The Turning Words for a Good Night's Sleep: Developing an Effective Communication Strategy for a Mindfulness-Based Sleep & Media Intervention

Samuel Aaron Tullman

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Committee:

Dr. Michelle M. Garrison

Dr. Hendrika W. Meischke

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Abstract

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Samuel Aaron Tullman

Chair of the Supervisory Committee:

Michelle M. Garrison

Department of Health Services

While researches continue to uncover more each year about the harms of frequent media usage, hours of daily smartphone and other media usage is increasingly the norm starting as early as pre-adolescence in the United States and other developed nations. Known harms for adolescents and pre-adolescents include attentional problems, depression, elevated likelihood of risky behaviors, and decreased and lower quality sleep. Despite knowing much about the harms of usage, there is little research elucidating effective strategies for *reducing* harms of inevitable use. This study attempts to uncover the most important components of a communication strategy primarily by querying professionals (n=10) through semi-structured interviews working in the areas of mindfulness, sleep, adolescent health, and education — areas chosen by modeling the suggested changes and contrasting approaches with the "Sleepazoid Intervention" of University of Washington's Garrison Lab. Thematic analysis uncovered three primary themes future researchers and interventionists in media harm reduction and sleep for adolescents are suggested to heed: 1) the importance of immediate relevance to an early adolescent's life, primarily through augmenting a sense of agency; 2) the

need to address the serious perceived social consequences of changing behavior, as well as cultural relevance of communications; and 3) a list of specific strategies deemed most effective for working with early adolescents, especially using visual, partner, and moving exercises. These themes from the interview agreed with key points uncovered in the targeted literature review conducted prior to the interviews, and promise to be essential pillars for adolescent health communication in general and media harm reduction in particular.

Introduction

Smartphone use amongst teenagers, and increasingly *early* adolescents (middle schoolers, aged around 11-13), has exploded in the last decade (1). While the dangers and even observed consequences of this trend are increasingly being discussed in documentaries (like *the Social Dilemma*), podcasts (like *Screenagers*), academic research, and in legal courts around the world, societies globally are still early in the process of figuring out best practices for harm reduction systematically. Harms of frequent use specific to teenagers and younger children include attentional problems, depression, elevated risk for early alcohol abuse and suicide, and overeating (2-7).

This thesis works to build an effective communication strategy for an intervention (the "Sleepazoid" study) focused particularly on mitigating media use's impact on sleep. Media use, especially around bedtime, has been repeatedly identified as a risk-factor for poor sleep in this younger age group. Further, early adolescents are reported to engage in more media use than older adolescents and younger children both (8-25). More poignant still, despite the negative outcomes, kids in this age group report using media around bedtime to try to *help* them go to sleep (9, 10, 26). The impacts of disturbed and insufficient sleep in kids this age include school failure, behavior and mood problems, obesity and physical pain (27-37).

The Garrison Lab's "Sleepazoid" study was initially launched in 2019, out of Seattle Children's hospital. In short, Sleepazoid is a mindfulness-based media hygiene intervention, aimed at improving sleep and its downstream outcomes, in middle-school aged kids. Kids move through an eight week curriculum that familiarizes them with the impact of media of various kinds on their mental and bodily states, and helps them find ways to adapt their engagement with media without completely leaving it behind, using a harm-reduction paradigm. Primary strategies relied on, outside of the educational materials, include a five minute guided meditation intended for use every night, (which is meant to help kids feel their bodily state and decrease arousal at the same time) plus the regular use of "mindful checkins" wherein the subject is meant to just briefly feel what is happening in their body during natural breaks in their media use, and take cues from these happenings as to how to proceed with media use. These mindfulness strategies are centered due to extensive research validating their efficacy in both 1) reducing state arousal, (38-41) which supports kids moving towards sleep using a bottom-up approach, and 2) improving behavioral regulation (42, 43), which may support better media choices (resulting in less arousing stimuli) from the top down. Sleep has repeatedly been shown to be improved by mindfulness-based interventions (MBIs) in the literature (41, 44-50). Further, MBIs specifically oriented towards awareness of internal body processes — as Sleepazoid's meditation is — appear to be particularly effective in facilitating this self-regulation and decreased state arousal (40, 46, 51-53). In addition to these practices and the self-education and journaling, kids in the intervention meet with an interventionist once at the beginning, and another time early on in their eight week experience.

Because of the relatively recent, dramatic increase in smartphone usage in middle schoolers, and the rapidly changing nature of the content they are interacting with, interventions in this area have relatively little clinical precedent to go on, and even less published literature. Furthermore, they are often hamstrung by issues of practicality; because media has become such an integral part of kids' social-emotional life, absolutism like hard and fast rules for use may ultimately not lead to any change in early adolescent behavior, because it involves them turning away from the social interaction and immediate gratification they value most. This may be one explanation for repeated findings in school-based sleep interventions (which deal with media hygiene), where kids *do* effectively learn the proscribed knowledge and attitudes, but do not actually experience significant changes in clinical outcomes (54-57). Solid interventions must be built on established and widely accepted principles of developmental psychology,

such as Bandura's Social Cognitive Theory (SCT), which served as a foundation for Sleepazoid. There is also more recent academic work on MBIs with youth, and research on insomnia in youth to be consulted in developing an appropriate intervention for this issue for this age group (19-32, 37, 43, 48-50, 54-57) .

But despite some initial attempts to study methods of reducing harm caused by media use in early adolescents, and the robust body of knowledge in several related areas mentioned above, much remains to be known to researchers about how to effectively support kids in healthier usage of media. Meanwhile, as is typical of responses to emergent health problems, there is a growing body of knowledge amongst those on the ground actively working with the individuals affected in clinical and other settings. To that effect, this small study has endeavored to consult those experienced with working with youth in mindfulness and media usage in particular, in addition to conducting a targeted literature review on those and other related topics, in order to develop the most effective communication strategy possible for future iterations of Sleepazoid, as well as other mindfulness-based media-use interventions to come. The immediate intention for this study is to develop short, medium, and long term recommendations for changes and additions to Sleepazoid's ongoing communication strategy, as well as to build a firm, scientific foundation for the communication strategy, based on previous literature and this work.

Methods

This research used a two-pronged approach to triangulate the best practices for communicating with early adolescents about mindfulness and media usage: first, a targeted review of the literature on these and other related topics, and second, qualitative interview of subject matter experts (SMEs) on mindfulness, media usage, sleep, and other adjacent topics to this study. The intention of this approach was to use the targeted review as an opportunity to clearly identify gaps in existing research as well as key themes and assumptions of existing research, both of which were used to build a codebook and develop tentative hypotheses about what may be most important in a communication strategy. This then served as the foundation for the interview component of the study, which was meant to: a) fill in gaps in the literature; b) affirm or negate that findings in the literature indeed represented SMEs' on-the-ground observations, and c) coax out more specific, detailed communication techniques and strategies that work for kids in this age range.

Targeted Review

As mentioned, this study began with a targeted review of published research intended to fill in knowledge gaps in matters of communication with adolescents about mindfulness, sleep, and media usage. The following topics were explored: Digital Interventions in Adolescents, Health Communication and Behavior Change in Adolescents, Mindfulness Based Interventions for Adolescents, Adolescent Health Communication Theory, Sleep Interventions for Adolescents, Media Usage in Adolescents, and Compulsive Eating Behavior in Adolescents (which was theorized to be a closely related health concern). The primary database queried was PubMed, and most results were generated by searching the above topics either word for word, or with small phrasing adjustments (i.e. "Health Communication for Adolescents" instead of "Adolescent Health Communication Theory"). Additional studies were found by using PubMed's "Similar Articles" tool, and by reading the papers included in the original Sleepazoid grant bibliography, and similarly using PubMed's "Similar Articles" tool for those papers. Articles were thereby selected by relevance to each of these areas to the intervention, where the most relevant information included specifically used a similar or the same target population (early adolescents), moderately relevant information was about teens as a whole, and slightly relevant information included young adults. Studies on individuals older than "young adults"

were generally not consulted, except in meta-analyses that included youth interventions. Insights about the Sleepazoid intervention drawn from this targeted review were used to build an initial codebook for interview analysis, which was adjusted as data was collected and began to be analyzed in a first pass of coding. Each code was taken from a specific core idea, or grouping of core ideas, coming up repeatedly in the targeted review or the existing materials from the Sleepazoid intervention. Initial codebook shown in Appendix A.

Interviewee Selection, Interview Guide Formation, and Codebook Finalization

Having undergone an efficient, foundational review of the published literature on the most critical topics for the development of an effective communication strategy for the population of interest, experts on these topics were consulted further to elucidate specific best practices for communicating on these topics with the population of interest, as well as to assess the reviewed literature's congruence with SME opinions. Initial prospective interviewees were found by internet search and asking individuals known to the research team who were working with kids in areas of media, sleep, or mindfulness. Further prospective interviewees were identified by asking those interviewed who else may have a valuable perspective on this topic, especially a different perspective ("Snowball" sampling). Only those working with kids in the above areas, or working at the intersection of multiple of those areas, were interviewed. Ultimately this included ten SMEs from different topically relevant professional and life backgrounds. These experts included child-and-adolescent therapists, psychologists, mindfulness teachers, schoolteachers, sleep researchers, media-use researchers, and meditation researchers, with many of these individuals fitting into multiple of these roles over the course of their professional and personal lives. Included in those interviewed was also the primary interventionist from the pilot program, and the head of the teen mindfulness initiative for a popular mindfulness app. Each subject, identity concealed by number, can be seen in a table next to their specific expertise and role in Appendix D.

Interview questions were developed in order to target gaps in knowledge most specifically about what gets through to kids of this age in terms of the SME's area of expertise. They included questions about what most kids' starting points were for relevant behaviors in the area of expertise (like healthy sleep habits, setting media boundaries, or engaging in mindfulness practices), what drives these relevant behaviors and behavior changes, and what the expert felt was most important to communicate to middle-school aged kids in this matter. The development of guides was heavily influenced by SCT, which maintains that, "Behavior change is initiated and maintained when persons feel that they are capable of executing the desired behavior (self-efficacy) and have a reasonable expectation that the behavior will result in a desired outcome (outcome expectations)." (Wong & Monaghan 2020) SCT also suggests that health knowledge and learning by modeling are critical factors for any individual, but especially a young person, to learn and grow. Though interview guides were adjusted for each SME, to reflect their specific expertise and experience within their field, most individual interview questions were reused with multiple subjects.

As mentioned, an initial codebook (Appendix A) was developed primarily from the targeted literature review. This codebook heavily featured constructs from SCT, because of both it's relevance in considering behavior change in adolescence, and the fact that it was foundational to the creation of the Sleepazoid intervention. Other key literature foundations of the codebook were Uses & Gratification Theory, Motivational Interviewing, and some of the hypothesized principles of how mindfulness practice creates change in an individual.

Notes were taken during and after each interview on topics that seemed to be stressed by the interviewee, but weren't currently covered in a way that could be coherently coded using the initial codebook. When another data from at least one other interview highlighted a similar topic

that wasn't covered by the initial codebook, a code was added to bring these key ideas into the analysis. By the end of the interview process, this led to a swelling of the codebook to 35 codes. In order to be sure all interviews had a chance to have added codes applied, a second pass of coding was taken on all interviews. All coding and analysis was performed by the principal investigator using video recordings of interviews, on Dedoose software.

After this second round of coding was complete but before thematic analysis began formally, some codes were consolidated, (when two or more smaller codes were closely related) collapsed into a larger code/emerging theme (in the case of child codes that were used two or less times) or pruned completely (for unused codes). Appendix B reflects the full final codebook, with examples of quotes that fit the code best; the below table reflects a version of the same table but only using primary codes, to help navigate the Thematic Analysis section.

Primary Code	**Exemplary Quotes**
"Contemplative" Approach Throughout the Day	"We're not trying to be the most mindful person ever … We're just trying to embody mindfulness, so you have these reminders, especially when you realize you've drifted … What happens if you just *be*? What happens if you're just here, and watch things unfold? It's to try to get people grounded in that mindset."
Knowledge/ Health Literacy	"… kids *love* learning about the neurobiology of what's going on … explaining to kids — here's your brain, here's how it functions, here's why you can't stop, here's where you lose control." " … that type of education would be very useful …to understand how the TikTok algorithm is feeding you things to keep you engaged, not designed with your wellbeing in mind."
Important Message: It's Not Their Fault	"They [kids] need to actually understand that a lot of this [lack of sleep] is happening because of biological changes … the system we have, we need to recognize it's simply not cut out for teenagers' sleep …"
Awareness of Triggers (for Use & Ending Use)	" … When you realize that you've gone down this rabbit hole … nothing major[ly] bad is happening … it just doesn't make you feel like you've used your time well."
Centering Goal of Individual Kids	"We were doing outcome expectations where we set a certain goal … we would say what does [it] look like for you? What's it look like for your parent? It made kids frustrated at the beginning — they were just like, 'I know what this looks like, I don't need my mom to tell me.' So I stopped asked the parents as much …"
Communication Strategy Development With Kids	"What we're doing right now with teenagers is forming our own advisory council … to ensure that it's [our content] hitting the mark."
Dressing Communication Up in Whatever Language Kids Resonate With	"I don't even use the word mindfulness … in my work, because I find that especially with teenagers, some like it but some do not. I dress it up in whatever language they can understand."

Primary Code	Exemplary Quotes
Digital Mediums Effective for Youth Intervention	“Part of what makes gamification efforts successful … is the social component, and the social component is much easier to facilitate in a networked environment, so yeah, something that’s online at least is useful.”
Peer Group/ Social Unit Key for Intervention	"What that suggests to me is that the message has to go to the peer group. It’s hard enough to do this alone if you’re a mature adult.”
Positive Social Outcome Expectations (of Use)	“An additional hour they spend on sleep they’re not spending with their friends.” “ … [their] best friends are online.”
Observational Learning	“… approaches to parenting transfer into the digital realm, and that really affects how kids enter into relationships with technology …”
Specific Strategy to Revisit	N/A

Finally, in order to shed light on the emerging themes of the data, a light content analysis was conducted to understand which codes were used the most, and which were used *together* the most. Quotes were identified for each of these major codes to highlight both standard examples of when the code was used, and data in which the code was used where the key message or meaning diverged substantially from other data coded this way. Using this approach, five codes stood out as significantly more used than the rest, and three in particular had a notable amount of code co-occurence with smaller codes, which served as an initial indication that these three codes were importantly interconnected to the rest of the data. These three were, “Knowledge/Health Literacy,” “Centering the Goals of Individual Kids,” and “Peer Group/Social Unit Key for Intervention.” Consideration of standard uses of each codes and outliers within the code then led to the development of the three themes discussed in the section below, with the first two themes coming from consideration of the three codes noted above.

Results: **Thematic Analysis**

The three themes identified from this initial examination of the data were: 1) **Why They Should Care**; 2) **Meeting Kids’ Needs**; and 3) **Content and Methods that Work for Kids**. The first two themes each had two identified sub-themes, whereas the last theme, **Content and Methods that Work for Kids,** had four.

Theme	Subtheme	Representative Quote or Example
Why They Should Care		

	Agency	"'***I know*** what this looks like, I don't need my mom to tell me." "How can we deliver these tools directly to young people — give them agency — not always through an adult?"
	Making Life Better	"You can also work with a kid on an activity that they *do* enjoy, by helping them recognize that they're not getting enough enjoyment out of it … When you're eating … are you actually enjoying what you're eating? … are you actually tasting the cookie? … [or] for some kids music is really powerful. I tell them, 'I want you to tell me how many instruments you can pick up. … can you enjoy that?'
Meeting Kids' Needs		
	Resolving the Social Dilemma	"… Children are working out how to be social beings in relation to their peer groups … What that suggests to me is that the message has to go to the peer group …"
	Resonant, Relevant Communication	"I don't even use the word mindfulness … in my work, because I find that especially with teenagers, some like it but some do not. I dress it up in whatever language they can understand."
Content & Methods that Work for Kids		
	Movement Practices	Walking meditations, or noticing the stress experience in the body of playing a game where a beach ball "can't" hit the ground.
	Practicing in the Extremes	Noticing the experience of the activities one enjoys the most to fully savor them — like how thrilling it feels to play a video game, and what "thrilling" feels like, or really enjoying a bite of ice cream maximally, noticing the components of the experience.
	Group/Partner Practices	Acting out with a partner, who is representing a stressor, various different possible responses to that stressor.

	Visual Metaphors for Cognitive Awareness	The emotion ruler, which allows one to locate various "locations" of emotional experience on an X-Y graph, where one axis has arousal (or energy) and another has affect (or mood).

Theme One: "Why They Should Care"

Sub-theme 1.1: Agency

Under the code, "Knowledge/Health Literacy," one of the most prescient comments came from Subject 7, an interviewee who is an internationally recognized sleep researcher and clinician:

> *"Everybody knows the right thing to do — the key thing is that they don't do it! …. Kids already know what they're supposed to do, it's not about that."*

Though at first appearing to be at odds with comments from almost every other interviewee, this comment proved to organize the thoughts of others; what became increasingly clear is that the "Knowledge" interviewees spoke about often was not primarily the actionable kind that explained to kids what they *should* do, from an authoritative source. Rather, what interviewees were speaking to was bringing some of the interesting and highly relevant information which might suggest **Why They Should Care,** without directly telling them that they should, leaving them to decide that on their own (in other words, giving them "Agency"). Hence, both the first theme of **Why They Should Care** and its first sub-theme, "Agency" were identified. Some reasons suggested in the data about why kids should care included that they may be picking up old bad habits of their parents, (who's flaws they are beginning to become aware of in this stage of development — highlighted in the "Observational Learning" code) that their brain's attention system is being coopted for profit by media companies, (various codes, especially "Awareness of Triggers") and that part of the issue with their sleep and media use is not their fault to begin with, as they face uphill battles both biologically and societally, which makes it more emotionally comfortable to acknowledge that there is an issue at all ("It's Not Their Fault" code). In most of these cases, what drew together each of these disparate areas that point to **Why They Should Care** was this central component of "Agency," which is also stressed by the literature as being expected to become very important for kids this age. (59, 60) The Sleepazoid interventionist, Subject 5, recognized this strong drive in the kids he has worked with when he said,

> "*We were doing outcome expectations where we set a certain goal … we would say what does it look like for you? What's it look like for your parent? It made kids frustrated … they were just like, 'I know what this looks like, I don't need my mom to tell me.'"*

This sub-theme of the data highlights that education should be further geared towards things that highlight that they may not be in control when they are using media, but that they can regain their agency through engaging with the intervention. It suggests that materials and the intervention as a whole can be made to feel more salient by highlighting that these practices and this knowledge are designed to free them up to have control over their lives. Subject 6, who works with teens at a large mindfulness app company, states this succinctly while rhetorically asking the question she feels is most important, to kids and to her mission:

> *"How can we deliver these tools directly to young people — give them agency — not always through an adult?"*

Sub-theme 1.2: Making Life Better

What emerged from interrogating the highly used code, "Centering Individual Goals," is another sub-theme of **Why They Should Care** — "Making Life Better.**"** This section of the data, rather than stressing that a true freedom of choice is the best frame for this intervention, highlights the need to make it clear that this intervention shows promise in improving things in their life that they already care deeply about, either by making the good things better or the hard things easier. Subject 3, a mindfulness researcher and former schoolteacher who taught mindfulness practices, spoke directly to this, stating,

> *"You need to tell kids in a really simple, understandable way, why they should care. For me what seemed to work is talking about my experience and the challenges I experienced at that age, and why meditation works [for those challenges]."*

In this sense, just putting a person — the interventionist — in front of them who similarly struggles and who has been benefited by this practice ("Interventionist Exemplifying the Practice" code) is one way of immediately illustrating how *their* lives, too could be better, and is consistent with Social Cognitive Theory (58). On the positive face of this same coin, Subject 1, a child and adolescent counselor who focuses primarily on mindfulness practices, suggested,

> *"You can also work with a kid on an activity that they do enjoy, by helping them recognize that they're not getting enough enjoyment out of it … When you're eating … are you actually enjoying what you're eating? When you're sneaking that cookie … are you actually tasting the cookie? … [or] for some kids music is really powerful. I tell them, 'Your meditation may be just listening to this one song. I want you to tell me how many instruments you can pick up. … can you enjoy that?'"*

This data excerpt is the tip of the iceberg that suggests that an excellent way to get kids to engage their mindfulness practice *during* media usage (when it's hardest) is to encourage them to build momentum by engaging it elsewhere, throughout the day, (which is most covered in '"Contemplative' Approach Throughout the Day" Code) at times when it's easy, or when things are hard and they need a tool to turn to. Importantly, multiple interviewees commented that "making life better" should include how they can really enjoy and get the most of their media use, which is also core to the orientation of the Sleepazoid intervention. The specific implications of this sub-theme will depend on what a kid's goals and cares are, which will be discussed more in the Conclusions section.

Theme Two: "Meeting Kids' Needs"

Sub-theme 2.1: Resolving the Social Dilemma

Considering the last of the five most used codes, "Peer Group/Social Unit Key for Intervention," another theme begins to emerge. The overall theme this belongs to we identify as **Meeting Kids' Needs**, but this code draws out a specific sub-theme of Meeting Kids' Needs: "Resolving the Social Dilemma." This was brought up repeatedly in modern media-usage literature, is already spoken to in existing Sleepazoid intervention materials, and was brought up by almost every interviewee who discussed media usage in kids: adolescents, especially early adolescents, lean heavily on media for social purposes, whether directly (to

connect with others online in gaming, chatting, or other social media features) or indirectly (to stay "up on" the latest shows or videogames). In considering how kids are faced with difficult choices in media use, especially with it being a primary social hub, it makes absolute sense that a space that helps them learn about how to use it more healthily would itself involve a healthy social unit. To this point, Subject 4, drawing from the example of his classes on helping college-age kids develop healthier relationships with technology, says,

> "… Children are working out how to be social beings in relation to their peer groups … What that suggests to me is that the message has to go to the peer group. It's hard enough to do this alone if you're a mature adult. … [What] are you going to do if your sense of identity and wellbeing and status depends on the group that you're part of?"

Not only does the data repeatedly suggest that this is *needed* for an effective intervention, but indeed, that it may be the most impactful ***part*** of an effective intervention: S3, mentioned before as the mindfulness researcher and former teacher, after an initial response about what motivates kids to engage in these practices paused, and said,

> "*Maybe the most powerful thing that kids got out of [the class] was [that] there was an environment where [they] felt comfortable being themselves with other teens, and that is exceptionally rare … That to me comes through the practice … Adolescents especially will respond to that."*

There was clear consensus across interviews that a group intervention could massively benefit the kids that experience it and support their engagement with the intervention, despite group work coming with its own challenges. The potential for impact of the social unit is most saliently highlighted by the words of the children's mindfulness teacher and author who was Subject 2 of this study, who says of some of the kids she's worked with in classrooms,

> "*So many feel like … they are alone in their experience. But if you normalize … I'll look around the class and say, 'How many of us have been in that position?' And all hands go up. So then they feel, 'Oh my gosh, this is my community… There's nothing wrong with me … then you teach skills about … how to make the right choices."*

Driving this home, Subject 6 of the mindfulness app company, similarly says, "They want to hear about other people's experiences — [they want to hear] that they're not alone." This theme makes it clear that in some way or another, the intervention needs to address the "social dilemma" kids face in their social media use.

Sub-theme 2.2: Resonant, Relevant Communication

Much more straightforward were interviewees' comments about the importance of communicating in the way that makes most sense to kids of that age group, and the value of developing alongside kids in the population of interest, covered primarily in the codes, "Communication Strategy Development with Kids" and "Communication: Dress It Up in Whatever Language They Can Relate to." Of this, acclaimed sleep researcher and clinician Subject 7 says,

> "I don't even use the word mindfulness … in my work, because I find that especially with teenagers, some like it but some do not. I dress it up in whatever language they can understand."

This can be considered another sub-theme of Meeting Kids' Needs, which we will call "Resonant, Relevant Communication," wherein the two codes mentioned above are related by virtue of the fact that deciding what language kids most relate to is best done by working with kids to develop or at least give feedback on intervention materials. Both Subject 8, a media researcher who has developed intervention apps for kids, and Subject 6 of the mindfulness app company were clear that having an advisory group of kids at the age of interest was something they considered essential in their own processes of working with youth.

Theme Three: "Content and Methods that Work for Kids"

Many of the codes used, indeed many of the suggestions made by interviewees, referred to specific methods for working with kids in mindfulness practices and sleep or media behaviors. It became clear that these sections of the data had significant overlap in content, and clearly belonged to the same theme. These recommended strategies informed the below conclusions about best practices to carry forward for future iterations of Sleepazoid, as well as for other mindfulness-based media interventions, as found at the bottom of the Conclusions section, and at more length in Appendix C. But thematically, a couple of sub-themes emerged from this central theme, which we have identified as, **Content & Methods that Work for Kids**. Subthemes included "Movement Practices," "Practicing in the Extremes," "Group/Partner Practices," and "Visual Metaphors for Cognitive Awareness." Each sub-theme has multiple examples of how they look on the ground with kids, and belong to much larger categories of engaging practices, beyond what was mentioned by interventionists. Whatever additional strategies the next round of Sleepazoid may include, it is recommended to consider each of these sub-themes as a category of helpful practices that interventions could benefit from incorporating.

Conclusions

The above thematic analysis may have significant bearing on the future course of development for the Sleepazoid Intervention. This section will first speak to the ways in which the outlined theme both encourage a deepening of the existing approach of Sleepazoid, and suggest ways in which the intervention may become more effective by modifying its approach, or adding additional components. Then, recommendations will be made in the form of tables organized by the timescale they may undertaken in.

Conclusions: Why They Should Care

Conclusions for Sub-theme 1.1, "Agency"

As far as really instilling for kids "Why They Should Care," the existing Sleepazoid Intervention tracks closely with many of the recommendations of experts. The intervention already astutely supports **Agency** by endeavoring to put kids in the driver's seat of their own engagement with media, giving them a short list of "tweaks" that they can attempt in order to bring balance to their media usage, without dictating which they use or when. What the interviews conducted highlight is that what may be missing is the perspective that as a starting point, they are currently ***not*** in control, but rather *being* controlled. This is a distinctly uncomfortable (but objectively true) perspective for a kid of this age, and may provide motivation to ***get*** into the driver's seat by engaging more fully with the intervention. Literature and interviews suggest a number of ways kids are not yet in the driver's seat, where they can strive to regain their agency: that their brain is being manipulated by certain media features, (and how that works) that they are absorbing some of the bad media habits their parents engage in, (and why these habits are detrimental) and that they are already facing an uphill battle because their own

biology is making it harder to sleep early and more exciting to engage socially, and yet they have more expected of them in life than ever before. Content in the workbook and content reviewed with the interventionist should strongly highlight these components of this sub-theme, igniting in kids a desire to be in control of their budding lives. There are also specific strategies, highlighted below, that really highlight the challenge to agency that media poses — one clear example being Daniel Hirschberg's "Smartphone Dis/Connect" exercise, which could be done with an interventionist alone or in a group, and is an excellent companion to the regular, daily guided meditation practice. Of note in discussing this sub-theme is the fact that the intervention originally included more utilization of biometric and biofeedback devices, with the intention of allowing kids to see and experience for themselves through "first person science" that their bodies and minds were changing based on meditation or media use (61). Much of this component was cut due to funding concerns. This would have fit nicely into the kind of education that experts discussed, especially education about what's happening to the nervous system, which multiple experts recommended be shared with kids. In so doing, it would have hugely boosted **Agency's** role in the communication strategy. Based on experts' feedback, investigators are also highly encouraged to bring this component back into the intervention when funding allows, or to highlight **Agency** in another way.

Conclusions for Sub-theme 1.2, "Making Life Better"

The other sub-theme of "Why They Should Care," "Making Life Better," presents some ways forward that Sleepazoid has not yet focused on. Elucidating exactly how the intervention poses to "Make Life Better" in an immediate, felt way could be further supported in the workbook and by the interventionist by being prepared with research and anecdotes for kids that support the idea that their other goals are benefited by engaging fully in the suggested mindfulness practices and media modifications. For example, an individual who cares about gaming may be inspired by published research that suggests that mindfulness training helps people continue to perform and respond well mentally even when chronically fatigued or under pressure (62), or a kid who wants to be a great basketball player may get excited to hear that Michael Jordan was regularly instructed in meditation before practices and games, or that Lebron James meditates and guides meditation on the "Calm" App. Conversely, kids with high social anxiety (who are already at higher risk for leaning into media for social gratification) may find an entry into engaging in checkins and staying consistent with guided meditations when they learn that mindfulness practices are shown to help individuals struggling in this way to feel less anxious (63). Having some of these exciting, motivating information tidbits for kids with different interests could prove to be immensely useful in relating why this might matter to them. Additionally, the final suggestion discussed in the analysis of this sub theme — to help kids highlight what they do enjoy about media use and how it feels — is completely congruent with the approach of the Sleepazoid intervention, which should be applauded for making similar suggestions to kids in the intervention. The slight adjustment to this approach suggested by the interview data is that this could be framed more in terms of, "how much more fun it is to play a video game or chat with friends while undistracted" rather than primarily using checkins as a way to gauge arousal (which is often referred to in the workbook, using appropriate middle-school language, as feeling "amped."). Lastly, more points of contact with the interventionist is important, as they classically serve as a living reminder modeling the practice. Their role, as sleep and mindfulness researcher Subject 10 says,

> *"is to create space … gently encouraging them [participants] to do the practice, to get away from the judgmental thinking of 'Am I doing it right or wrong' … to embody mindfulness. Part of being a mindfulness teacher is you embody it, [and] you hope that they will pick up on that."*

Having a role model who has experienced similar things the kids are experiencing, is "cool," and helps keep them on track, is an essential way for them to learn by watching how they can make their lives better. This suggests that it's essential that the interventionist be a relatively experienced mindfulness practitioner. The norm in MBIs of all ages, with the exception of mobile interventions, is generally for those in the intervention to meet with the interventionist every week; in contrast, Sleepazoid has only two meetings between the interventionist and kids (and parents) over the course of the eight weeks, one of which is largely an introduction to the intervention.

Conclusions: Meeting Kids' Needs

Two primary "needs" kids have to be able to fully engage with the intervention became clear in the data: social needs, and language needs. In one sense, then, the suggestions the interview data calls for are fairly simple: 1) Adapt the intervention so kids are engaging as a social unit, and 2) Develop a teen advisory council who can be consulted about intervention materials, and even help develop them. The latter intervention is relatively simple to accomplish, with the appropriate resources. The former suggestion requires a little more careful consideration. Because the intervention is currently being delivered primarily by Zoom, there is an opportunity to more easily, accessibly hold regular meetings where the interventionist is guiding a group, which can go further into some of the educational topics mentioned as part of "Agency" sub-theme and easily be broken into smaller groups. This provides the additional benefit of allowing the interventionist to have more points of contact with kids, as currently, kids have no engagement with anyone involved in the intervention (peers or adults) from their second meeting through to the end. As mentioned, both literature and interviewees suggests that especially at this age, a weekly interaction is considered the status quo; even in adult mindfulness interventions, research where people aren't engaging with a teacher and other peers weekly is sparse. Weekly peer meetings by Zoom are one way to solve both this problem and the "social dilemma" at the same time. A short-term solution would be at least including more discussion in the workbook and with the interventionist about the fact that all kids are struggling with this, and giving examples of others' experiences.

Conclusions: Content & Methods That Work for Kids

Interviewees generated a plethora of suggestions for "Content and Methods that Work for Kids." One challenge impeding being fully responsive to these suggestions is maintaining the fidelity of the "Sleepazoid" intervention as it was initially proposed and approved by an IRB. Care must be taken in order to adapt without adding or changing enough to make it something new entirely. Content and methods that can be more easily added are those that can be incorporated into the workbook (i.e. visuals, DIY activities, new ways of speaking about what the intervention is doing) and those that can easily be done with the interventionist (or in a peer group — i.e. exercises that require more guidance, or that require a partner). Some examples in the first category that stand out might be the addition of an "Emotion Ruler," suggested by Subject 6, or Subject 1's Russian doll metaphor for paying attention to different parts of one's experience. An example of an easily accomplished workbook adjustment would be to add in a section that asks kids what media choices they made on a given day of the week, what their experience was during use, and why they made different choices around use (including stopping use). As for content that can be added to work with the interventionist, the study may incorporate the "Smartphone Dis/connect" exercise or lead an eating meditation, both of which encourage an individual to attend to their cravings; encourage kids to express in movement or body language what different media sources feel like, which serves to help them connect their bodily and mental experiences; or show kids how easy it is to lose attention by exercises like short meditations where one's arm is over one's head. Two of the most potentially impactful suggestions made by one interviewee involved teaching mindfulness of other sense "doors."

The first is sound, which is clearly important as an important component of media use, and can give kids another tool to more easily engage mindfully when they are actually using media, a multi-sensory experience. This is already encouraged by Sleepazoid's workbook, but actually practicing with an interventionist in order to have a felt experience of how media's sounds impacts them, rather than just reading it, could have a profound impact on their engagement with the intervention. Without this direction and encouragement, they are unlikely to glean the insight about sound's impact on their own. The other suggestion that fits in this category is mentioned earlier — mindful eating practice. Again, this presents the opportunity to practice the skills kids are developing in a complex, multi-sensory, dynamic situation, where craving is a strong component. The similarity between food craving and media craving was already assumed at the outset of this project and thus was part of the targeted literature review, and further feedback from interviewees made clear that this similarity is actually an incredible opportunity to exploit in practice. A more complete list of recommended practices is included in Appendix C.

Research Findings in Historical Context

Indeed most of these sub-themes that emerged from this "Content & Methods that Work" conglomerate should come as no surprise in the face of more historical awareness of contemplative practices, as each of these sub-themes has roots in nearly every contemplative tradition that stresses bodily awareness. Going back to ancient times, these have been considered methods to "practice" (or contemplate) that are not limited to "sitting" to meditate. Examples of **Movement** Practices abound in nearly every historical meditative tradition, and include walking and working meditations, as well as common movement practices like yoga (asanas) and Qi Gong or Tai Chi, or the "whirling" of the Sufi Dervishes. Historical **visual metaphors** might include the Mandalas of Tibetan Buddhism, single-stroke calligraphy of Japanese Zen, or visual depictions meant to inspire contemplation of the Incarnate Christ in monastic Catholicism. **Practicing in the Extremes** is exemplified by nearly every monastic tradition's insistence on asceticism and intentionally undergoing hardship and often poverty to become familiar with these experiences, while on the other end stressing the importance of fully appreciating and even taking joy in the little things, making even the eating of gruel, sipping of tea, or smelling of incense a cherished experience. **Group and Partner Embodiment Practices** also exist across traditions, such as chanting, collaborative drumming and dancing circles in Yoruba and other traditions of West Africa, and Mondo (way of conversation) in Zen. This can remind us that perhaps "Content & Methods that Work for Kids" are really just content and methods that ***work***; even *adults* have historically needed these kinds of supports in becoming more closely attuned to the happenings of their bodies and gain insight into their behaviors. In truth, these are all just methods of bringing attention to an intended object, or making it easier bring this attention. This suggests that they are even more necessary for kids struggling to maintain a felt sense of their body because of media usage.

Recommendations for Next Steps for Sleepazoid

Accordingly, we recommend the below recommendations be made to the intervention over the course of the coming months and years of iterating Sleepazoid, and further, that future interventions in the spaces of media or mindfulness interventions for youth heed the following considerations:

Short Term Recommendations (6 month)	Source of Recommendation
Formation of a Teen Advisory group	S8, S6

Short Term Recommendations (6 month)	Source of Recommendation
Inclusion of at least one guided exercise that explores craving	S1, other email Interviewee
Guidance by interventionist on mindfully attending to sound	S1, S2
Increase contact with the interventionist(s) (more than just twice in the first few weeks)	Mindfulness Literature, S1, S2, S3, S4
Featuring a visual metaphor (emotional ruler or Russian doll metaphor as examples) in the interactive component of each subject's workbook, for them to fill out.	S1, S2, S6
Spend more time giving real life examples of other kids' struggles with social media.	S2, S3, S6

Middle Term Recommendations (12-18 months)	Source of Recommendation
Adaptation of Intervention to a Group Format, Have Groups Led by Interventionist Meet at Least Every Other Week	S2, S3, S4, S8
Lay Groundwork for App Development	S8, S10
More significant overhaul of workbook to organize around themes of **Agency, Making Life Better,** and include visual suggestions and reflective exercise suggestions	Various
Creation of an online catalogue for kids to check out different exercises they have done or could do, and be guided in a recorded video to engage in them. This might center specifically on moving meditation practices.	N/A

Long Term Recommendations (2-3 years)	Source of Recommendation
Release App, Scale	N/A

Discussion

Both targeted review and the ten interviews conducted agreed on a number of important directions for Sleepazoid to continue to develop in, in order to best reach youth and support their growth in adopting healthier behaviors for media use, especially through mindfulness practices. Among the most salient were centering both agency and the ways the intervention impacts what an individual kid cares most about in communicating about the intervention, addressing and easing the "pain" of the social implications of engaging with the intervention,

and building intervention materials in concert with kids. Interviews in particular also provided a number of specific strategies for the study to consider, many of which are discussed above and the rest of which are listed in Appendix C. These are then organized by feasibility for the Sleepazoid study to incorporate over a specific timeframe in the above table at a high level, in a way that's broad enough to be potentially useful for future interventions hoping to have an impact on youth media usage behaviors.

These findings should be taken in a measured manner, however, as there are a number of challenges to the internal and external validity of this work due to the constraints of the project. First is the relatively small sample size: only ten subjects were interviewed in the qualitative component of this research. Further, though on one hand the study achieved a great success in interviewing SMEs from a range of backgrounds, on the other hand, this meant that each area of expertise (sleep, mindfulness, media usage) consulted may have had only three SMEs in it. This was the case for media usage as a category, while both sleep and mindfulness had more experts, due to overlap in interviewees between categories. Future studies would benefit from increasing the total sample size, and thus the sample size of each area of expertise surveyed. This could be accomplished without much difficulty with additional time and researchers, both of which were constrained in this study in part because it served as the master's thesis of the principal investigator, who served as the lone interviewee and coder. Another potential weakness may have come through sampling method, at first convenience sampling and later snowball sampling, which may have decreased the diversity of responses received, creating a false point of data saturation. Future studies could consider casting a wider net and doing outreach in a more methodical way by reaching out to authors of works considered in a targeted review, or sending emails to professional organizations asking for help gathering subjects. This may also benefit the racial/ethnic diversity of interviewees; in this study, while experts came from a variety of educational and work backgrounds, eight of ten interviewees were white, which may have further constrained the generation of new perspective for best communication practices across populations and experiences. Additionally, it must be considered especially in light of the interview data that there was no consultation of adolescents or even young adults in this study, which was identified *in* the study as an essential part of developing an effective communication strategy for youth. Similarly, though agency is a key theme discovered in the data, future research should consider bringing in parents' perspectives on the issues and feasibility of proposed directions, as they are still gatekeepers for their children's behavior, and may have the capacity to observe their child's behavior more closely and more longitudinally than anyone else; parents were not consulted in this study because of both scope and a concern for the potentially sensitive nature of of conversations with parents about their child's behavior. Lastly, on the topic of age, some of the interviewees were speaking more from an experience of working with young adults, older in age than the Sleepazoid study works with, like older teens and college students. This was taken into account when recommending future courses of action, but nonetheless limits the internal validity of this work.

Even so, this study is a much needed exploration of experts' opinions of best practices in mindfulness and media interventions for youth; very little other literature exists querying experts on what they've learned from engaging youth in these areas. The fact that there is strong consensus across SMEs and across areas of expertise all pointing to the themes discussed indeed suggests they are indeed key components of an effective communications strategy, if not the entire picture. Though snowball sampling did lead to more perspective from individuals in similar circles, only individuals with a different professional background than the recommending individual were followed up with for an interview. Also, while those interviewed were overwhelmingly white and with high educational attainment, the populations they had worked with in their research and professional life was quite diverse racially, ethnically, and

socioeconomically. In these ways, this study is “good enough” to be immensely helpful to future development of mindfulness-based media interventions, despite its limitations.

For the Sleepazoid intervention, the next steps are to begin to implement what recommendations are deemed helpful and possible over the next few months and years. Because the recommendations are extensive, it is understood that many may not be incorporated in future iterations of the intervention. Future efforts in media harm reduction are encouraged to incorporate some of these findings in their work as well, either as a foundation to pilot-test hypotheses, or in an effort to quantify the relative importance of the themes discussed in this paper. Future qualitative work is encouraged to build on the shortcomings of this study, by interviewing more individuals, more racially and ethnically diverse individuals, and include youth. Future work could also clarify the best practices for motivating middle-schoolers with an agency and personal goals-based approach, much of which falls under a Motivational Interviewing paradigm, and report on best practices for helping kids work ***with*** their peers to move towards healthier media behaviors.

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Appendix A — Initial Codebook

Primary Code	Secondary Code	Theoretical Origins
Self Efficacy		Social Cognitive Theory (SCT)
Outcome Expectations		SCT
	Socially Beneficial Expectations of Use	SCT
	Perceived Severity of Consequence	Health Belief Model
	Risk/Reward Judgment	SCT, “Integrated Model of Adolescent Risk Behavior”
Knowledge/Health Literacy		SCT
Observational Learning		SCT
Facilitation		SCT
Cognitive Rehearsal		SCT
Mindless Use Degrades Gratification		Uses & Gratification Theory (UGT)
Awareness of Triggers		Mindfulness Based Intervention Literature (MBI), UGT
	“30 Minute Ick Factor”	UGT
Quality of Awareness as Key		MBI
More Practice —> More Benefit		MBI
Individual Goals Should Be Centered		Motivational Interviewing
Digital Mediums Effective for Youth Intervention		Digital Intervention Literature (DI)
Developing with Kids Is Important		DI

Appendix B — Final Codebook, with Exemplary Quotes

Primary Code	Secondary Code	Exemplary Quotes
"Contemplative" Approach Throughout the Day		"We're not trying to be the most mindful person ever … We're just trying to embody mindfulness, so you have these reminders, especially when you realize you've drifted … What happens if you just *be*? What happens if you're just here, and watch things unfold? Just see what happens. It's to try to get people grounded in that mindset." — S10
	Bringing Mindfulness to Everyday Activities	"They relate to that — they know when they put on a great piece of music, or they're doing something out in nature, whether it be surf[ing], rollerskating, they feel *alive*, they know what that is." — S2
	Quality of Awareness — Noticing Rather than Being an Experience	"When you're ruminating on something, recognize, 'This is a thought … It's not *my* thought … it doesn't represent me … And there's space in my experience to hold this thought …'" — S4
	Recognize and Savor Enjoyment (of Media and other Activities)	"Say you enjoy walking, or exercise — how do you make that activity more mindful? … young people put a lot of pressure on themselves … they have the awareness around mental health, but how can we shift that to action? … Rather than treat it as a separate thing, how do we bundle it with something they enjoy?" — S6
	Questioning Motives for My Own Behavior	"… Keep a log of certain things you do while online. And then at the end of that time, I want you to go back and read through what you've noticed and try to answer certain questions … Why did you do what you did, and not something else? What other things were possible?" S4
Knowledge/ Health Literacy		"… kids *love* learning about the neurobiology of what's going on … explaining to kids — here's your brain, here's how it functions, here's why you can't stop, here's where you lose control." S9 " … that type of education would be very useful …to understand how the TikTok algorithm is feeding you things to keep you engaged, not designed with your wellbeing in mind." S8
Important Message: It's Not Their Fault		"They [kids] need to actually understand that a lot of this [lack of sleep] is happening because of biological changes … so a lot of it is biological … within the system we have, we need to recognize it's simply not cut out for teenagers' sleep …"S7

Primary Code	Secondary Code	Exemplary Quotes
Awareness of Triggers (for Use & Ending Use)		" … When you realize that you've gone down this rabbit hole … nothing major[ly] bad is happening … it just doesn't make you feel like you've used your time well." S8
Centering Goal of Individual Kids		"We were doing outcome expectations where we set a certain goal … we would say what does a one, a five, a ten look like for you? What's it look like for your parent? It made kids frustrated at the beginning — they were just like, 'I know what this looks like, I don't need my mom to tell me.' So I stopped asked the parents as much …" S5
	Instant Gratification Trumps Long Term Appeals	"It's really hard to ask anybody, but especially teens, to weigh the rewards they're currently anticipating versus an amorphous long term outcome …" S8
	Self Efficacy	"A lot of times people get caught up in, 'Am I doing it right or wrong?' We really try to get across the message that there really isn't a wrong way to practice the meditation, it's just about creating that space to where you can bring your attention to these things." S10
Communication Strategy Development With Kids		"What we're doing right now with teenagers is forming our own advisory council … to ensure that it's [our content] hitting the mark." S6
Dressing Communication Up in Whatever Language Kids Resonate With		"I don't even use the word mindfulness … in my work, because I find that especially with teenagers, some like it but some do not. I dress it up in whatever language they can understand." S7
Digital Mediums Effective for Youth Intervention		"Part of what makes gamification efforts successful … is the social component, and the social component is much easier to facilitate in a networked environment, so yeah, something that's online at least is useful." S8
Peer Group/ Social Unit Key for Intervention		"What that suggests to me is that the message has to go to the peer group. It's hard enough to do this alone if you're a mature adult. But what in the world are you going to do if your sense of identity and wellbeing and status depends on the group that you're part of?" S4
Positive Social Outcome Expectations (of Use)		"An additional hour they spend on sleep they're not spending with their friends." S7 " … [their] best friends are online." S9
Specific Strategy to Revisit		N/A

Primary Code	Secondary Code	Exemplary Quotes
	Movement Practice is Essential for Kids	"It's so easy to get caught up in your mind, and for a lot of teens that's already a problem, so it can be more anxiety producing …. We would do a lot of embodied [moving meditation] type of stuff …" S3
Observational Learning		
	Kids' Relationship to Media Largely Determined by Parents	"… approaches to parenting transfer into the digital realm, and that really affects how kids enter into relationships with technology …" S8
	Interventionist Exemplifying (Verbally & Nonverbally) the Practice	"There's no advice … or judgment at all. It's just sitting quietly and witnessing … In the classes [I've worked in] I don't think [many of the kids] have had the blessing of someone's attention, without judgment or interruption. Just spaciously and quietly listening …" S2
	Recognizing Parents' Impact on Kids (to Kids & Parents)	"… people in their house don't have dinner until late, don't wind down until late, there's family arguments late … sometimes parents can have unhelpful beliefs about sleep that influence sleep as well. That's more social and parenting related …" S7

Appendix C — A List of Practices Recommended by Interviewees and Others Consulted

Strategy Name	Category	Explanation
“Smartphone Dis/ Connect” Exercise (by Daniel Hirschberg)	Specific, Multisensory Exercise	In this exercise, students are guided to put their phone in front of them, with all notifications and sound turned on, and, after being guided to settle into their bodily experience, notice what happens as their phone vibrates, dings, and rings.
Eating Meditation	Specific, Multisensory Exercise	There are many classic examples of eating meditations, including MBSR’s “Raisin” meditation. All will include noticing changes in the body and craving experiences and deconstructing the eating experience.
David Levy’s “Mindful Tech” Reflections	Reflective Exercise or Partner Exercise	Primarily intended for older adolescents and young adults, these exercises ask students to keep a log of what they’re doing while using media (ie phone or computer, video game or social media) and when, and then asks critical questions about why they may be motivated to engage in these behaviors, or what experience they may be having during use. It can also be done in conversation with another student (or in theory, an interventionist).
Noticing/imagining how good it feels to sleep	Reflective Exercise & Embodiment Practice	This asks kids to imagine what an amazing night’s sleep feels like (in their body), and really connect to that feeling often as a motivation. (This is congruent with the existing practices of *noticing* in the Sleepazoid intervention; most contemplative traditions have practices for both noticing things as they are and cultivating desired states of being)
Gingerbread-person Trace	Reflective Exercise & Embodiment Practice	Asks kids to fill in a gingerbread-person, using color, in the places that they feel certain emotional experiences (color and location help to identify “states” for them)
Creating Strong Physical Sensations in Order to Sense a Change	Embodiment Practice	S3 gives the example of having kids clap their hands together strongly and feel the dissipation of sensation in different places. Other examples might include shouting to better hear the quiet, or jumping up and down before coming to rest, in order to feel the heart pumping.

Strategy Name	Category	Explanation
Physical Balancing Acts with Focus on Breath or Body	Embodiment Practice	Kids are encouraged to become more aware of how frequently their mind wanders by engaging in exercises like focusing on the breath for two or three minutes while their arm is overhead, or on one foot, or while balancing something in their hand.
Walking and Gentle Yoga/ Tai Chi-Like Practices	Embodiment Practice	N/A
Have Kids Express in Movement What Their Body Feels Like	Embodiment Practice	This is exactly what it sounds like, and is a particularly useful strategy if kids are having trouble putting words to their experience. Even if they aren't, allowing them to "act" out their feeling may more effectively bring it into their awareness than verbalizing.
Embodiment of ignore, avoid, resist, and accept	Embodiment Practice/ Partner Exercise	Two partners work together to externalize and dramatize what might be going on internally with them with a current stressor; one person acts as the stressor (embodied) and the other acts as themself, reacting to the stressor by ignoring, avoiding, resisting, or accepting the stressor.
"X-Ray" Hands	Skillful Means for Better Attention	Moving hand over areas of the body, imagining that the hand can feel *into* the body area.
Get up and do *anything* else	Skillful Means for Better Attention	S7 posits that it's not often feasible to ask kids to turn off their media and go to sleep. More effective is to ask them to get up and do anything else, like getting a glass of water, which then makes it easier to move on.
"Thought-hunting"	Skillful Means for Better Attention	A suggestion by S1 to frame meditation this way for kids, as it makes it fun and engaging. It also dereifies thoughts, so that they are not bad, they are only a function of the brain.
Practicing mindful awareness with things you love	Skillful Means for Better Attention	This gives another opportunity for kids to practice the skill of checking in with their body, at a time when it's easy.

Strategy Name	Category	Explanation
Triune Brain/Flip Your Lid Model	Framing Mindfulness Practices	This is one now widely debunked method of talking about the functioning of the autonomic nervous system and behavior. While it is not completely scientifically accurate, it presents an understandable model for kids to feel the difference between feeling at rest and feeling aroused, and connects that to what's going on in their brain, which was recommended by multiple interviewees.
Many Selves/Russian Doll	Framing Mindfulness Practices	This was an incredibly enticing way of framing practice from S1, especially given Sleepazoid's focus on interoceptive awareness. This model conceptualizes many different layers of each individual, all of which we can tap into — they can become aware of their physical body, their emotional body, their thought body (progressing more internally each time) and ultimately, their innermost "wisdom" body which has the ability to witness and experience each of the other bodies. S1 talked about kids likening this to their "inner Yoda." This gives kids the opportunity to create some separation from their "loudest" or most immediate "self," which might include the one that craves media usage.
Emotion Ruler and Wheel	Framing Mindfulness Practices	These are two visual illustrations available on any search engine of emotions that make emotions more clear and simple, and serve as a kind of educational tool about emotions. S6 suggested that kids are ready to learn and practice in this area, but often don't yet have the vocabulary; both of these make it simpler for kids to point and understand "where" they may be, and within the context of Sleepazoid, what gets them to different places.
Accountability Buddy	Sticking with It/Getting Engagement	Participants in Sleepazoid could be paired to work with another, or check in with another each week on their progress. This comes from multiple interviews.

Strategy Name	Category	Explanation
Posting Reminders of Practice Suggestions and Commitments, and Motivations	Sticking with It/Getting Engagement	Participants could work with interventionists to physically create materials, as well as setting digital reminders, that may remind them how they *want* to be. Examples include something physical like drawing a sign to go on the refrigerator or the door of their room or a note for their computer, or something digital like a reminder on their phone (or multiple) at certain vulnerable times a day.
Creating an Internal Social Network of Kids Going Through the Intervention	Sticking with It/Getting Engagement	This was suggested plainly by at least two interviewees, and indirectly by more. It was one of the strongest, most frequent recommendations across interviews. This could be digital or it could be an in-person class.
Interventionist as an Embodiment of the Practice	Sticking with It/Getting Engagement	This also came up in different ways in multiple interviews. It was highly recommended by multiple interventionists that if mindfulness-based practices are the center of the work, the interventionist should be a living example of it, and well experienced in it.

Appendix D: Concealed List of Areas Represented by SMEs Interviewed:

Subject Number	Expertise; Current Role; Past Relevant Roles
S1	Mindfulness for kids; psychotherapist working primarily with kids and using mindfulness-based strategies as the foundation for their work.
S2	Mindfulness for kids; Mindfulness author and teacher focused on mindfulness for children.
S3	Mindfulness-Based Interventions for Kids. Researcher at a large public university and renowned center for contemplative researcher; former schoolteacher in relevant age-range for Sleepazoid, who also taught mindfulness practices; long time meditation practitioner.
S4	Personal media usage. Researcher and professor at a large public university studying mindfulness based intervention for media usage; long time meditation practitioner.
S5	Sleepazoid; Interventionist of version one of the Sleepazoid intervention.
S6	Digital delivery of mindfulness, mindfulness for adolescents; head of social impact unit of a large mindfulness-app company, working with teens to develop ideal programming.
S7	Sleep medicine and policy, especially in adolescents; Clinical psychologist and professor at a medical school in another country, studying sleep on a policy-level and treating individuals with insomnia.
S8	Media usage, especially in adolescents; Professor at a large public university researching media usage in adolescents.
S9	Media addiction and the treatment of it; clinical psychologist running an inpatient media addiction recovery center.
S10	Sleep medicine, mindfulness based sleep interventions; Md., currently adjunct professor and researcher in a medical school and medical advisor to a sleep startup.

Appendix E — A Visual Diagram of the Thematic Analysis