Guest editors' commentary

Electronic Media, Violence, and Adolescents: An Emerging Public Health Problem

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Abstract   Adolescents' access to and use of new media technology (e.g., cell phone, personal data assistant, computer for Internet access) are on the rise, and this explosion of technology brings with it potential benefits and risks. Attention is growing about the risk of adolescents to become victims of aggression perpetrated by peers with new technology. In September 2006, the Centers for Disease Control and Prevention convened a panel of experts in technology and youth aggression to examine this specific risk. This special issue of the *Journal of Adolescent Health* presents the data and recommendations for future directions discussed at the meeting. The articles in the *Journal* support the argument that electronic aggression is an emerging public health problem in need of additional prevalence and etiological research to support the development and evaluation of effective prevention programs. © 2007 Society for Adolescent Medicine. All rights reserved.

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Over 80% of adolescents own at least one form of new media technology (e.g., cell phone, personal data assistant, computer for Internet access), and they are using this technology with increasing frequency to text and instant message, e-mail, blog, and access social networking Web sites [1,2]. The explosion of technology and its use by adolescents has many potential benefits. This technology allows adolescents to talk to people worldwide and to more easily and regularly communicate with family and peers, which may translate into a stronger sense of safety and connectedness. The internet also provides opportunities for adolescents who have difficulty making friends (e.g., youth who are home schooled or socially anxious) to make rewarding social connections. Additionally, the growing accessibility of the Internet through cell phones and wireless computer access allows adolescents to quickly and easily increase their knowledge about a broad number of topics.

A potential risk of using these new forms of media technology is also starting to emerge. Specifically, increasing numbers of adolescents are becoming victims of aggression perpetrated by peers with this new technology [3]. Examples include adolescents creating Web sites or sending e-mail or text messages that are intended to embarrass or harass a peer and/or to threaten physical harm. This risk is gaining tremendous attention, and state and federal legislators and school officials are responding by passing, modifying, or enforcing laws. For example: school districts in Florida, South Carolina, Utah, and Oregon are creating new policies to deal with cyberbullying [4], New York City is now enforcing an existing law banning communication devices in school buildings [5], and Washington state recently passed a law requiring the inclusion of cyberbullying in school district harassment prevention policies [6].

Is this heightened alarm and attention justified? Are adolescents who use new forms of media technology vulnerable to victimization and/or to developing associated psychosocial problems? Is there a public health problem that is in need of focused prevention and intervention efforts? To begin to answer these questions and to provide guidance to educators, researchers and policymakers, the Centers for Disease Control and Prevention convened a panel of experts in technology and youth aggression in September 2006. This panel included representatives from

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research universities, a public school system, federal agencies, and nonprofit organizations. Panelists presented research about if, how, how often, and under what circumstances technology is used by young people to perpetrate aggression. Additionally, the panel examined situational and personal characteristics that make an adolescent more or less likely to be victimized or to perpetrate aggression via electronic media. This special issue of the *Journal of Adolescent Health* presents the data and recommendations for future directions discussed at the meeting.

The focus of the panel and of the articles in the *Journal* is on aggression perpetrated and experienced by adolescents through new forms of technology. Throughout the panel discussion, other issues such as the sexual solicitation of youth on the internet and the perpetration of violence against youth by adults were recognized as important topics but beyond the scope of the meeting. Additionally, the exposure of youth to extremely realistic violence through online and offline video games and the potential impact these experiences may have on adolescents' propensity to be aggressive were also topics briefly discussed but not focused on by the panelists. Although none of these important issues are a focus, all of them are briefly touched on by articles in this special issue.

The role new forms of technology may play in adolescent health is a relatively new field of investigation. However, Huesmann [7] provides an important reminder that decades of research on theory and the negative impact of what are now viewed as "traditional" forms of technology (e.g., television, movies, and video games) offer important insights into how new forms of technology may heighten aggressive tendencies or behavior. The technology conduit may be changing, but the influential processes (e.g., priming, activation and desensitization) may be the same. Research is needed about the association between such processes, evolving technology, and adolescent behavior to inform prevention and intervention approaches.

Although there is a consistent focus across the studies in the *Journal* on the use of new media technology to perpetrate violence against peers, there is tremendous variability in the conceptualization and measurement of what we broadly refer to here as electronic aggression (i.e., any type of harassment or bullying, including teasing, telling lies, making fun of, making rude or mean comments, spreading of rumors, or making threatening or aggressive comments, that occurs through e-mail, a chat room, instant messaging, a Web site, or text messaging). In addition, a variety of terms are used—electronic bullying, cyberbullying, internet bullying, internet harassment, and online harassment [8–12]. The forms of technology and aggression examined across the articles range from a narrow focus on lies told through e-mail and instant messaging to intentionally cause harm or discomfort [9] to a more inclusive assessment of rude or threatening comments, embarrassing rumors, and threats perpetrated through email, chat rooms, Web sites,

and cell phones [8,10–12]. Additionally, the time frame referenced in the assessment questions varies across the articles—in the past couple of months [8], last 6 months [10,12], since the beginning of the school year [9], in the last year [11]. The variety of terms used and the lack of a standardized operational definition make it extremely difficult to pool results and draw conclusions across the limited studies. This problem is further compounded by the lack of a gold standard to measure electronic aggression. These definitional and measurement impediments must be addressed for researchers to draw accurate conclusions about the incidence, prevalence, and risk and protective factors associated with electronic aggression.

To improve measurement in this area, results of several studies highlight factors to consider. Kowalski and Limber's [8] examination of the methods of electronic aggression underscores that all forms of media technology may not be used by adolescents with the same frequency. They found that both victims and perpetrators reported that electronic aggression was inflicted through instant messaging more frequently than through chat rooms, e-mail, and Web site postings. Ybarra et al's [10] data illustrate that the prevalence of different forms of aggression vary, with rude and mean comments from someone online occurring more frequently than online rumors or threats. In future studies, a series of questions assessing a variety of forms of electronic aggression (e.g., instant messaging, chat rooms, text messaging) would provide a more accurate picture of the scope, nature, and impact of electronic aggression.

Despite measurement variations, the studies in the *Journal* consistently indicate that adolescents who experience and perpetrate electronic aggression represent a minority of youth who use electronic media. Likely due in part to measurement differences, victimization estimates range from 9% to 34% of youth, and perpetration estimates range from 4% to 21% of adolescents [8–12]. Furthermore, Williams and Guerra [9] demonstrate that face-to-face verbal and physical aggression perpetrated by adolescents remain the most prevalent forms of aggression. A significantly smaller proportion of youth perpetrate aggression through online email or instant messaging.

Although the prevalence of electronic aggression is relatively low, the number of adolescent victims is growing. Wolak and colleagues [3] note that from 2000 to 2005 there was a 50% increase in the percentage of youth who were victims of online harassment (i.e., threats or other offensive behavior, not sexual solicitation, sent online to youth or posted online about youth for others to see). The articles in the *Journal* highlight that new media technologies are facilitating the development of a new group of adolescents who under traditional circumstances are not victimized by their peers as well as providing another conduit for perpetrators to continue to victimize youth who are already targets at school. Ybarra et al [10] report that only 23% of youth who are victims of electronic aggression also expe-

rience harassment at school. This finding suggests that for over two-thirds of harassment victims, their use of new forms of media technology created a vulnerability that they may not have typically experienced elsewhere. Ybarra et al [12] examine groups of adolescents who are victims and perpetrators of online aggression and online sexual solicitation. Depending upon the group, 68% to 97% of online aggression victims also experience offline relational aggression, and 24% to 76% also experience offline physical victimization.

In light of the infancy of the research on electronic aggression, most articles in the *Journal* draw upon the traditional school bullying literature. However, Wolak et al [11] raise an interesting question of whether we can equate school bullying with harassment perpetrated through electronic means, and in the course of their article, highlight several areas in need of consideration as this field moves forward. For instance, one of the elements researchers have identified as necessary for an experience to be considered bullying is the repetition of an aggressive experience [13,14]. The frequency of aggressive acts in traditional, face-to-face circumstances is easier to quantify than those perpetrated through electronic means. For a victim of an aggressive text message or internet posting, does the experience constitute one episode of aggression even if the victim rereads the message or repeatedly logs onto the Web site? If the message becomes widely disseminated, does it remain one incident of aggression or does it become a repeated act as the victim becomes aware the message is being viewed by more peers? If other peers join in and add to the blog or Web site, does the episode remain one act of aggression or become part of a cycle of repeated acts?

In addition to repetition, bullying includes an element of power imbalance between the perpetrator and victim [14]. Although the traditional influence of physical size, for example, does not play as strong a role in electronic aggression, and it may seem easy to tell youth to turn off a computer as a way to maintain power equality, there are several unique features of new technology that give a lot of power to youth who choose to perpetrate violence with it. For instance, new technology allows adolescents to mask their identity when they perpetrate aggression (e.g., send or post messages anonymously or under assumed or falsified identities). Two studies in the *Journal* report that many victims of electronic aggression do not know the identity of their perpetrator(s) [8,10]. The anonymity provided by new technology limits a victim from responding in a way that may ordinarily stop a peer's aggressive behavior or influence the probability of future acts, which provides an advantage to the perpetrator. Additionally, new technology allows victims to be attacked at anytime and in any place. Again, the advantage goes to the perpetrator.

Traditional school bullying and the new forms of aggression perpetrated through electronic means may or may not be similar enough to require different terminology and a

conceptualization framework. However, what is clear from research is that when youth are victimized by their peers either through traditional means or through electronic means, they experience psychosocial difficulties [10–12,15]. Several studies in the *Journal* demonstrate an association between electronic aggression victimization and a range of psychosocial difficulties and risk factors, including emotional distress, school conduct problems, weapon-carrying at school, low caregiver–adolescent connectedness, and sexual solicitation [10–12]. These findings suggest that there is an emerging public health issue and a group of adolescents in need of attention.

Although there appears to be some overlap between victimization at school and victimization perpetrated through electronic technology, consideration also must be given to the fact highlighted by Wolak and colleagues [11] that electronic aggression is sometimes perpetrated between adolescents who know each other solely from online contact. King et al [16] note that some of those online acquaintances may be members of gangs. King and colleagues discuss that the internet offers some of the same draws for gang members, such as social connections, as it does for other adolescents. However, of concern is that some online behavior by gang members that is growing in popularity could increase the propensity for violence by other youth, thereby increasing online and offline perpetration and victimization of youth.

As the field of research on electronic aggression grows, continued attention must be given to how some of the unique elements of new media technology may contribute to or compound the negative impact of victimization and increase the likelihood of perpetration. Attention is also needed to the individual and contextual factors that may influence perpetration via new media, such as anonymity, detachment, and power to inform the development of treatment and prevention strategies. Moreover, as noted previously, the use of different forms of technology to perpetrate aggression vary in prevalence, and different media may give rise to varying levels of distress. For instance, receiving aggressive text messages on a personal cell phone versus having messages posted in a very public way on a popular social networking site may prove to have different impacts and require different prevention and intervention services.

Although much of electronic aggression is likely perpetrated outside of school hours with personal communication devices rather than with school technology resources, there is a growing understanding that these external events negatively affect the functioning of students at school and the school environment. For instance, youth who are electronic aggression victims also experience higher rates of behavior problems at school than nonvictimized youth [10]. Furthermore, because youth spend most of their time at school, and schools are where most social connections are formed, it is logical to assume that when adolescents are victimized through electronic means, whether the perpetrator is known

or not, the assailants are likely schoolmates. Even though a strong empirical association between electronic aggression and schools has not been demonstrated to date, school systems are recognizing they have a role in understanding and addressing the emerging problem. Agatston et al [17] report on a series of focus groups conducted by a school system to create an understanding among administrators of the nature and scope of the problem and help them develop appropriate and effective prevention messages and policies for their students. This work illustrates an important recognition by educators of their role in prevention.

The increasing prevalence rate, the negative impact of electronic aggression on victims, and the association between electronic aggression and problems in the school setting suggest there is an emerging public health issue that needs to be addressed. Unfortunately, there is little empirical data about how to address this problem. Others have suggested that media literacy is a promising approach [18,19] because it trains adolescents to critically analyze media, and thus, may help to mediate the impact of violent media messages on subsequent aggression. Although media literacy has been effective in changing attitudes and behaviors of adolescents related to alcohol [20], eating disorders [21], and tobacco control [22], currently there are no primary or secondary prevention programs designed specifically to address electronic aggression that have been rigorously evaluated. Both the etiological and prevention research that are needed to fill this gap are challenged by the fluidity and constant evolution of technology; however, this formative research is critical to prevent the continued emergence of this new group of victims and to address resulting personal and institutional problems.

Although prevention programs specific to electronic aggression are lacking, the work and comments of several authors in the *Journal* highlight some of the processes and factors that should be considered in the development of such programs. For instance, the processes discussed by Huesmann [7] (e.g., priming, activation, desensitization) are important to consider as technology and perpetration of aggression evolves. Adolescents' increased exposure to violence, whether on television or as a victim or bystander on a social networking site, may activate these processes and contribute to an increased likelihood to become a perpetrator. The *Journal* focuses on the perpetration of violence through electronic means, and does not discuss how evolving technology has increased adolescents' access to violent movies and realistic and interactive video games. Attention to these other technological advances (e.g., use of the internet to play interactive video games and to view movies and video clips) and how these advances increase adolescents' exposure to realistic violence are important factors to consider in prevention programming. Exposure to high levels of aggression, whether through the internet or another venue, may increase the likelihood of aggressive behavior [18,23], and may require broad prevention strate-gies that address exposure to violence in face-to-face situations and electronically. Furthermore, Williams and Guerra [9] highlight that moral approval of bullying, perceived school climate, and peer support are significant contributing factors to the likelihood that an adolescent will perpetrate verbal and physical aggression as well as electronic aggression. All of this work underscores that what we have learned about how to prevent adolescents from becoming aggressive under other circumstances may be extremely useful in the development of prevention programs for electronic aggression.

The question remains: do we know enough at this juncture to provide any type of prevention guidance to youth, educators, parents, practitioners, and policymakers? Across the articles in the *Journal*, the authors agree stopping adolescents' access to and use of electronic media is not the answer. Additionally, Agatston and colleagues' [17] discussions with adolescents reinforce the comment made by several authors that sole reliance upon blocking or filtering software is insufficient to address this issue. New types of media are not regulated by any one agency, so adolescents, parents, schools, and technology-related businesses must work together to create a coordinated strategy that is flexible enough to evolve as technology and electronic aggression change. This effort should consider the utility of a coordinated-school health program model [24], which is already present in many schools and communities.

The articles in the *Journal* do suggest some actions for schools and families. Willard [25] proposes some reasonable precautions that a collaborative team of school officials and parents can take: develop a plan to address electronic aggression; regularly evaluate needs and effectiveness of the plan, practices, and policies; implement monitoring practices; educate students and teachers; and implement a plan to support the reporting of electronic aggression incidents and the actions taken by school staff and parents when incidents occur. Willard argues that schools have the legal authority and responsibility to take action, but points out that case law and empirically based programs are not available yet that clearly point out what concretely should be done. Worthen [19] further echoes these points by reviewing the role and constraints facing educators at different levels of the educational system as they attempt to address electronic aggression. Worthen also clearly asserts that schools have an important role in promoting a school environment that does not tolerate any form of aggression and in implementing effective programs as they become available. Additionally, King and colleagues [16,26] highlight that approximately 40% of adolescents report their parents do not impose rules around their Internet use and are unaware of what they do on the Internet; further, approximately a quarter of these adolescents admit their parents would be concerned if aware of what their child did on the Internet. These survey results suggest some reasonable precautions may include parents increasing their awareness and moni-

toring of their adolescents' use of new technology and increasing discussions with their adolescents about their awareness of and/or involvement in electronic aggression. Research on parental monitoring and offline aggression indicates significantly higher rates of aggression in youth who report very low parental monitoring compared to those who report very high parental monitoring [27], suggesting that parental monitoring is a strategy that may be effective for the prevention of electronic aggression.

Electronic media creates tremendous positive social and learning opportunities for adolescents, but as the articles in the *Journal* point out, new technology also comes with some degree of risk. With the development of new cell phones that are small enough to fit into young children's hands and that are designed to be visually attractive to a younger audience, more and younger children will become competent and frequent users of new technology. This growth will likely contribute to the continued increase of electronic aggression as an emerging public health problem. Accordingly, research needs to continue and be attentive to some of the issues raised in this special issue to gain a better understanding of electronic aggression prevalence, etiology, and prevention. As this field moves forward, it must be rapid and flexible enough to keep up with the evolving nature of technology, or it will be limited to knowledge, intervention strategies, and policies that are outdated and restricted in application potential.

Acknowledgments

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