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ROUNDTABLE

# New Media and Research: Considering Next Steps

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**Abstract** This is an edited transcript of a roundtable discussion that was held on January 3, 2011. Six experts in the fields of new media and sexuality education discussed the most recent developments in the field, the opportunities presented by new technologies, measurement and evaluation strategies, and the theories that can be used to shape research in the field.

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## Introduction

MG (Melissa Gilliam): The purpose of this roundtable is to think about digital media and youth and begin to discuss the current status of this field and some hopes for the future. It is clear that the technology is evolving—it is being implemented in many forms, and the research process by nature is slower and therefore lagging behind. So, we will spend some time discussing the state-of-the-art and the state-of-the-science. An important issue will be to discuss how to create quality research in this field including interventions and evaluations.

What is New Media?

MG: Deb Levine of ISIS, Kylene, and I had a recent conversation about the terminology; so, Kylene, do you want to just take a few minutes and define what we mean by new media?

Kylene Guse (KG): We use terms like new media and social media and even 2.0 technology interchangeably, and most of the time, everyone assumes to know what we're talking about. And as we were looking at articles, we found many sexual health programs that used CD-ROMs and DVDs, and we didn't think that necessarily meant digital media. We found a couple of definitions that we liked: one on the Health and Human Services website and one on aids.gov. I personally liked the definition from aids.gov that stated new media connects people with health care

providers, family, friends, and caregivers. New media is collaborative. And you can use new media to create new content, services, communities, and channels of communication that help you deliver information and services. So, we came up with a definition that new digital media is an interactive form of communication where the user can create, share, comment on, and interact. Popular forms of new digital media would include text messaging, social networks, RSS feeds, blogs, podcasts, online videos, wikis, and virtual worlds, to name a few.

Sheana Bull (SB): I think it's really helpful the way you've framed it; it remains broad, and I agree with something you said in the beginning: CD-ROMs and videos don't necessarily constitute new media, but if you've got a video on YouTube, that may. But I think what's most helpful for me is hearing you say that it is marked by things like interactivity and technology-based, with examples. And those examples are likely to evolve over time. Like today, we have social media through Facebook, for example, but we don't know the new next thing coming down the pike. We may have some good ideas, but they're not here yet. So, I'm for using a definition that allows us to understand the concepts of interactivity and technology but then leaves it open for adding new elements as they evolve and emerge.

KG: I think that word "interactivity" is a key element and "anytime, anywhere" access. Whereas, for example, a CD-ROM is something you'd have to get and put into your computer. Do you think this idea of "anytime, anywhere" would be part of the definition?

SB: I guess the only problem I have with "anytime, anywhere" is that there are still high limitations for access, given people's broadband availability and things like that, but I think the concept is important. Maybe it's more user-driven because "anytime, anywhere" for me evokes that the person who the technology is meant for or the program is meant for gets to choose when they interact with it. So, perhaps we're talking about user-driven access?

KG: That's exactly right. I think we're talking about the same thing.

MG: I also like the shareability definition. That takes it away from a CD-ROM model. The user is the person who's creating it and sharing it and owning it.

Susannah Allison (SA): I think I would definitely agree with the emphasis on the interactive piece to this. And I would agree, if we include "anyplace, anytime", it does seem to push the definition towards mobile technologies. I think at this point, it's nice to keep the definition broader and include access via desktops as well.

## What is State-of-the-Art in This Field?

MG: What is the state-of-the-art in this field? Are there some specific examples of important programs that people who are using digital media for sexuality education should know about?

SB: This is always kind of an interesting question for me. I see it in two ways. Really great, cool ideas that people are testing out and are really innovative very frequently don't map onto the evidence for what works. So, we've got this chronic problem in this field where the innovation is ahead of our research. I think we could talk about innovative ideas and then what we know, from the research world, has demonstrated effectiveness. So, in the first bin is a lot that we know is out there. There's a program, for example, called "ICYC: In Case You're Curious". It's very similar to the Sex Info program that Deb Levine and her colleagues in California did. Then, there are programs in North Carolina where people can use text messaging and either get a preprogrammed message if they text a number to a certain cell phone number, then they can get a response to things like, "what do you do if the condom broke?" or "where can I go for contraception?" Those are great ideas. We don't have a strong evidence base that they work for behavior change or increase access to care. We have a good sense that they may, but we haven't done the randomized controlled trials to show how effective they are or what they're more effective for. Another couple of examples: Deb Levine, John Santelli, and I are in the middle of finishing up a randomized controlled trial on Facebook. We don't know yet if it's effective. But basically, we are creating a Facebook site and getting networks of individuals to share information from the site around comprehensive sexual health information. It's something that we hope will work, but we don't have all the data collected to analyze it yet. We just finished up a project looking at using cell phones for HIV prevention messages, text messaging for African American male youths. And again, that shows promise, but we haven't looked at that in the form of a randomized controlled trial. And that was really more our standard text messages that are sent out on a preprogrammed basis. Then, there are the programs that are run out of places like Planned Parenthood and other Title X-funded family planning clinics where you can have access to a counselor via text message. It's like the hotline for HIV, sexually transmitted infection (STI), and pregnancy information; instead of through voice, it's done through text. Then, there are numerous kinds of technology-based initiatives that the CDC has put out there. Again, we simply don't know whether or not access to that information helps change reproductive health outcomes. So, I think, as you switch to the research side, some of the best evidence has been put out in a couple of meta-analyses by Seth Miller out of Kentucky. He looked at technology-based or computer-based—very broadly defined, so it could have been mobile, it could have been desktop, it could have been internet-based, or it could have been a CD-ROM type

of approach, where it's stored on a single machine or in a lab. He looked at nine studies and found collectively that studies that used computers and the internet to deliver sexual health information had the same or a similar level of effectiveness as face-to-face traditional programs in changing behaviors, like increasing condom use or increasing access to care or increasing contraceptive use. That's one of his meta-analyses. Then, the other, which he recently published, looked at the effectiveness of similar programs in addressing the antecedents to these behaviors. He asked whether they impact norms and attitudes towards sexual behavior. These studies focus on computer-based and internet-based programs. To my knowledge, we don't have anything yet that really demonstrates the efficacy of mobile phones or social media, and by this, I mean Facebook or the social networking sites to promote behavior change. So, that's where there's this disconnect. We know of several programs that are using those media, but we don't have the evidence yet.

SA: As Sheana stated, this field is so young from a research perspective. A lot of the data that are out there and have been published do talk about the feasibility and acceptability and uptake of some of these programs, but there's a real lack of actual behavioral outcome data. And that's for a number of reasons: one reason is that it's much more expensive to collect as you have to follow people over time and track individuals. But, there are a number of projects that are currently being evaluated that will give us some of that information. There are more data on using technology to collect assessment data. There is a lot more depth in that area. You can collect ecological momentary assessment data which can be really powerful with implications for sexual behavior, sexual risk, drug use, and alcohol use. I think we know a lot more about the validity and reliability of using newer forms of technology to collect assessment data than we do about using new technologies to deliver interventions.

John Santelli (JS): Another example comes from global health: we have a program in Ghana which is looking at how community health nurses can use "dumb phones"—not a high-end phone, but a phone with texting capability—to improve clinical care. I'm not quite sure we fully understand how some of these new technologies are going to change the quality of clinical care in this country or elsewhere. They're using it for clinical care and for demographic surveillance in a randomized design that should allow them to measure changes in maternal mortality and infant mortality. It tells me that there are a myriad potential applications; we haven't even thought of all the possible uses of interactive technologies.

MG: Another thing to consider are the programs around contraception and contraceptive adherence using text messaging after the visit to remind people to take a pill. We did a study with Web-based data collection using daily messages about pill use or ring use via email. In one study by Michelle Fox, she showed that a daily reminder didn't improve contraceptive use, and we saw that a daily reminder didn't seem to make the pill users take the pills any better; they didn't have better adherence compared to contraceptive ring users. But I think again, it illustrates that these are vehicles for research, they are vehicles for interventions and also vehicles for data gathering.

SB: I would just add that there is some evidence for increased adherence to medications for people who have HIV, using the internet, and again, pilot data for adherence that show some promise. I think we focused a lot initially on developing stand-alone technology-based interventions, but haven't really explored these hybrid approaches that really can think about how do we help clinicians do their job better and how do we help health care service systems improve their delivery systems. I think that's a whole area for exploration that really has a lot of promise because I think the health professional is someone who really does use the technology and wants to, so it's just for that future orientation focus.

MG: For example, internet kiosks are an example of other ways for people, who may not have access to smart phones or other forms of technology, to have places where it can be integrated into their lives, particularly in a healthcare setting.

SB: I'm working on a project with Michele Ybarra, who has her own consulting firm. We're developing and about to go into the field with a comprehensive sexuality education program that is internet-based and designed for secondary school students in Uganda. That's another example of something that's still in the oven. We don't know how well it works.

SA: Sheana mentioned adherence to medications. A couple of months ago, an article came out from Richard Lester and a group from Canada. Their research in Kenya found significant effects on viral load outcome with just a simple text message system. The effects were not huge, but they did find an impact. The Text to Change group works in different countries to increase HIV testing.[1] I believe that they found significant effects on behavior change in terms of uptake of HIV testing.

## Does Digital Media Offer a "New Frontier" or a Just a New Way of Presenting What We Already Do?

MG: Will we be able to do something different with sexuality education or health or behavior change, or does digital media offer a better way to do what we're already doing?

[1] http://www.texttochange.org/

SA: I think it will allow us to do both. It will allow us to be more cost-effective in delivering educational material that we know how to deliver face-to-face. I also think the interactive nature and the fact that, especially when we're talking about mobile devices and delivering interventions on mobile technology, it will let us go in another direction—the intervention is with that person. It's sort of like your therapist in your back pocket or your doctor in your back pocket. It allows the intervention to travel with the person in that context within which they may engage in risky behavior. I also think it increases the ability for collecting data on a more regular basis, and then adapting and targeting an intervention to really adapt to someone's behavior over time. I think some of the interventions we have now are targeted to individuals based on baseline data. But with new forms of technology, we can adapt interventions as individuals' behavior changes over time.

MG: Digital media changes the model away from having an adult, who is the person who's designing, and with some formative research, determining what questions to ask and creating content. It gives the person who is being studied, or the behavior that's being studied, an opportunity to be part of the design and creation of the content for the intervention. The intervention not only can mutate during the process, but also it can be informed by the people who are being affected.

JS: I think, on the methodological side, it enhances the fidelity of delivery without actually interrupting the ability to innovate. With certain technologies, you know exactly what got delivered because there's a permanent record of the communications. A big problem with health educators or people-delivered interventions is that they customize them in ways that maybe you don't want them to be customized. So, there's a methodological advantage. Further, the US is a country where sex education is not enormously popular anymore. It's well documented in trend studies that we're actually teaching less to kids today than we used to, around both sexuality and contraception. There are a variety of cultural constraints to delivering sex education in schools today. I think the internet and new technologies offer enormous promise for bypassing some of the cultural barriers to dealing with basic information and useful prevention information. Particularly, when we can tie the information to, say medical care, which is perhaps better accepted. People will still go to their doctor for a concern about sexual functioning whereas they're not sure that they want that talked about in school. If we figure out the right way to do this and we can deliver to scale, we might be able to make a much bigger difference than do the current efforts that are being delivered in public schools.

SA: You have reminded me about a study that the National Institutes of Mental Health was supporting—developing an intervention that's web-based. It is a developmentally appropriate intervention. By asking a series of questions, it tailors the intervention based on the youth's responses so it is appropriate to that student.[2] It takes into account the wide range of sexual experience that kids in middle school have. You're exposing all kids to the same basic information, but then, some of the kids who have experience or intend to become sexually active get more in-depth information whereas the kids who still think boys are gross and can't even imagine sex are still getting good basic information. This type of intervention can be developmentally tailored in a way that the classroom doesn't allow for.

JS: Tailoring seems to make sense in other behavioral change settings, but it certainly helps with parental acceptance. One shouldn't ignore that. We need to have parents as allies in this fight to make teens healthier.

SB: I agree with everything that has been said about the future orientation. I wanted to underscore what John was talking about regarding standardization, but also, I think Susannah mentioned this too—reach. There is an enormous potential to think about the impact of digital media. If we have brief interventions that are delivered on a mobile device, let's say, and they have a small effect, the research community tends to look down their noses at it and say, "well, it's not showing a big effect." But the core concept in public health is that if you spread a small effect across a large population, you have a much bigger impact. It's kind of exciting to think that we don't have to see a huge effect, we don't have to see a 40–50% change in condom use, maybe we could see something more along the lines of 10–15%, but because we can reach people, many more people than we previously could, we have the possibility of really starting to see whether or not this impact can translate into the declines that we want to see in STI incidence and teen pregnancy and other important reproductive health outcomes.

MG: What I like about that point, and if you put it with the previous points that were made, you are describing scalability but also the ability to tailor for specific populations, whether it's age, race, or ethnicity. And with that type of flexibility, you can really start to imagine what the impact could be, taking the same intervention or a similar intervention and seeing how it works across multiple populations. It would be far more feasible and far more cost-effective, and even if the gains were small, you could look at different effects in different populations and imagine that you could reach a much larger group of people. Putting these ideas together is also very exciting.

[2] http://jahonline.org/article/S1054-139X(09)00247-X/abstract

SB: One thing that seems to me to be largely untapped is this idea of thinking about policy and how we might use digital media more effectively beyond the individual level. I'm not sure who mentioned it, but we talked about parents. We can get sexuality education perhaps standardized and tailored for the middle school person, but is there a way to engage parents more effectively in a private, perhaps, online social media groups where they improve their own skills in being an askable parent or talking to their kids about sex and sexuality. Is there a way we can use social media more effectively to lobby and agitate for sexual health education or reproductive health benefits? How could we use technology more effectively to educate our legislators to get them to understand some critical issues at a time when it needs to be salient for them, like right before a vote? I'm also thinking about getting to the individual level and working with people like clinicians, parents, teachers, and policymakers to engage them more effectively in reproductive health interventions.

MG: Look at the work on reproductive justice: there are youth organizations which are using these tools to advocate for things like sexual and reproductive health education for themselves. Again, it levels this playing field and gives youth a voice in advocating policy and political work.

JS: I really like Sheana's point about parents. My memory of working in public schools, working as a school doctor, is that it's virtually impossible in inner city schools to get parents involved at the high school level. But we now have a generation of young parents who actually use technology. You know, we'd be much better off in some cases, using technology to reach parents. They generally do support us for most of what we do. Obviously, we need to educate young people, but we need to educate parents too. And now we have a new tool that makes it much better.

## How Do We Address the Generational Technology Divide?

MG: Could we spend a few minutes talking about potential digital divides and where the divides might be, who might not have access, and what the issues might be. I think we know the basic outlines, but is there anything that people would want to add regarding concerns about populations of youth that might not be reached?

JS: I think there are still issues of digital divide, but the issue is one of quality rather than of quantity. There was that interesting study from a few years ago suggesting that all the homeless kids in Austin, Texas had internet access. Most of them went to the library. But none of them were lacking for an email account. But the quality of the immediacy of some of the technology obviously doesn't get to certain people as fast as it does to other people—so, smart phones are going to come later to teenagers than they do to people in their 20s and 30s.

## What Are the Implications of Digital Media for Behavioral Interventions? What Outcomes Can We Influence?

MG: As we think about behavioral change, we've talked a little bit about contraception, adherence to medications, condom use behaviors, and then the meta-analysis about antecedents. Are there other behaviors that digital media might be able to address? Are there new areas we might want to think about?

SB: Following on the idea of getting beyond the individual, can we use technology for behavior change for parents, teachers, and people who are coming in contact with the highest risk groups? There is enormous promise for increasing HIV testing behaviors and perhaps regular STI testing behaviors as well. I think it was Susannah who talked about how text messaging has been looked at for adherence. It goes back to this difficulty that I've observed, where people sometimes want to use technology to do the exact same thing as a face-to-face program so they may err on the side of making it very intensive—you're required to do six sessions that are an hour long and things like that. Not that that's a bad thing, it's just that it kind of skips over the opportunity to think about really simple, easy to deliver interventions that might be laser-focused on a very simple thing. If you have had more than one sex partner in the past × number of months, however you want to craft that message, you need to be a regular client at this clinic and get yourself tested or you need to think about getting your partner tested as well. That way, the message can be not diluted with a lot of other things that are equally important but may not be as easy to deliver through this technology.

## If We Do Research Using Digital Media, What Theories Do We Use to Frame Our Work? Do We Need New Theories of Behavioral Change?

MG: What are the theories that should drive this type of research? We've talked about harder clinical outcomes or harder behavioral outcomes, but in terms of behavioral theories and ways of framing research in this area, what types of theories should we use?

SA: I'd say the majority of applications that we see that come in using new forms of technology to change sexual behavior rely on the oldies but goodies—the health belief model, social cognitive theories. I think there are some real benefits to using them, but then, there are some real drawbacks as well. They have been used to help us understand people's health behavior for a while, and we have some good data on how they work and how they don't work, so in that regard, there's a benefit to using them. Some of the weaknesses come if they're used in a static, linear approach, and it's not dynamic because we're talking about the interactive capacity of using technology to

intervene. If we don't take that dynamic approach into account in our models, I think we really miss out on what's happening. I have a colleague here at NIH who is very supportive of looking at different approaches, control systems engineering; it raises the idea that you can look at all of the inputs and outputs and modify the intervention based on all of these variables that are being monitored. I think that's one way. I wouldn't toss out everything that we've learned from our health behavior theories, but I think using a more dynamic approach would benefit this field. Yet, we should still root our work in a theoretical approach. A lot of times, articles don't talk about the theoretical basis, and the theory helps us to understand why something did or didn't work. So, having a theory is obviously important, and then having something that can help explain or tap into this dynamic process is important.

SB: I would completely agree. We're really interested in looking at social networks and bringing social network theory more explicitly into our work. I think it speaks to this idea of using theory more directly to understand how the benefit of the technology can be harnessed. So, if we are talking about interactivity, a lot of the theoretical oldies but goodies don't focus on that. Social network analysis, social network theory may not be the best but it's one example. So, you can look at how networks operate and how information disseminates through networks. To a certain extent, diffusion of innovation is perhaps a good model to consider as well. And certainly, social support adds information. And we know that that social capital theory has been applied to other health behavior perspectives. I think bringing in those theoretical perspectives really helps us better understand what's novel, and in this case, if we go back to the very first part of our conversation, that was about interactivity and perhaps ubiquitousness (as long as we're not closing people off who don't have mobile technologies). We need to consider how social theories about social interactions can be more helpful in informing our understanding of how to best deliver interventions and how to capitalize on what might work.

SA: I think that that's an excellent point, Sheana. When we're talking about something like sex, obviously, you're talking about how people are interacting with other people, so it's essential to understanding social network dynamics.

MG: I like the way that we're framing this issue. Human behavior may not necessarily change; the theories may still be relevant for human behavior. But there is certainly a new, dynamic, interactive sharing that's going on with digital media; so, what theories or what aspect of theories or new things need to be added to capture the new benefits that are seen with digital media? Are there other existing or maybe emerging theories? I've been thinking about gaming as digital media and games as a source of learning, so knowledge and decision-making theory are things we might also want to add in as we think about theories.

Robin Boyar: So, I'm just going to just jump in here, I've been working on gaming for 10 years. I've seen the research in other areas—for example, the military has done research—showing that gaming is an effective way of getting people to adhere to more positive behaviors, and it's also effective in teaching. So, I definitely would add it to the list.

## How Do We Evaluate Digital Programs? What Metrics Do We Use for Measurement?

MG: John, maybe you could just give us your thoughts on evaluation and whether there are additional metrics or outcomes we should be thinking about for evaluation.

JS: Some things lend themselves very well to randomized clinical trials. And the whole adherence literature with text messaging—we're going to see dozens of studies coming out in the next few years, probably most of which show that it does work, and that's all good. But there are two areas that I think are more problematic. One of which is a reminder, and the other is more problematic. I think we have alluded to this, it's really important to pay attention to the sort of observational literature that's going to put it into context because a randomized trial only allows you to zero in on a specific technology, or piece of a technology, or maybe a set of technologies. But it doesn't necessarily put it into context. So, we're going to continue to need to know and monitor things like the digital divide. But the other, more problematic piece is that certain things don't lend themselves easily to randomized design. We know that most young people go on the internet when they have a question about their health, but we're probably not going to readily see solutions to how to do that in a randomized way. Actually, Deb, Sheana, and I are trying to figure out how to use group randomized designs to encourage people in that direction, but it's going to be difficult to show a specific kind of effect—the kind of effect that's going to get policymakers and insurance companies interested in supporting it. Going back to what Sheana said at the beginning, there are a lot of great ideas, but not all of them are readily evaluated. There are probably areas, such as the more organic uses of the internet, for which we may be stuck with observational designs or other kinds of designs for some period of time.

MG: I would like to thank you for your many thoughtful comments. We have had the opportunity to discuss existing research, new areas for research, the role of theory, cautions about the limits of technology, and the limits of evaluation. I look forward to seeing your work in this field.