ActionPoint: An App to Combat Cyberbullying by Strengthening Parent-Teen Relationships

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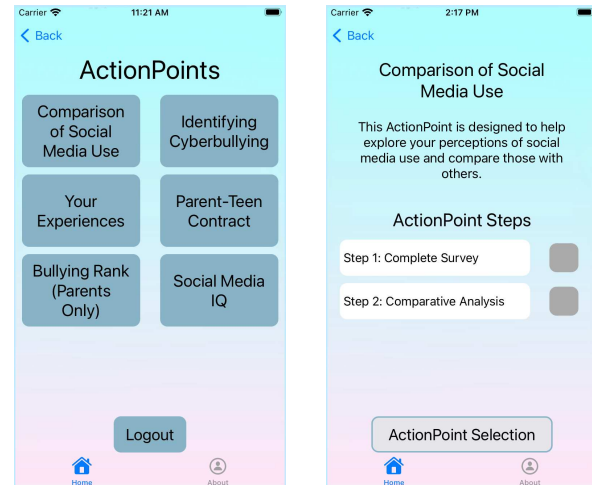Chicago, IL, USA
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Abstract—Due to the increased prevalence of cyberbullying and the detrimental impact it can have on adolescents, there is a critical need for tools to help combat cyberbullying. This paper introduces the ActionPoint app, a mobile application based on empirical work highlighting the importance of strong parent-teen relationships for reducing cyberbullying risk. The app is designed to help families improve their communication skills, set healthy boundaries for social media use, identify instances of cyberbullying and cyberbullying risk, and, ultimately, decrease the negative outcomes associated with cyberbullying. The app guides parents and teens through a series of interactive modules that engage them in evidence-based activities that promote better understanding of cyberbullying risks and healthy online behaviors. In this paper, we describe the app design, the psychology research supporting the design of each module, the architecture and implementation details, and crucial paths to extend the app.

Index Terms—cyberbullying, anti-bullying tools, social networks, social media, parents, teens, mobile applications

(a) Main Controller Menu   (b) Overview Menu

Fig. 1. In the menu, parents and teens choose modules to complete.

I. INTRODUCTION

Cyberbullying, sending intentionally harmful messages to others via electronic media [1], is a growing problem, in large part due to the prevalence of social media and mobile device use in people's daily lives. Given the robust link between cyberbullying and depression, substance abuse, self-harm and suicide [1], cyberbullying has become a major concern for many parents [2]. One promising approach for combatting cyberbullying involves technological tools for parents, schools, and communities, including websites and mobile applications with anti-bullying functions.

In this paper, we introduce one such tool—an innovative mobile application called ActionPoint (available in the App Store)—that seeks to promote conversations between parents and teens about social media use and healthy online interactions, and helps them identify and prevent instances of cyberbullying. The ActionPoint app (Fig. 1) draws on empirical findings from a range of social science disciplines that point to the importance of strong relationships and open lines of communication between parents and teens for reducing cyberbullying risk. The paper's main contributions are:

- The introduction of an app centered around activities to strengthen parent-teen communication.
- The first effort, to our knowledge, to translate empirical research on parent-teen relationships into an app for families that also helps parents navigate and understand relevant research findings.
- A description of prior research that informs the design of each ActionPoint module.

II. Background and Previous Work

Common features of existing anti-bullying apps include parents' ability to monitor and/or restrict their teen's online activity [3], the provision of educational resources about bullying [4], and tools reporting instances of bullying [5]. Other apps encourage teens to "rethink" the content of their electronic communications [6] or think about how they might respond to instances of cyberbullying [7]. Notably, these apps are geared primarily toward *either* parents or teens, but not both.

The ActionPoint app is based on empirical work that elucidates the importance of open and effective communication within a household regarding healthy social media use. For instance, prior research shows that teens seldom communicate with their parents about negative online interactions they experience [8]. There is also considerable research linking poorer relationship quality between parents and teens with teens' experiences of cyberbullying victimization and problematic internet use [9]. To illustrate, teens who are cyberbullied are more likely to report difficulty talking with parents about issues bothering them and feel that their parents don't understand their problems [9]. In fact, the quality of the relationship between parents and teens has been found to more consistently predict teens' cyberbullying experiences than variables such as family composition and socioeconomic status [10]. Together, these findings highlight the vital role of within-family communication in reducing cyberbullying impact and risk, and thus motivated the development of the ActionPoint app.

III. Design and Interface

When starting the ActionPoint app for the first time, parents are prompted to create an account with an email that can be linked to multiple children's accounts. Teens are prompted to register for an account, which is then linked to a parent's account via the parent's email. The app includes a privacy policy stating that it collects information to enable core functionality, that no personal identifying information is collected or shared, and that only aggregated data will be shared in research reports.

After initial set up, the parent and teen work together to complete a series of ActionPoint modules— guided activities that assess parents' and teens' beliefs about and experiences with social media and encourage open communication— through the app. As shown in Fig. 1a, the app includes six modules: *Comparison of Social Media Use*; *Identifying Cyberbullying*; *Your Experiences*; *Parent-Teen Contract*; *Bullying Rank*; and *Social Media IQ*. In each ActionPoint module, users first see an overview screen explaining the module's purpose and empirical basis, along with steps for completion. As steps are completed, status boxes turn from gray to green. A module is marked complete when all boxes are green. Parents and teens can view each other's responses

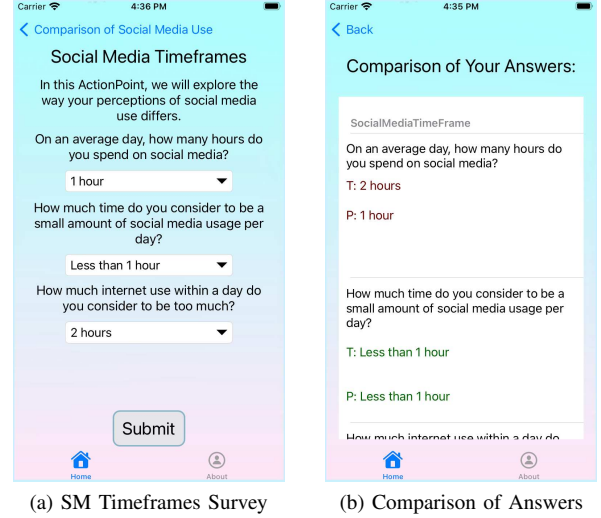(a) SM Timeframes Survey   (b) Comparison of Answers

Fig. 2. Views of the *Comparison of Social Media Use* module. Parents and teens compare their actual social media use timeframes as well as their perceptions about appropriate timeframes.

only after submission, and teens have the option to keep their responses in certain modules confidential (e.g., the *Your Experiences* module). Given the dynamic nature of social media and teens' ongoing socioemotional development, parents and teens can revisit and update any previously completed module.

A. Comparison of Social Media Use

A relatively weak link has been found between parents' monitoring of a teen's technology use and cyberbullying risk [1], however, not all mediation strategies appear to be equally effective. Whereas restrictive approaches (where parents unilaterally control a teen's technology use) tend to be uncorrelated with teens' cyberbullying experiences [11], mediation strategies where parents and teens engage in open conversations about technology use and jointly establish family rules have been linked with decreased cyberbullying risk [12]. Additionally, although rules surrounding social media and technology use may exist within a family, there is often a disconnect between parents' and teens' perceptions of what these rules are [13].

Drawing on these findings, the *Comparison of Social Media Use* module (Fig. 2) is designed to assess: (a) parents' and teens' *current* social media use and understanding of any existing technology and social media rules within the household; and (b) parents' and teens' *perceptions* of the appropriate types and degrees of social media use within the family. First, the parent and teen independently complete the same surveys (Fig. 2a), which collectively assess the parents' and teens' current behaviors and beliefs about ideal types and degrees of social media use, their understanding of any family rules limiting social media or technology use, and
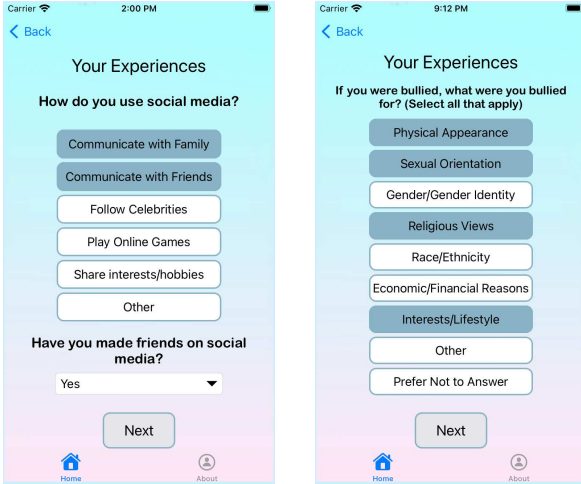
(a) Cyberbullying Experiences Survey   (b) Bullying Topic Assessment

Fig. 3. Views of the *Your Experiences* module. This module helps teens and parents share and reflect on their social media experiences.

their beliefs about *ideal* uses and limitations. Next, the parent and teen jointly view and compare their survey results (Fig. 2b). The comparison provides a springboard for strengthening the understanding of current social media use behaviors and restrictions in the family, identifying areas of overlap and discrepancy in this understanding, and adopting a collaborative approach to family technology and social media use guidelines.

B. Your Experiences

Rather than disregarding teens' online presence, research calls for a greater focus on providing parents, teens, and the tech industry with recommendations for healthier social media use, e.g., [14]. Indeed, teens' social media use can facilitate well-being by deepening friendships and broadening exposure to diversity [15]. Research also indicates that the extent to which social media use predicts better or poorer psychological well-being depends on how and why an individual uses social media [16].

The *Your Experiences* module (Fig. 3) helps teens and parents assess and discuss their (positive and negative) social media experiences and motives. First, parents and teens complete a survey asking which social media platforms they use, how they use social media (e.g., to communicate with friends, follow celebrities), and the extent to which their prior experiences have been positive or negative. The teen additionally completes a survey about prior cyberbullying experiences on social media. Next, parents and teens view a comparison of their responses highlighting similarities and differences in how they each use social media. After viewing the comparison, they are encouraged to discuss how

and why they use social media and their positive and negative experiences with each other.

C. Identifying Cyberbullying

Given variability in how individuals (and researchers) define cyberbullying [17], it may be difficult for parents and teens to recognize and acknowledge when it is happening. Building on prior research suggesting that educational and intervention efforts can improve parents' ability to recognize cyberbullying [18], the *Identifying Cyberbullying* module helps parents and teens gain greater awareness of the forms that cyberbullying can take and more easily recognize when it is occurring. The module measures parents' and teens' ability to identify cyberbullying using a variety of scenario-based questions. First, parents and teens are presented with 15 scenarios involving hypothetical online interactions. The parent and teen independently indicate whether they think each scenario constitutes cyberbullying. Next, they compare their assessments and discuss why or why not they perceived a particular scenario to be cyberbullying. Although the immediate goals of these conversations are to facilitate an open dialogue about cyberbullying and increase parents' and teens' collective awareness of various forms of cyberbullying, a longer-term goal is to increase their ability to recognize and respond to cyberbullying in the future.

D. Parent-Teen Contract

Many parents struggle with how to protect their teen from online harms while fostering the teen's autonomy and respecting their need for privacy. Moreover, the efficacy of household rules may be undermined by incongruent perceptions of what the rules are [19] and inconsistency in parents' enforcement of the rules [20]. Inconsistency in parental mediation of media use has, for instance, been linked with teens' greater social media use and elevated cyberbullying risk [20]. To encourage a collaborative approach for establishing and maintaining household guidelines, we draw on tools for reducing risky driving [21] and alcohol use [22] among teens: a parent-teen "contract" or agreement.

The *Parent-Teen Contract* module guides parents and teens through the steps to create an interactive contract that establishes clear expectations for social media and technology use, online behavior, and open communication within the family. First, the teen and the parent discuss the terms of the contract. Potential components of the contract include degree and type of parental involvement in teens' media use, teens' access to social media and technology, and pledges surrounding open communication and respecting of boundaries. For example, parents may include a pledge to remain positively involved in their teen's online activities; teens may pledge to talk to their parent about cyberbullying they

encounter. Once parents and teens have jointly decided on the terms of their contract, they review their pledges, sign the contract, and set a date to revisit the terms.

E. Bullying Rank

Cyberbullying among youth is associated with depression, anxiety, behavioral issues, substance use, increased internet use, and prior involvement in instances of bullying [23]. The findings for demographic risk factors, including age, gender, and race, are more nuanced. For example, there is some evidence of a curvilinear relation between age and cyberbullying, with the highest risk during mid-adolescence [1], however, others' have found that gender differences in cyberbullying vary depending on age, with girls more likely (than boys) to cyberbully others during early to mid-adolescence and boys more likely to cyberbully others in later adolescence [24]. Finally, prior research has found that gender and sexual minorities experience particularly high rates of cyberbullying [25].

The *Bullying Rank* module provides parents with information about their teen's relative cyberbullying risk. First, the parent completes a survey assessing a number of factors that may increase their teen's vulnerability to cyberbullying, including the teen's age, race, gender, sexual orientation (if known by the parent), prior bullying history, mental health history, behavioral or disciplinary problems, and whether the teen recently moved to a new neighborhood/school [1]. Although the survey is completed by the parent, we expect that most questions would be answered similarly by the parent and teen. The module then derives the teen's Bullying Rank, which can range from 0 (no risk) to 100 (high risk)—by normalizing the sum of survey response weights and converting this value to a percentage—using an algorithm based on weighted correlations obtained from meta-analyses of cyberbullying studies [1] [26].

F. Social Media IQ

Given the rapid evolution of social media, staying up-to-date with the unique functions, privacy settings, and terminology of various platforms can be difficult for parents. Prior research has identified a gap in the technical knowledge of teens and parents that may prevent parents from adopting an active role in their teen's social media use [27] and decrease teens' likelihood of initiating conversations about social media experiences. Building on these findings and research pointing to the growing importance of social media literacy [28], we designed the *Social Media IQ* module.

In this module, teens first quiz their parents on a chosen platform's features and then adopt an active role in expanding their parents' social media knowledge by reviewing the quiz results with the parent. This process aims to foster discussions about platforms and
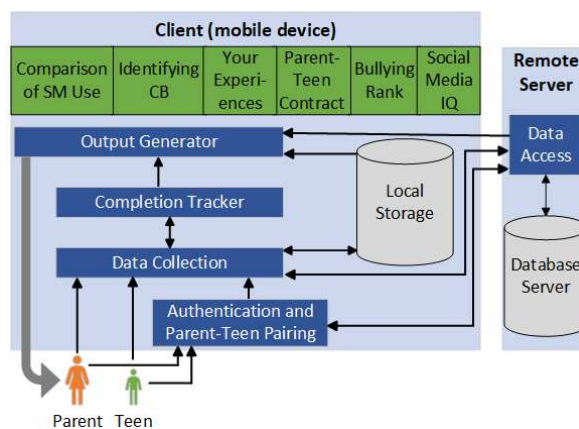

Fig. 4. ActionPoint Architecture

platform-specific features with which the parent may be unfamiliar, empower teens to improve their parents' social media literacy, and strengthen communication about teens' social media experiences.

IV. IMPLEMENTATION

The ActionPoint app framework (Fig. 4) consists of two main components: a mobile device client and a remote cloud-based server. The client component was implemented in Swift, Apple's programming language, for iOS devices. After authentication, both parents and teens progress through modules by entering responses via in-app surveys, handled by the Data Collection and Completion Tracker sub-components. The Completion Tracker ensures parents and teens proceed together by blocking progress until both have provided necessary data, stored both locally and remotely for sync. Once data are complete, it triggers the Output Generator for result comparison. The system uses a PHP-based Data Access sub-component and a SQL cloud database for storing responses. Each module scene uses an iOS Storyboard for smooth view transitions, with the app design emphasizing accessibility through large titles, dark borders, and rounded buttons.

V. FUTURE DIRECTIONS

Next, we highlight a few crucial future directions for extending, improving, and evaluating the app. For instance, in the current version of the app, modules can be repeated, but there is no way to assess the app's long-term impact on parent-teen communication. An enhancement could include interfaces that allow parents and teens to see how their perceptions of social media use and cyberbullying have evolved. A related future direction involves measuring the impact of the app on cyberbullying outcomes. This could, for example, be facilitated with the development of a module that uses periodic surveys and potential changes in a teen's

Bullying Rank to assess the impact of the app on cyberbullying risk and actual cyberbullying experiences.

Arguably, the most pressing next step will be to assess the usability and effectiveness of the ActionPoint app through multiple evaluation frameworks involving parents and teens. We plan to conduct focus groups and online surveys to obtain feedback about the app's usability, user interactions, and potential challenges and outcomes associated with the use of the app within families. Through a combination of pre-post test use surveys and qualitative interviews, in particular, we hope to gain a better understanding of parents' and teens' evaluations of the app.

VI. Conclusions

Cyberbullying is a major issue facing teens that has been linked with depression, substance abuse, and risk of self-harm. The detrimental impact of cyberbullying underscores the need for tools to help combat it. This paper introduces ActionPoint, an innovative app that engages parents and teens in evidence-based activities to help build stronger family communication, set healthy boundaries for social media use, identify instances of cyberbullying and cyberbullying risk, and, ultimately, decrease the negative outcomes associated with cyberbullying. A vital goal in developing the ActionPoint app was to facilitate ongoing efforts to study mechanisms that help improve parent-teen relationships and reduce cyberbullying.

Acknowledgments

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