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Examining Youth Conceptualizations of Water Safety Behaviors among Participants in a Learn-to-Swim Program

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Abstract

Drowning represents a leading cause of unintentional deaths among children. Concomitantly, while formal swim instruction often incorporates water safety practices, the efficacy of these messages remains largely unexplored. This qualitative-based study sought to evaluate how youth apply learned water safety concepts when posed with a hypothetical aquatic scenario. Semi-structured interviews, augmented by use of a visual illustration prompt, were conducted with 29 participants of a youth Learn-to-Swim (LTS) program. Interviews assessed participants' expressed water safety behaviors and were coded based on emergent themes. Findings indicated that most participants were able to identify a "struggling" swimmer in the dramatized illustration. When questioned regarding their hypothetical behavioral response to that swimmer in trouble, participants ultimately yielded appropriate behaviors (e.g., extending one's reach) with prompting, revealing they would eventually enter the water. Additionally, participants also frequently mis-conceptualized or reported hesitancy in other behaviors; for instance, "calling" for help was sometimes misinterpreted to exclude contacting 911. Results also indicated that other sources, such as television, were important sources of water safety knowledge among participants and that relationships with social agents played a role in water safety messaging. Given these results, LTS programs and public health agencies should work to further improve the prioritization, practice, and communication of water safety behaviors.

Keywords: water safety, drowning prevention, behavior, youth, intervention

Background

Globally, an estimated 360,000 fatal drowning incidents occur annually, half of which are children (World Health Organization, 2014). While drowning-related deaths have generally decreased in developed nations, fatal drownings still approach 5,000 annually in the United States despite being generally preventable (Peden et al., 2019; Xu, 2014). Concomitantly, extant literature has suggested that participation in swimming lesson programs can significantly reduce the risk of drowning, particularly among children (Brenner et al., 2009; Yang et al., 2007). Less is known about the role of water safety instruction in preventing drowning. In contrast to swim instruction, this form of programming prioritizes water safety skills such as identifying swimmers in trouble and providing aid rather than using swimming skills.

To reduce adverse outcomes, a core tenant of many safety promotion initiatives is that knowledge acquisition leads to behavioral change (Laflamme et al., 1999). This logic manifests itself in water safety messaging to prevent drowning as well (Blitvich, 2014; Tipton, et al., 2021). While interventions such as educational campaigns and water safety instruction may be effective strategies in

preventing drowning, particularly among young children, limited empirical evidence exists to support that these interventions reduce drowning among older children and adolescents (Wallis et al., 2015).

Even within high-income countries, gaps in water safety knowledge persist. Among a sample of more than 2,000 youth in New Zealand, 35% of participants self-reported no rescue skills, 43% could not perform CPR, and between 8.4-27.7% demonstrated other deficits in water safety knowledge (Moran, 2008). Additionally, research has indicated that participation in youth aquatic education programs that prioritize safety messaging does not necessarily result in correct identification of safe water rescue behaviors (Ramos & Anderson, 2017). In that study, the researchers found that among youth who had participated in LTS programming, the average participant was likely to report that they would engage in a variety of undesirable water safety behaviors.

Given this apparent disconnect between water safety education and participants' behaviors, we sought to build upon this limited extant literature by exploring youth understandings of water safety behaviors through qualitative inquiry. Our focus centered on participants of an American Red Cross (ARC) LTS curriculum, which features a series of progressive levels in water safety skill and messaging. This program's ultimate goal is to prevent injury and drowning. Through dialogue with participants, we pursued themes related to risk identification and water safety behaviors, seeking to understand how water safety practices were conceptualized by participating youth when posed with a hypothetical scenario.

Method

Participants
Interviews were conducted in July 2019 after the ARC LTS summer program, across three locations in Brevard, Broward, and Orange counties, Florida. Interviews were conducted with 29 children, ages 6-13 years old, who were divided based on gender presentation: 14 male and 15 female participants. Each child was provided an ARC-branded backpack and water bottle in appreciation for their participation. The study protocol, parental informed consent, and other ethical requirements were approved through the primary investigator's institutional review board.

Procedures
Semi-structured interviews were conducted individually. In addition to two researchers, a camp counselor was present for participant comfort and familiarity. A standard script developed by the research team was followed during interviews (Table 1). The interview protocol sought to elicit information regarding water safety behaviors including recognition, rescue, and calling for help. These areas are

directly analogous to behavior messaging that is found in the ARC-LTS curriculum and has been identified by previous research as needing further investigation (Ramos & Anderson, 2017).

The series of questions regarding recognition and rescue sought to understand (1) the child's ability to identify and aid a swimmer in trouble and (2) their familiarity and knowledge of lifesaving equipment and its use. This series of questions was augmented by lifesaving equipment in the interview space that included a rescue tube, a ring buoy, a reaching pole, and Shepard's hook, as well as other manipulatives including paper and crayons (to facilitate bimodal, illustrated responses), and an aquatic scene illustration. The illustration (Figure 1) depicted multiple activities taking place at a beach environment and included one swimmer with arms overhead, perhaps struggling or in perceived trouble due to a rip current, and another who had fallen off a surfboard. The second series of questions sought to understand the child's understanding of how and when to call for help, and from whom. Additional, emergent questions were asked based on interview direction. Due to the nature of the format (i.e., both audio and physical materials), video was recorded. Interview length ranged from 16-26 minutes.

Analysis
Video recordings were transcribed for audio, with descriptions regarding non-verbal aspects included as necessary (e.g., to identify lifesaving equipment referenced by the child). Following this, three research team members individually evaluated the transcripts for recurrent ideas and relevant quotes through a process of inductive analysis. Then, the research team met to share these discoveries and consolidated the main ideas into a set of five initial emergent themes. As a next step, one researcher re-evaluated the dataset according to these themes. Finally, the research team convened again, reconceptualizing one theme and eliminating another, ultimately resulting in four themes.

Results
Interview participant responses were guided by the set questions presented by the interviewers (Table 1) and the subsequent probing to examine participant attitudes and knowledge levels around water safety and water safety behaviors. Participant responses clustered around the following themes: (a) identification of a swimmer in trouble; (b) assistance for swimmers in trouble; (c) the meaning of "call" in getting help and (d) social learning agents.

Table 1

Interview Protocol

Research Focus and Interview Questions

Research Focus 1: "Recognition and Reach, Throw, Don't Go Message"

[Engage youth to inform regarding study. Gain verbal consent. Determine name, age, highest level of curriculum completed, and self-reported swimming ability. Record researcher-perceived gender and race or ethnicity]

[Then, present illustration and allow youth time to study the scene]

1. What kinds of things do you see happening in the picture?
2. What are people doing? Do you do any of these when you're in the water?
3. Do you see anyone that you feel might be in trouble…needs some help?
   3a. Why do you think so? *[If they don't find anyone, then prompt them to draw finding the correct person]*

[Draw their attention to the equipment available to them and ask general questions about their familiarity and understanding. Probes can be used based on responses that lead to further questioning.]

4. There is all kinds of equipment (stuff) sitting here in the room. Have you seen any of it at the pool or place where you go swimming?
   4a. Did you and your teacher talk about any of these things when or while you were taking swim lesson classes *[probe as necessary]*?
   4b. Can you tell me and maybe show me what any of this equipment is *[probe as necessary]*?
   4c. Can you think of any ways you might use these things *[probe as necessary]*?
   4d. Can you show me?
5. We talked about how you would notice when a swimmer needed help in a pool. Is there anyone in the picture that you think might need help? Why do you think so?
   5a. Can you tell me if you would use any of this equipment to help a swimmer in trouble *[probe as necessary]*?
   5b. Can you show me?
   5c. If this stuff wasn't around to help someone, what would you do?
6. Do you think it is important that pools where you swim have these things available? Why or why not *[probe as necessary]*?

Research Focus #2: "Calling for Help"

7. *[If they mentioned calling for help in any manner during the first part, use this point to follow up. "Earlier you mentioned……"]*
8. Tell me again how you call for help and who you call?
9. When do you call for this kind of help?
10. How did you know how to call for this kind of help?

Figure 1
Aquatic Scene Illustration Employed during Interviews

Recognition of a Swimmer in Trouble
Using Figure 1 as a reference, participants were asked to describe their general impressions and then they were probed on specific activities including whether they could recognize anyone to be "in trouble" or "in need of help". The majority of interview participants identified the swimmer in the water who looked to be struggling ("drowning") in their initial impressions, and all interview participants were able to identify such a person when prompted further.

The interview participants identified a variety of ways an active drowning victim might present to bystanders. One 11-year-old male stated, "Because he's drowning and he's like, screaming for help. Like their head go like up and….'cause they would say 'Help'." A 12-year-old female added, "You would know if someone needs help because they may be yelling for help or they're, like, going under water constantly and they can't keep themselves up." These physical manifestations of needing assistance were directly tied to skills taught in their LTS programming by one 11-year-old boy who said,

> …'cause here they taught us if like…they demonstrated that if somebody's drowning, their face will like…turn….like, I don't know how to explain it but their face is like that. They [are] like huffing and puffing, trying to breathe when they go under water. And their hands…they move 'em, like go like this (waving).

Provision of Assistance for Swimmers in Trouble
The ability of the participants in the study to readily recognize when someone is in trouble in the water was of particular importance because this skill leads directly into what participants would (or should) do once this recognition takes place. In examining steps participants would take to assist, the researchers sought to examine the educational message of "Reach and Throw, Don't Go," which intends to teach youth to provide assistance by using an object to throw or extend their reach rather than physically entering the water in an attempt to deliver assistance. Initially, interview participants readily acknowledged their preference to find an external way to "reach" the victim without entering the water. One 11-year-old female stated, "I would help him, but I wouldn't go and get him. I would just pass him something that's very close and long." An 11-year-old male also simply stated, "I would throw something in there and don't go because I might drown with them."

Upon further questioning, however, almost all interview participants suggested they would physically enter the water to render assistance. The same 11-year-old-female stated, "I would probably save him…swim the best way I can, try to get him to help." The 11-year-old-male also relented when asked what he would do if none of the safety equipment was available, stating, "then I would've swim to him and pulled him to safety."

The Meaning of "Call" in Getting Help
As part of the ARC LTS curriculum, participants are taught to "call" for help when they recognize an emergency in or around the water. Generally, this is explained as using a telephone to call for first responder assistance (calling "911") in the case of an emergency. Most of the participants did realize that calling 911 for help was important; however, shifts were evident due to "smart" devices and potentially contentious relationships associated with first responders (e.g. police). For instance, when asked specifically if the presence of a phone would help, one 11-year-old female said, "[a] phone, kinda won't be helpful, because....how [do] you know the phone has, like, service

or something?" Others recognized the need to call emergency services for help, reflecting what they were taught in the LTS program, but either modified the meaning of "calling" to not include an actual telephone, or de-emphasizing the importance of calling 911 and emphasizing their own attempts to render aid. For example, one 11-year-old female stated, "Oh, I could call…I could get a lifeguard…" emphasizing her ability to "call" for help without the use of a telephone. One 11-year-old male stated he would,

> …call 911 and then, cause sometimes if you call 'em, they come in a few minutes and you don't know if he (the victim) is gonna be drowned or something. So, I'd call 'em and when they're on their way here, I [would] try to save him.

Social Learning Agents

The participants also were prompted to consider the way they had gained knowledge about the water safety behaviors they referenced. While many did mention their LTS program, the role of social learning agents in influencing the water safety knowledge of the participants was also identified frequently. The interview participants often referenced television as a mechanism through which they learned to call on the phone for emergency assistance or appropriately render aid to a victim, the role of family members in influencing their knowledge about water safety, and the role of school in forming their opinions on safe behaviors. When asked how he knew what to do to be safe around the water, one 8-year-old male said, "I just know it. I know it because when I was little, I used to watch all these little [television] shows that be like somebody be kind of like drowning and they just throw the buoy [to them]." An 11-year-old female added, "I learned from my mom…she's like, if there's a stranger, just call 911, or, if there's something wrong, call 911."

Discussion

Through this study, we sought to understand the conceptualization of water safety messaging among youth. Our findings indicated that when provided a visual prompt, most program participants were able to identify a swimmer "in trouble." Still, the graphic depicted a dramatized active drowning which stands in contrast to the ARC's description of drowning as a silent event. Exploring how the many forms of drowning are understood, including passive drowning, represents an area of future study (Lanagan-Leitzel, Skow, & Moore, 2015). Results also indicated that "Reach and Throw, Don't Go" messaging remained salient, with most participants acknowledging that they would first provide assistance through extending or throwing a nearby object. When prompted further, however, most participants relented, stating that they would enter the water if another assistive device was unavailable. This is understandably a strong instinct to counteract. In a study examining bystander rescues in Australia, most adult rescuers did not employ a flotation device during the incident, and more than 80% stated they would not do anything differently the next time such as grabbing a flotation device or telling someone/seeking help (Brander et al., 2019; Pearn & Franklin, 2012).

Additionally, many of this study's participants' concepts of "calling" for help alluded to a broader application of the term, such as to yell for a lifeguard or adult, rather than the specific meaning of this step. This reflects an underlying need to update and clarify educational materials to acknowledge the divergent meanings of the term "call," particularly given the changing nature of technology. Given that lifesaving first aid instruction for young primary school-age children can markedly improve their performance in calling an emergency telephone number and telling the dispatcher the location and what has happened (Bollig at al., 2009), improving messaging to

clarify this step may be warranted. Finally, it is important to recognize that many interviews indicated that water safety messaging was garnered from several sources beyond structured LTS programming including media (e.g., TV) and individuals within students' close social networks such as a parent or caregiver. Leveraging these agents to assist in the delivery and understanding of water safety messages and behaviors represents an important opportunity.

Still, any interpretations of these findings should be contextualized in that one persistent limitation with evaluating water safety program efficacy is that it is hard to evaluate their effect on the true outcome of interest which would best be evaluated based on real rescue scenarios rather than evaluations of self-reported, anticipated behaviors. Nevertheless, the results outlined herein provide valuable context into how water safety messages are interpreted by children. Our findings not only underscore the importance of messaging and instruction around water safety practices but they have the potential to spur changes in how messaging is delivered with respect to water rescue and potentially other risky, scenarios.

As efforts to reduce drowning deaths advance globally (World Health Organization, 2014), identifying the messaging that does and does not remain salient among participants is critical to designing programs that work (Moran, et al., 2011). This study illustrates that while youth who have undergone formal instruction with water safety messaging may demonstrate knowledge concerning key desired behaviors when posed with hypothetical drowning incidents, results revealed that some practices were inconsistent and/or incorrect. This provides evidence that further improvement of water safety messaging efforts among practitioners, both alone and in tandem with swim instruction programming, is warranted.

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