they had ever used on-campus mental health services prior to the study (0 = never used, 1 = has used on-campus mental health services), whether they had ever used community mental health services prior to the study (0 = never used, 1 = has used community mental health services), whether a student was born in a Latin American country (undocumented student analyses only; 0 = not born in a Latin American country, 1 = Born in a Latin American country), and whether a student has DACA (undocumented student analyses only; 0 = without DACA, 1 = with DACA) were all included as covariates in the models. Unless otherwise noted, the same covariates are included in all analyses⁵ (see Table 3 for the results of the multivariate tests).

When examining H1 and H3, all significant and marginally significant multivariate multiple linear regressions were followed-up with a series of multiple linear regressions predicting each outcome (see Table 4 for results). Despite not reaching traditional levels of significance, marginally significant multivariate results were followed-up on because they were approaching traditional levels of significance, and these multivariate tests are significant when covariates are removed from the models. Given the importance and difficulty of conducting research with undocumented participants, a slightly higher risk of making a Type I error was warranted in these cases. Post hoc analyses using estimated marginal means were used to examine the significant main effects of the condition. Unless otherwise noted, Tukey's HSD was used to adjust all estimated marginal mean comparisons. Post hoc analyses using simple slopes were used to examine significant two-way interactions.

For H2, PROCESS (Hayes, 2022) v4.3 for R was used to conduct the parallel mediation analyses. Using model 4, for each outcome measure, the video condition was entered as a binary predictor (each experimental condition [1] was separately compared to the control condition [0]); identification, interest, realism, negative cognitions, and stress were entered as mediators; and all covariates were included. A parallel mediation was tested for each experimental condition (compared to the control condition), for each outcome, at both timepoints, for both the undocumented and U.S.-born samples.

Results

In the following sections, Video 1 refers to the Confidentiality & Stigma Video, Video 2 refers to the Procedural Knowledge Video, and Videos 1 & 2 refer to viewing both videos.

Table 3. H1 (Main effect of condition), H3 (Moderation), & RQ multivariate test results.

	Pillai Trace (df)	Approximate $F(df_{num}, df_{den})$	p
<i>Undocumented Sample</i>			
Immediate Effects			
Condition Main Effect	0.84 (3)	2.92 (30, 225)	<0.001¹
2-Way Interaction w/Identification	0.62 (4)	1.39 (40, 304)	0.068 ²
2-Way Interaction w/Interest	0.60 (4)	1.34 (40, 304)	0.092 ²
2-Way Interaction w/Realism	0.49 (4)	1.06 (40, 304)	0.385
2-Way Interaction w/Negative Cognitions	0.53 (4)	1.17 (40, 304)	0.236
2-Way Interaction w/Stress	0.35 (4)	0.72 (40, 304)	0.895
1 Month Effects			
Condition Main Effect	0.97 (3)	2.66 (39, 216)	<0.001¹
2-Way Interaction w/Identification	0.82 (4)	1.45 (52, 292)	0.031¹
2-Way Interaction w/Interest	0.82 (4)	1.44 (52, 292)	0.034¹
2-Way Interaction w/Realism	0.46 (4)	0.73 (52, 292)	0.919
2-Way Interaction w/Negative Cognitions	0.57 (4)	0.93 (52, 292)	0.611
2-Way Interaction w/Stress	0.73 (4)	1.26 (52, 292)	0.120
<i>U.S. Born Sample</i>			
Immediate Effects			
Condition Main Effect	0.18 (3)	5.71 (21, 1833)	<0.001¹
2-Way Interaction w/Identification	0.05 (4)	1.11 (28, 2448)	0.316 ²
2-Way Interaction w/Interest	0.06 (4)	1.29 (28, 2448)	0.140
2-Way Interaction w/Realism	0.02 (4)	0.48 (28, 2448)	0.990
2-Way Interaction w/Negative Cognitions	0.08 (4)	1.77 (28, 2448)	0.008¹
2-Way Interaction w/Stress	0.06 (4)	1.35 (28, 2448)	0.106 ²
1 Month Effects			
Condition Main Effect	0.09 (3)	1.96 (30, 1824)	0.001¹
2-Way Interaction w/Identification	0.09 (4)	1.37 (40, 2436)	0.062 ²
2-Way Interaction w/Interest	0.10 (4)	1.60 (40, 2436)	0.010¹
2-Way Interaction w/Realism	0.06 (4)	0.95 (40, 2436)	0.555
2-Way Interaction w/Negative Cognitions	0.15 (4)	2.36 (40, 2436)	<0.001¹
2-Way Interaction w/Stress	0.08 (4)	1.20 (40, 2436)	0.188 ²

Note. The Pillai Trace multivariate test was used. Results displayed are from analyses that include covariates. Significant results are indicated by bolded text.

¹These results remain significant when covariates are removed from the model.

²These results are significant when covariates are removed from the model.

Undocumented students results

H1: Main effect of condition

Beginning with the central question, do the experimental videos differentially impact outcomes relative to the control video (H1), results indicate that only the Videos 1 & 2 condition ($M = 3.68$, $SE = 0.47$) resulted in higher immediate disclosure efficacy compared to the control video ($M = 2.79$, $SE = 0.49$), $t(82) = 2.72$, $p = 0.039$. This was the only significant main effect finding, among the undocumented sample, where at least one experimental video condition outperformed the control video condition. Likewise, there was only one instance of an experimental video condition performing worse than the control video. The Video 1 condition ($M = 3.17$, $SE = 0.38$) resulted in less immediate self-efficacy compared to the control condition ($M = 3.93$, $SE = 0.41$), $t(615) = 4.02$, $p < 0.001$. All other significant contrasts were between experimental conditions. Inferential statistics for the main effect can be found in Table 4.

H2: Mediation

We next investigated if the experimental videos would influence outcomes indirectly through identification, interest, realism, negative cognitions, or stress (H2). None of the parallel mediations testing for the indirect effects of video condition on the key

Table 4. H1 (Main effect of condition), H3 (Moderation), & RQ multiple linear regression results.

Dependent Variable	Condition Main Effect		2-Way Interaction w/ Identification		2-Way Interaction w/ Interest		2-Way Interaction w/ Realism		2-Way Interaction w/ Neg. Cognitions		2-Way Interaction w/ Stress	
	F(df1, df2)	p	F(df1, df2)	p	F(df1, df2)	p	F(df1, df2)	p	F(df1, df2)	p	F(df1, df2)	p
<i>Undocumented Sample</i>												
<i>Immediate Effects</i>												
Self-Efficacy	11.84 (3, 82)	<0.001¹	2.59 (4, 82)	0.042 ⁴	1.08 (4, 82)	0.372	—	—	—	—	—	—
Response Efficacy	5.98 (3, 82)	<0.001 ⁴	2.28 (4, 82)	0.068 ²	1.23 (4, 82)	0.305	—	—	—	—	—	—
Disclosure Efficacy	5.20 (3, 82)	0.002¹	1.87 (4, 82)	0.123	2.19 (4, 82)	0.077 ²	—	—	—	—	—	—
Self-Stigma	4.78 (3, 82)	0.004 ⁴	2.52 (4, 82)	0.048 ⁴	0.87 (4, 82)	0.487 ²	—	—	—	—	—	—
Procedural Knowledge	21.65 (3, 82)	<0.001¹	0.10 (4, 82)	0.982	2.15 (4, 82)	0.082	—	—	—	—	—	—
Intentions to schedule an appointment with a campus MHP for general stress/concerns	1.72 (3, 82)	0.169	6.50 (4, 82)	<0.001¹	1.25 (4, 82)	0.296 ²	—	—	—	—	—	—
Intentions to schedule an appointment with a campus MHP for undocumented experience stress	2.26 (3, 82)	0.087	4.54 (4, 82)	0.002¹	2.81 (4, 82)	0.031 ⁴	—	—	—	—	—	—
Perceptions of MHP understanding of the undocumented experience	4.10 (3, 82)	0.009⁴	2.73 (4, 82)	0.035 ⁴	0.75 (4, 82)	0.560	—	—	—	—	—	—
Intentions to schedule an appointment with a community MHP for general stress/concerns	2.55 (3, 82)	0.062	1.85 (4, 82)	0.127 ²	0.08 (4, 82)	0.989	—	—	—	—	—	—
Perceptions of MHP understanding of the undocumented experience	5.47 (3, 82)	0.002⁴	3.06 (4, 82)	0.021¹	0.82 (4, 82)	0.513	—	—	—	—	—	—
<i>1 Month Effects</i>												
Self-Efficacy	1.92 (3, 82)	0.132	0.95 (4, 82)	0.437	0.12 (4, 82)	0.976	—	—	—	—	—	—
Response Efficacy	4.19 (3, 82)	0.008 ⁴	2.32 (4, 82)	0.064 ²	1.01 (4, 82)	0.404	—	—	—	—	—	—
Disclosure Efficacy	1.38 (3, 82)	0.254	0.54 (4, 82)	0.709	2.62 (4, 82)	0.041 ⁴	—	—	—	—	—	—
Self-Stigma	1.49 (3, 82)	0.224	1.78 (4, 82)	0.140	1.13 (4, 82)	0.350	—	—	—	—	—	—
Procedural Knowledge	1.78 (3, 82)	0.157	2.34 (4, 82)	0.061	0.57 (4, 82)	0.685	—	—	—	—	—	—
Intentions to schedule an appointment with a campus MHP for general stress/concerns	1.29 (3, 82)	0.283	4.90 (4, 82)	0.001¹	1.66 (4, 82)	0.167	—	—	—	—	—	—
Times talked to a campus MHP since baseline	—	—	—	—	2.86 (4, 82)	0.028 ⁴	—	—	—	—	—	—
Times used other campus mental health services since baseline	—	—	—	—	—	—	—	—	—	—	—	—
Intentions to schedule an appointment with a campus MHP for undocumented experience stress	2.46 (3, 82)	0.068	2.76 (4, 82)	0.033 ⁴	1.09 (4, 82)	0.368	—	—	—	—	—	—
Perceptions of MHP understanding of the undocumented experience	3.47 (3, 82)	0.068	1.67 (4, 82)	0.165 ²	1.58 (4, 82)	0.188	—	—	—	—	—	—
Intentions to schedule an appointment with a community MHP for general stress/concerns	—	—	—	—	—	—	—	—	—	—	—	—
Times talked to a community MHP since baseline	0.86 (3, 82)	0.465	1.97 (4, 82)	0.106 ²	0.32 (4, 82)	0.865	—	—	—	—	—	—
Perceptions of MHP understanding of the undocumented experience	12.24 (3, 82)	<0.001¹	0.85 (4, 82)	0.496 ²	1.78 (4, 82)	0.140	—	—	—	—	—	—
									3.61 (4, 82)	0.009¹	3.64 (4, 82)	0.009³

outcomes were significant for the undocumented student sample (Please contact the first author for a table of non-significant mediation results for the undocumented sample.).

H3: Moderation

While there is minimal evidence that the experimental videos had meaningful direct or indirect effects on undocumented students' outcomes, when undocumented students identified with the characters in the experimental videos, this significantly increased the videos' effectiveness (H3). Specifically, viewing Video 1 [$b = 0.43$, 95% CI for $b = (0.04, 0.82)$, $SE = 0.20$, $t(82) = 2.21$, $p = 0.030$] and Videos 1 & 2 [$b = 0.36$, 95% CI for $b = (0.03, 0.69)$, $SE = 0.16$, $t(82) = 2.19$, $p = 0.031$] lead to greater immediate intentions to schedule an appointment with a campus MHP for general stress/concerns, but only among participants who highly identified with the video characters. The Video 1 and Video 1 & 2 conditions did not significantly differ from one another. This pattern of results persisted for the Video 1 condition one month later, $b = 0.83$, 95% CI for $b = [0.39, 1.26]$, $SE = 0.22$, $t(82) = 3.81$, $p < 0.001$. Similar patterns of results are observed with other immediate outcomes. Specifically, viewing and identifying with the characters in Video 1 resulted in greater intentions to schedule an appointment with a campus MHP for undocumented experience stress; $b = 0.20$, 95% CI for $b = [0.08, 0.88]$, $SE = 0.20$, $t(82) = 2.41$, $p = 0.018$; and greater perceptions of MHP understanding of the undocumented experience, $b = 0.66$, 95% CI for $b = [0.22, 1.10]$, $SE = 0.22$, $t(82) = 2.96$, $p = 0.004$.

There were additional interactions predicting the number of times students talked to a community MHP since baseline. Viewing Videos 1 & 2 [$b = 1.25$, 95% CI for $b = (0.47, 2.02)$, $SE = 0.39$, $t(82) = 3.20$, $p = 0.002$] and the control video [$b = 2.80$, 95% CI for $b = (0.67, 4.92)$, $SE = 1.07$, $t(82) = 2.62$, $p = 0.010$] lead to seeing a community MHP more since baseline, but only among participants who had high negative cognitions to the videos. The Video 1 & 2 and control conditions did not significantly differ from one another. Likewise, viewing Videos 1 & 2 [$b = 0.91$, 95% CI for $b = (0.18, 1.63)$, $SE = 0.37$, $t(82) = 2.48$, $p = 0.015$] and Video 2 [$b = 1.05$, 95% CI for $b = (0.12, 1.99)$, $SE = 0.47$, $t(82) = 2.24$, $p = 0.028$] lead to seeing a community MHP more since baseline, but only among participants who were highly stressed. The Video 1 & 2 and Video 2 conditions did not significantly differ from one another.

There are no other significant interaction effects among the undocumented sample. Nevertheless, the significant findings suggest that culturally grounded videos can improve undocumented student outcomes, especially if the students identify with the video characters, react strongly to the videos, or are particularly stressed.

U.S.-born students results

RQ H1: Main effect of condition

As with the undocumented student results, there is minimal evidence the experimental videos directly outperformed the control video on all but one outcome, immediate procedural knowledge. Participants who watched both Videos 1 & 2 ($M = 4.10$, $SE = 0.05$) reported greater immediate procedural knowledge than those who watched the control video ($M = 3.82$, $SE = 0.04$), $t(615) = 4.69$, $p < 0.001$. There were some instances of an experimental video condition performing worse than the control video. The Video 1 condition ($M = 3.57$, $SE = 0.04$) resulted in less immediate procedural knowledge compared

to the control condition, $t(615) = 4.44, p < 0.001$. The control video condition ($M = 4.06, SE = 0.04$) resulted in greater response efficacy one month later than Video 1 ($M = 3.90, SE = 0.04$); $t(615) = 2.93, p = 0.018$; and Video 2 ($M = 3.89, SE = 0.04$), $t(615) = 3.29, p = 0.006$. Finally, the Video 1 condition ($M = 3.52, SE = 0.05$) resulted in less immediate self-efficacy compared to the control condition ($M = 3.79, SE = 0.05$), $t(615) = 4.02, p < 0.001$. All other significant contrasts were between experimental conditions.

RQ H2: Mediation

Unlike the undocumented sample, there is some evidence for mediation among the U.S.-born sample. At immediate post, both Video 1 and Videos 1 & 2 conditions, compared to the control video, increased interest ($\beta = 0.28, p = 0.011$ & $\beta = 0.23, p = 0.040$, respectively) which, in turn, increased intentions to schedule an appointment with a campus MHP ($\beta = 0.14, p = 0.003$ & $\beta = 0.16, p = 0.005$ respectively); $\beta_{\text{indirect effect Video 1 vs Control}} = 0.04, SE_{\text{indirect effect Video 1 vs Control}} = 0.02, 95\% \text{ CI for } \beta_{\text{indirect effect Video 1 vs Control}} = [0.005, 0.09]$; $\beta_{\text{indirect effect Video 1 \& 2 vs Control}} = 0.03, SE_{\text{indirect effect Video 1 \& 2 vs Control}} = 0.02, 95\% \text{ CI for } \beta_{\text{indirect effect Video 1 \& 2 vs Control}} = [0.0002, 0.08]$. The Video 1 effect persisted in predicting intentions to schedule an appointment with a campus MHP one month later; $\beta_{\text{indirect effect}} = 0.05, SE_{\text{indirect effect}} = 0.03, 95\% \text{ CI for } \beta_{\text{indirect effect}} = [0.005, 0.10]$. Furthermore, the Video 1 condition, compared to the control video, increased interest ($\beta = 0.28, p = 0.011$) which, in turn, increased both response efficacy ($\beta = 0.20, p < 0.001$; $\beta_{\text{indirect effect}} = 0.05, SE_{\text{indirect effect}} = 0.03, 95\% \text{ CI for } \beta_{\text{indirect effect}} = [0.009, 0.11]$) and procedural knowledge ($\beta = 0.16, p = 0.012$; $\beta_{\text{indirect effect}} = 0.04, SE_{\text{indirect effect}} = 0.02, 95\% \text{ CI for } \beta_{\text{indirect effect}} = [0.004, 0.09]$) one month later (Please contact the first author for a table of non-significant mediation results for the U.S.-born sample).

RQ H3: Moderation

When examining moderation effects, there is weak evidence that identification with the experimental video characters improves their effectiveness among the U.S.-born sample, unlike with the undocumented sample. Only identification with the characters in Video 1 resulted in an improved outcome, procedural knowledge at 1 month, $b = 0.11, 95\% \text{ CI for } b = [0.01, 0.22], SE = 0.05, t(615) = 2.25, p = 0.025$. Interestingly, for the U.S.-born sample, higher identification with the characters in the control video resulted in increased intentions to schedule an appointment with both a campus MHP; $b = 0.27, 95\% \text{ CI for } b = [0.10, 0.44], SE = 0.09, t(615) = 3.10, p = 0.002$; and community MHP; $b = 0.26, 95\% \text{ CI for } b = [0.10, 0.43], SE = 0.09, t(615) = 3.07, p = 0.002$; for general stress/concerns one month later. Likewise, higher identification with the characters in Video 1 resulted in participants seeing a community MHP less since baseline; $b = -0.19, 95\% \text{ CI for } b = [-0.36, -0.01], SE = 0.09, t(615) = 2.08, p = 0.038$.

Unlike the undocumented sample, among the U.S.-born sample, there were additional significant interactions between interest and negative cognitions with video condition. When participants had greater interest in Video 1, this resulted in increased procedural knowledge one month later, $b = 0.17, 95\% \text{ CI for } b = [0.06, 0.28], SE = 0.06, t(615) = 3.00, p = 0.003$. Interest in Video 1; $b = 0.15, 95\% \text{ CI for } b = [0.05, 0.26], SE = 0.05, t(615) = 2.94, p = 0.003$; and the control video; $b = 0.16, 95\% \text{ CI for } b = [0.05, 0.27], SE = 0.06, t(615) = 2.77, p = 0.006$; resulted in greater response efficacy one month later. The Video 1 control conditions did not significantly differ from one another. Likewise,

interest in Video 1; $b = 0.20$, 95% CI for $b = [0.02, 0.38]$, $SE = 0.09$, $t(615) = 2.15$, $p = 0.032$; Video 2; $b = 0.19$, 95% CI for $b = [0.004, 0.37]$, $SE = 0.09$, $t(615) = 2.01$, $p = 0.045$; and the control condition; $b = 0.22$, 95% CI for $b = [0.03, 0.42]$, $SE = 0.10$, $t(615) = 2.28$, $p = 0.023$; resulted in greater intentions in scheduling an appointment with a campus MHP for general stress/concerns 1 month later. The Video 1, Video 2, and control conditions did not significantly differ from one another.

To this point, there is weak evidence that the experimental videos are more effective than the control video at improving outcomes among the U.S.-born sample, though this is not surprising given that U.S.-born students are not the target audience of the experimental videos. That said, there are some results that suggest that under particular circumstances watching the control or experimental videos may negatively affect U.S.-born students. Among U.S.-born students, higher negative cognitions to Video 1 results in less immediate response efficacy, $b = -0.19$, 95% CI for $b = [-0.31, -0.08]$, $SE = 0.06$, $t(615) = 3.28$, $p = 0.001$. Higher negative cognitions to the control video results in greater immediate self-stigma, $b = 0.19$, 95% CI for $b = [0.05, 0.33]$, $SE = 0.07$, $t(615) = 2.67$, $p = 0.008$. Additionally, higher negative cognitions to the control video; $b = 0.26$, 95% CI for $b = [0.12, 0.40]$, $SE = 0.07$, $t(615) = 3.60$, $p < 0.001$; and Video 1; $b = 0.28$, 95% CI for $b = [0.15, 0.52]$, $SE = 0.07$, $t(615) = 4.09$, $p < 0.001$; results in greater self-stigma at one month. The Video 1 and control conditions did not significantly differ from one another. Higher negative cognitions to Video 2; $b = -0.15$, 95% CI for $b = [-0.26, -0.03]$, $SE = 0.06$, $t(615) = 2.54$, $p = 0.011$; and Videos 1 & 2; $b = -0.17$, 95% CI for $b = [-0.30, -0.05]$, $SE = 0.06$, $t(615) = 2.74$, $p = 0.006$; results in less immediate procedural knowledge. The Video 2 and Video 1 & 2 conditions did not significantly differ from one another. And finally, higher negative cognitions to Video 2 resulted in less self-efficacy at one month, $b = -0.24$, 95% CI for $b = [-0.39, -0.08]$, $SE = 0.08$, $t(615) = 3.03$, $p = 0.003$. Interestingly, counter to these negative patterns, when U.S.-born students have high negative cognitions to Video 1; $b = 0.32$, 95% CI for $b = [0.12, 0.52]$, $SE = 0.10$, $t(615) = 3.20$, $p = 0.001$; Video 2; $b = 0.21$, 95% CI for $b = [0.03, 0.39]$, $SE = 0.09$, $t(615) = 2.30$, $p = 0.022$; and Video 1 & 2; $b = 0.21$, 95% CI for $b = [0.01, 0.41]$, $SE = 0.10$, $t(615) = 2.06$, $p = 0.040$; this results in greater intentions in scheduling an appointment with a community MHP for general stress/concerns one month later. The Video 1, Video 2, and Video 1 & 2 conditions did not significantly differ from one another.

Discussion

Talking to an MHP may be one way to help alleviate some of the mental health strain that undocumented students often experience, yet past research (Cha et al., 2019) has found that undocumented students may hesitate to use their campus mental health services. To address this health inequity, the present study drew from NET to develop and test a culturally-grounded, animation narratives intervention intended to reduce the psychological barriers to talking to an MHP. In doing so, the study also extended NET by testing its assumption of mediation, expanding its conceptualization of narrative engagement, and providing evidence for an alternative way in which narrative engagement might operate: as a moderator instead of a mediator. We discuss the study's contributions below.

Extending NET: Mediation or moderation?

One of this study's main theoretical contributions is in testing NET's (Miller-Day & Hecht, 2013) supposition that narrative exposure indirectly affects health perceptions and behaviors through narrative engagement. Although this mediation is assumed, few studies (see Shin et al., 2023) have empirically tested this indirect effect in a NET framework. Our findings revealed that neither identification, interest, realism, negative cognitions, nor perceived stress were significant mediators for undocumented students; however, interest was promising for U.S.-born students. Compared to the control condition, Video 1 – which focused on decreasing stigma – led to increased interest, and in turn, increased response efficacy, procedural knowledge, and intentions to schedule an on-campus MHP appointment one month later. Given that Video 1 was created for undocumented students, it makes sense that identification and realism might not be significant mediators for U.S.-born students. Overall, the mediation finding is theoretically meaningful because it emphasizes the nuanced nature of narrative engagement, thereby reminding us that certain elements (e.g., interest) may carry more weight than others, depending on the audience (e.g., U.S.-born students, not undocumented students) and narrative (e.g., Confidentiality & Stigma Video). Furthermore, the non-significant mediation for undocumented students, yet the significant moderation for undocumented students, provides new theoretical insights for NET – moderation may be a way to show a narrative's promise, while also identifying a group for whom further work needs to be done.

The importance of identification and perceived stress in increasing undocumented students' intentions or actual behaviors

Among all the narrative engagement elements, identification and perceived stress (relevance) seemed to carry more weight for undocumented students, but only in the form of moderation. Our findings suggest that the video narratives may have a different influence depending on the degree to which the viewers identify with the characters or are feeling stressed. For our study, undocumented students' intentions to schedule an appointment with a campus MHP (to talk about general stressors) at the post-test and one month later were greater for undocumented students who highly identified with the characters when viewing the Confidentiality & Stigma Video *and* when viewing both intervention videos – Confidentiality & Stigma and Procedural Knowledge. Although identification is often proposed as a mediator between narrative exposure and health perceptions and behaviors (e.g., Cohen, 2001; Shin et al., 2023), our finding provides a different way of thinking about identification and how it operates. Some undocumented students highly identified with the characters in the intervention videos, and for those students, the intervention was effective. Cultural-grounding appears to be a promising method for developing mental health promotion narratives when target audiences identify with the characters in the narrative; however, naturally, not everyone in the audience will identify with the characters. For those who do not, additional work may be needed to understand why they did not identify with the characters, and future efforts may be made to revise the narratives or use audience segmentation. Our finding is consistent with

Muchiri et al. (2021) who also found that character identification moderated the effects of video exposure (a narrative on cervical cancer and screening) on intention to screen for cervical cancer.

Another theoretical extension to NET is in revealing the importance of perceived relevance, measured in this study as perceived stress. Miller-Day and Hecht (2013) conceptualized engagement as comprising of interest, identification, and realism, and our findings suggest that perceived relevance, in the form of perceived stress, should also be included. Students can be interested in the videos, identify with characters, and find the videos realistic, but if they do not find the video relevant to their health needs, message exposure may not have a significant effect on that specific health behavior. This finding is consistent with Kam et al. (2023) who found through qualitative interviews that undocumented students who had talked to an MHP had done so because they had felt they were at a breaking point. The authors identified feeling overwhelmed-by-stress as a cue to action.

Interestingly, our findings revealed an unexpected finding involving negative cognitions, which warrants expanding NET's conceptualization of engagement. Undocumented students who scored high in negative cognitions saw a community MHP more since baseline. Although psychological reactance is usually viewed as an impediment to the persuasiveness of a health message (Quick & Stephenson, 2007), students in our study who were annoyed with the video and who had negative thoughts about the video were more likely to talk to a community MHP after viewing both intervention videos or the control video. Our finding, however, is limited by its measure of negative cognitions – we did not ask students to reveal what exactly about the video annoyed them, and we did not ask them to report their specific negative thoughts. Students may have had a negative reaction to the videos, but at the same time, felt the videos' relevance, and in turn, were motivated to talk to an MHP. Additional research is needed to understand how and why negative cognitions operated in this unexpected manner, but the finding is still noteworthy, given how negative cognitions – under certain conditions – might not necessarily inhibit the persuasiveness of a health message.

Although our findings emphasized how identification, perceived relevance, and negative cognitions are crucial to examining the persuasiveness of decision narratives, we found little evidence for interest and realism, among our undocumented sample. When considering realism's non-significant mediation and moderation, mean levels of realism were moderate, but the intervention videos may not have been realistic enough. The videos included undocumented students of different racial identities (East Asian, Black Latina/o/x/e, and Latina/o/x/e) to be inclusive and to recognize the heterogeneity of undocumented students. However, the University of California campus for which the study took place had only approximately 450 undocumented students enrolled, and the majority of the students are from Latin America; therefore, having a group of undocumented friends from different nationalities might be uncommon for many undocumented students.

Multiple explanations may exist for the non-significant moderation (and mediation). This study excluded other widely-studied narrative engagement constructs such as transportation (i.e., becoming fully immersed in the narrative; Green & Clark, 2013) and empathy (i.e., understanding and adopting the characters' emotions; Busselle & Bilandzic, 2009), which might have functioned as mediators or moderators. Moreover,

although our study was theory driven – rooted in NET – many other narrative engagement approaches exist (e.g., Green & Clark, 2013; Moyer-Gusé & Wilson, 2024), as well as different measures of engagement.

The intervention videos' effects on pro-mental-health perceptions

We found encouraging results when predicting intentions to schedule an appointment with an MHP and talking to an MHP, but the intervention videos were not as favorable for increasing the three types of efficacy. Only disclosure efficacy was higher after watching the intervention videos at the post-test (even when considering identification, interest, realism, negative cognitions, and perceived stress as potential mediators and moderators). Both intervention videos attempted to increase disclosure efficacy because undocumented students in Kam et al. (2023) reported not knowing what to expect from an MHP appointment, how to talk to an MHP, and what to share. We found in our study that attempts to model the conversations and environment of MHP sessions did increase disclosure efficacy relative to the control video, which did not specifically model such conversations; however, these effects did not persist one month later.

The finding for self-efficacy was less promising; students felt less self-efficacious immediately after watching Video 1 compared to the control video. Attempts were made to increase self-efficacy, but the Procedural Knowledge Video was created to enhance self-efficacy, whereas the Confidentiality & Stigma video was meant to increase response efficacy and decrease stigma. Nevertheless, even though the Procedural Knowledge Video discussed how students can call the University's Counseling & Psychological Services and talk to an intake therapist immediately or fill out an online form and be contacted by an intake therapist within one business day, it is possible that campus mental health services' reputation for being understaffed, overwhelmed, and having long wait periods could not be overcome by the viewing the intervention video or the control video (Cha et al., 2019).

One noteworthy finding that highlights the value of cultural grounding is that undocumented students, who highly identified with the characters when viewing the Confidentiality & Stigma Video, reported greater perceived MHP understanding of their undocumented experiences at the immediate post-test. These findings are promising because Cha et al. (2019) found that some undocumented students did not believe MHPs would understand their experiences with immigration. Our results reveal the importance of developing culturally-grounded narratives that address the concerns of the targeted audience. Furthermore, it is important that culturally-responsive mental health services are available to students. At the University of California campus' Counseling & Psychological Services, 18 out of the 19 MHPs take a culturally-responsive approach to therapy, and all the staff at Counseling & Psychological Services underwent a one-time, six-hour training on undocumented students' experiences in September 2022, prior to starting data collection. The first author worked with the Director of Undocumented Student Services and a psychologist at Counseling & Psychological Services to develop and lead the workshop. Thus, efforts were made to increase staff's knowledge and understanding of students' experiences with undocumented immigration. Such efforts can build credibility, reputation, and trust with on-campus counseling services among students.

With respect to dosage, each intervention video alone had a similar number of significant effects, so it is difficult to conclude that one intervention video is superior to another. And, when comparing a stand-alone video to the condition of watching both videos, there was no significant difference between viewing a stand-alone video versus viewing both videos – either condition was promising for students who scored high in identification and high in perceived stress. One possible future direction is to examine whether the creation of a longer video that includes the perceived benefits and barriers from both videos might be more effective than watching two shorter videos. Feeley et al.'s (2023) meta-analysis revealed that the learning effects were smaller for viewers exposed to longer animated videos, and Guo et al. (2014) revealed that student engagement was highest for shorter videos up to 3 min. Given these findings, a longer video might not be as effective as two shorter videos; nevertheless, it would be informative to compare the effects of the two conditions.

Effects on U.S.-born students

In addition to finding modest positive effects for undocumented students, we uncovered mixed findings for U.S.-born students. When considering the mediation results, we would conclude that the intervention videos, especially the Confidentiality & Stigma Video, were more promising than the control video. Interest was a significant mediator such that Video 1 indirectly increased intentions to schedule a campus MHP appointment at the immediate post-test and one-month later, and Video 1 indirectly increased response efficacy and procedural knowledge one month later, through interest. Viewing both Videos 1 & 2 also was beneficial to increasing intentions to schedule an appointment with an MHP. Thus, NET garnered some support with respect to interest and U.S.-born students. Yet, when only considering the direct effects, we would conclude that the intervention videos were not promising – Video 1 resulted in decreased procedural knowledge, response efficacy, and self-efficacy – but when we consider interest as a mediator, the results are far more beneficial, thereby demonstrating the importance of NET and interest. This finding is theoretically important because it suggests that when an audience views a narrative, particularly when the characters have certain aspects of their identity that are distinctly different from the audience, interest plays a crucial role.

Although the mediation results are promising for U.S.-born students, the moderation results are less compelling. The intervention videos overall did not fare better than the control condition. The intervention videos had some positive significant effects on procedural knowledge, response efficacy, and intentions when students had a greater interest in the videos, but no more than the control condition. Moreover, when considering negative cognitions, we observed greater self-stigma for students who scored high in negative cognitions after watching the intervention videos and control videos. One concern that experts and practitioners might have with cultural grounding is that the intervention may yield negative effects for individuals outside the target audiences. Our findings revealed that while U.S.-born students garnered some positive results with respect to mediation, those who had strong negative cognitions of each of the culturally-grounded videos experienced greater self-stigma. These findings suggest that if culturally-grounded materials will be disseminated to a broad population that includes members of the

non-target audience, special attention should be given to minimizing negative cognitions by the non-target audience.

Limitations and future research

One of the main limitations of this study is its small sample of undocumented students, which requires us to interpret the results with some degree of caution. We recruited students and collected data for an entire academic year. Nevertheless, recruiting at only one university with a population of approximately 450 undocumented students, and recruiting a hard-to-reach sample, with a high need for privacy, posed a serious challenge. Given the aforementioned barriers, recruiting 122 undocumented students – nearly 30% of the undocumented student population at the university – is a substantial portion of the undocumented student population on campus.

We should also note that the undocumented student sample came from a variety of majors, whereas our U.S.-born sample was communication majors, and the two samples were compensated differently. We are, however, unaware of any evidence that suggests communication students differ from other majors in their perceptions of or use of mental health services. Another difference worth noting between the two samples is that undocumented students were asked to report on disclosure efficacy related to their undocumented experiences, whereas U.S.-born students reflected on disclosure efficacy more broadly because undocumented immigration was not relevant to them. In the future, undocumented students should report on disclosure efficacy that is not restricted to talking about undocumented experiences.

Lastly, this study is limited by its focus on one University of California campus when colleges and universities differ in the types of mental health services offered, particularly culturally-responsive mental health services. The animation backgrounds were meant to represent the campus to increase realism, and the procedural information about scheduling an appointment with an MHP might not be the same for other campuses. The focus on one campus is a strength in its cultural grounding, but may not be applicable to some campuses. Despite this study's limitations, it extends NET by: (1) uncovering the moderating effects of identification, perceived relevance (i.e., perceived stress), interest, and negative cognitions, (2) further developing the conceptualization of NET's engagement construct by adding relevance and negative cognitions, (3) providing some evidence for the utility of culturally-grounded, animation decision-narratives, and (4) applying NET and cultural-grounding to a new context of undocumented immigration, while also considering the benefits and risks for U.S.-born students.

Notes

1. In 2022, there were approximately 408,000 undocumented college students enrolled in U.S. higher educational institutions – out of which 119,000 were DACA recipients. Because new DACA applications are not being processed, the number of college students who have DACA continue to decrease each year (President's Alliance on Higher Education and Immigration, 2024).
2. Seponski et al. (2012, p. 30) describes culturally-responsive therapy as developing knowledge and understanding by talking to the community; being "accountable to the local community and their unique needs;" holding oneself accountable by recognizing one's own experiences,

power, and privilege and how they affect one's sense making and worldview; and being "client-centered."

3. Running a sensitivity power analysis using G*Power 3.1.9.6 (Faul et al., 2007), we find that for the undocumented participant sample ($N = 122$), we achieve 80% power to detect a main effect of condition (four groups) as small as $f = 0.30$, a *medium to large effect*.
4. Running a sensitivity power analysis using G*Power 3.1.9.6 (Faul et al., 2007), we find that for the U.S.-born participant sample ($N = 650$), we achieve 80% power to detect a main effect of condition (four groups) as small as $f = 0.13$, a *small to medium effect*.
5. Instances when inclusion or exclusion of covaries influenced results is noted in Table 4.

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Data availability statement

The data used in the research are not available and cannot be shared publicly in an effort to protect its highly vulnerable sample and maintain privacy. For questions, please contact the first author.

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