

**The Teen Media Juggling Act:
The Implications of Media Multitasking
Among American Youth
December 12, 2006**

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VICTORIA RIDEOUT, M.A.: Good afternoon and welcome. My name is Vicki Rideout and I am a vice president of the Kaiser Family Foundation and the director of our program for the study of entertainment media and health. I want to thank you all for joining us here for our forum on the implications of media multitasking among American youth.

Over the past couple of years, the issue of teens and multitasking has become very much a hot-button issue. Is it leading to attention deficit disorder? Does it mean kids can't concentrate when they need to? Or is it a sign that this generation has developed a skill our generation can only wish for, the ability to easily handle multiple streams of information and activity at the same time and whatever the answers to those questions, what are the implications of all of this multitasking when it comes to trying to reach young people with media messages about issues we want them to hear, like smoking prevention or AIDS awareness or fitness and nutrition? These are some of the questions that we hope to explore in our forum here today and we have assembled a wonderfully diverse panel of experts for that purpose, who I am going to introduce to you now.

To my far right, Dr. Jordan Grafman is the chief of the cognitive neuroscience section at the National Institutes for Health and he will be bringing us up to date on what the

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latest scientific research indicates about the impact of media multitasking on the cognitive development of children and youth and he will be speaking for himself and not the United States government, even though he works for the government.

Next we have Debra Williamson, from the market research firm eMarketer.com. EMarketer specializes in providing up to the minute data about media trends, mostly to corporate advertisers and other clients, media companies, and Ms. Williamson will be giving us the private sector's take on teen media multitasking.

Next, Ian Rowe is vice president of the television network MTV, where he heads strategic partnerships and public affairs. As a representative of the network that epitomizes youthfulness, Mr. Rowe will be sharing his insights into how his audience uses media, how they look at multitasking, and how his company has adapted its content to meet the needs of its audience.

Next to Ian, Patricia Greenfield is a professor of developmental psychology at UCLA, where she also heads up the university's children's digital media center and she has done a fair amount of research into exactly the issues that we are going to be talking to you about here today and she is going to be helping us work through the balance of potential benefits and costs of media multitasking.

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To my immediate right is Ulla Foehr, a former Kaiser Family Foundation researcher who coauthored with us our two major media use studies along with the book *Kids & Media in America*, which she co-authored with Don Roberts of Stanford University, and Dr. Foehr recently completed an in depth examination of media multitasking for the foundation, a copy of which is in your packets. You have got a one-page summary of findings and then the longer report that she authored for us in there, and we will hear more about that in just a minute, but before we do that, the very first thing that we want to do is hear from some teens themselves.

We asked the Kaiser Family Foundation's very own Jackie Judd, a former ABC news correspondent, to work with three young people from the D.C. area to take us behind the scenes and into the world of teen media multitasking, so we gave them video cameras and asked them to film themselves, to film their media, to make a video diary, and to answer our questions about how and why they use media the way they do and we have got it all on film and we are going to share it with you now.

[VIDEO PLAYS - starts at 4:25 to 11:18]

They are great. We asked the kids to be with us this afternoon but their parents said they had to go to school. [Laughter] So we will just have to let their videotaped words and actions speak for them.

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So, the first thing that we are going to do this afternoon is hear from Ulla Foehr. As I mentioned, Ulla was the coauthor of a report that the Kaiser Family Foundation released a year and a half ago titled *Generation M: Media in the Lives of 8-18 Year Olds* and that report was based on a large nationally representative survey, more than 2,000 kids in the 3rd to the 12th grades and what we found in that report was that young people spend an average of about 6-1/2 hours a day using media and that about a quarter of that time they are using more than one medium at the same time, something that we called media multitasking. Comparing those results to an identical study that we had done five years earlier, we found that media multitasking was on the rise and that really explained for us how it was that young people could be spending so much more time with newer media like the video games, computers, the Internet and so on, without cutting back on the time that they spend watching television, reading or listening to music because they were doing multiple things at the same time, but what we didn't know from that study was which media are the most multitasked and which are the least? Exactly how much of the time that young people spend with each of these media is spent multitasking? Do some teens multitask more than others and which media do they use together when they do multitask?

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So, Dr. Foehr answered those questions for us by conducting a detailed new analysis of 700-week-long media use diaries that were collecting during the Generation M study, so in these diaries for seven straight days the 700 respondents provided very specific information about their media use on a half-hour by half-hour basis. The result is the first report, I believe, that will document not just how wide spread multitasking really is but also exactly how much time young people spend multitasking each different medium. A copy of that report as I mentioned and the summary of its findings are in your packets and right now Ulla is going to take just a couple of minutes to give us some of the highlights of her findings. Ulla Foehr.

ULLA FOEHR, PhD: Well, good afternoon and, Vicki, thank you for that introduction. Well, first of all, that video is probably going to be more telling than any information that I can give you today, but I am going to put some numbers to those stories. Before getting into the data, though, I would like to thank the Kaiser Family Foundation for consistently conducting research on media and young people that otherwise wouldn't be possible and I particularly want to thank Vicki Rideout and Don Roberts for their vision on this project and the previous media use studies.

Vicki is right. Media multitasking certainly has become a hot-button issue and has received a good deal of

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attention from the media but until now, we have had very few details about who is doing it and how it actually happens. Before I answer those questions, I first want to tell you how media multitasking is defined in this work. Based on the diary measures, media multitasking is defined as engaging in more than one media activity such as watching TV, reading for fun, playing video games or instant messaging over any specified half hour period. Other researchers have tried out other names, such as simultaneous media usage or concurrent media exposure, but the term media multitasking seems to have stuck.

Just how common is media multitasking? Well, the vast majority of young people do media multitask, about four out of five young people. On the other hand, about 19-percent of all diary respondents who spent some time with media did not use a secondary medium across the entire week of the diary. Among kids who spend at least some time using secondary media, 26-percent of their media time is spent media multitasking. Data from the survey offer another angle in the prevalence of media multitasking. When asked how often they use other media while they are watching T.V., reading, listening to music, or using the computer anywhere from 1/4 to 1/3 of 7th- to 12th-graders report multitasking that medium most of the time. When most of the time responses are broadened to include some of the time, a

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majority of the kids report media multitasking each at a media asked about. On the other hand, anywhere from 12- to 19-percent never report multitasking the medium in question. So, overall a majority of kids media multitask at least some of the time.

A regression analysis on the survey data gives us some information about how is actually media multitasking. This analysis focuses only on the older kids, the 7th- to 12th- graders, and controls for age, race, income and other demographics. First of all, young people need the opportunity to media multitask in order to participate in the trend. Results showed that young people who live in what we have called highly television oriented households are more likely to media multitask. A highly TV-oriented household is defined as one in which the TV is on most of the time regardless of whether anyone is watching or not. The TV is usually on during meals and there are no rules about TV. Those who have a computer and particularly those who can see a TV from their computer are also more likely to media multitask. Young people are surrounded by media and the more available the more likely they are to media multitask. Girls are more likely to report media multitasking than boys. Girls are typically more motivated by social needs, spending more time with IM and e-mail, both highly media multitask

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activities. If you remember from the video, it was really the girls who were enthusiastic about the IM and the e-mail.

Young people categorized as sensation seekers are also more likely to media multitask. Sensation seekers are motivated to stay stimulated so they use more than one media at a time. Finally, those who are exposed to the media are more likely to media multitask in order to cram all the media content they crave into their busy lives, these young people need to media multitask. Of course, you could look at it the other way, because they media multitask all the time, they use the most media. Also noteworthy are the null findings, race, age, income and education are often predictors of media use. The fact that these variables were not significant in this analysis is important.

Before getting into a couple of the themes that came out of this research, I want to take a look at total time spent with media based on the diary, distinguishing between primary use, the yellow bars, and secondary use, the orange bars. This graph tells us a lot about how media time is shared. As you can see, television still completely dominates kids' time with media and is eight times more likely to be a primary activity than a secondary activity so anyone who thinks TV is becoming irrelevant should think again. Also important, more time is spent with e-mail and websites as secondary media than as primary media. E-mail

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and Web sites are more often companions to other media than they are the focus. Instant messaging almost shares its time equally between primary and secondary status and 40-percent of both reading and total computer time is secondary use. These media weighted so heavily towards secondary status share a good deal of their time with other media.

This graph leads me to a few themes that came out of this research focusing on television and the computer and their roles in media multitasking. Let me begin with television. As we saw earlier, television still completely dominates young people's time with media. Not only does TV dominate their time, but it dominates their focus as well. When TV is the primary activity, they do nothing else 55-percent of the time more than any other mediums other than video games. Incidentally, when they are doing something else, it is far more likely to be a non-media activity, such as eating or chores, than it is another media activity. In addition, when a young person is media multitasking, television is the most likely of all media to be a part of the media mix and this is possible because so much time is devoted to television, so television plays an interesting role in media multitasking that can be summed up as when watching TV, a young person is less likely to be sharing media time than with any other medium and when they are media

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multitasking, TV is the most likely medium to be a part of the mix.

Now, getting back to the opportunity theme, as television content becomes more available on cell phones, iPods and the computer, it also becomes more multitaskable so it may not retain focus like this for long.

Moving on to the computer, this research finds computer appears to be a serious media multitasking promotor. It makes sense. You can do so many things virtually at the same time when you are on the computer. Back to this slide again, when a computer activity is their primary activity, young people focus on nothing else only about 1/3rd of the time, meaning they are doing other things 2/3rds of the time. When the computer is the primary activity, the most likely secondary activity is another computer activity and in general when the computer is the primary activity, media activities dominate as secondary activities, unlike for TV, where non-media activities dominate. When you are on the computer, it is harder physically to manage to do things such as eat or chores. I would like to briefly highlight the main points from this research. An overwhelming majority of kids spend some time media multitasking. On average, those who media multitask do so 1/4 of their media time. While the impact of newer media is significant, the importance of television in the lives of young people can't be emphasized

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enough. It will be interesting to see, as television and the computer become more integrated, whether television's dominance will diminish. Computer activities are the most multi tasked activities in this study. The computer truly appears to be a media multitasking station and may be at least partly responsible for an increase in this recently pronounced phenomenon.

Finally, and I don't want this point to get lost, it may seem obvious but opportunity is critical to media multitasking. Kids with computers who can see a TV from their computer and kids who live in highly TV-oriented homes are more likely to media multitask so as those multitasking opportunities multiply in the years to come, media multitasking is only likely to increase. Thank you.

[Applause]

VICTORIA RIDEOUT, M.A.: Thank you, Ulla, and I want to invite those of you who are sitting over here with kind of an obstructed view if you would like to, please come on. Don't worry about walking in front of us, just feel free, come on down, there are a couple of seats over there where you will at least be able to see the panelists better and you are welcome to perch along the edge of the stage there like I was just doing so come on.

Okay, so Debbie Williamson, I want to start with you. Your company, what you do is you collect data from as many

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different sources as you can about media trends that are going on in this country and you put it all together to try to paint an accurate picture of what is actually happening and I know that right now you are working on a big report about teens and multitasking. And so I want to start with you and ask you to describe for us if you will what you think is an accurate picture of how kids are using media today and whether what you have just heard from Ulla jives with what you are seeing in other reports that are out there?

DEBRA WILLIAMSON: Definitely, the video is exactly what I imagined and what I think that my six and three year old will be like someday, which is scary. [Laughs] I have studied both "tweens," ages 8-11, as well as teens, ages 12-17, and I think the thing I wanted to point out first is that there is a somewhat striking difference in the way tweens and younger teens use media and older teens. You see a lot among the younger teens and tweens, you see a lot more use of television and games and video games and as they get older, that starts to decline and you start to see computer usage going up for school work, for socializing, instant messaging and things like that, so I think those are important things to remember as far as looking at teens and media. There is a significant change that happens starting around the 12-14 age group that the computer definitely becomes a lot more important in their lives.

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One of the things, as Vicki pointed out, one of the things we do is we look at data from a variety of places and I just went into our database and I gathered a bit of information from some of the research sources that we have and I just wanted to give you a picture from the research that we have, teens today, daily media and technology related activities of teenagers worldwide, this is as of 2005 from a survey conducted by an agency called BBDO, more than half of teens go online every day, 35-percent use a PC every day, 85-percent watch TV every day.

VICTORIA RIDEOUT, M.A.: Are you talking globally?

DEBRA WILLIAMSON: This is global write-up, yes, this is global data, 47-percent send a text message, 54-percent talk on a mobile phone, and 57-percent listen to CDs. I scratch my head about that one, because I don't know very many teens who still listen to CDs but maybe outside of the U.S. The other one that I scratch my head over that is in this data is that 49-percent say they read a newspaper daily and I wonder if that happens online. [Laughter]

So that just gives you a snapshot and the other thing I would point out is that T.V. is important to teens, even as they get older, another survey that I looked at asked teens what would they miss most of the various media if they had to give something up and you would think it would be Internet but actually the first thing that came up was TV.

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VICTORIA RIDEOUT, M.A.: Interesting. Well, Ian, speaking of TV, as a vice president at MTV, I know you stay on top of your audience's media consumption habits and patterns and behaviors and everything. Tell us how you see your audience using media these days.

IAN ROWE, M.B.A.: Well, first of all, thank you for the opportunity to be here. The video was very compelling and very much a snapshot of the lives of our audience. I think MTV, a long, long time ago, the leadership decided that if we really wanted to be the channel that was really for and owned by young people, we had to be extremely relevant to their lives, extremely central to their everyday life and adopted a strategy which meant that we told them a lot about pop culture and music and celebrity and then we also started engaging them on some of the most important issues facing them on a day to day basis. For many of our audience, they are dealing with issues for the very first time, the decision to have sex for the first time, developing their views around race, all of these things they were looking for MTV to be a partner in helping them make decisions for their own life. So that was one key strategy for how we became extremely relevant, but it was also this idea that we needed to be where young people were, right, and the advent of MTV with the technology boost was cable television. So in a top-down world, young people had to come to us and so we were sort of

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the only game in town for a long, long time. If you wanted to see the hottest music videos or the best celebrities, you needed to come to our destination to fulfill that promise.

Well, that obviously is now completely different and so we are now operating in a world where young people have the tools themselves to self-publish, to self-organize, to self-collaborate. And it is interesting that video, while it is about media multitasking, it is also showing the power that young people have incredible new tools of self-expression because now not only do young people have lots of intake - whether it be their iPod, their cell phone - they also have all these tools to connect with other young people and that is something we should really just for a moment take the advantage of this explosion of multiple media.

It is interesting. We were in South Africa about six weeks ago with Jay-Z, the artist, doing a show around the global water crisis and educating our audience around this issue and we were in this very remote village where people do not have access to basic water but at the school that we went to, virtually every single young person had a cell phone which was an incredible dichotomy but we realized, you know what? The fact that these kids have cell phones, we now actually can deliver messaging around HIV/AIDS, other ways to protect themselves, and so it is something to just keep in this debate that the explosion of multiple media is actually

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creating incredible vehicles for young people to get information about issues that typically would be very hard to get those in.

Now, on the issue of multitasking, from a prosocial perspective, all of our programming, we are always looking for what we call these teachable moments and historically we have had long-form shows where we can tell a 30-minute story or a 60-minute story about a young person in a tough situation and we can make that emotional connection with our audience and there is that moment where the young person, the viewer, feels compelled, I really want to do something, and we can provide a Web site or a phone number or some other way that they connect. In this new world, there is a new kind of creative pressure because we don't have the luxury of 30 minutes to tell a story on an iPod or a wireless device. So we have got to change our creative dynamic and even with our work with Kaiser, we are now looking at creating short-form, serialized programming where we might have a two-minute clip which is a spark for our audience to then interact with each other, upload their own ideas about what they thought about this particular clip about a young person facing the decision of whether or not to have an HIV test and that dialogue and that community action then informs the next clip that is shown on their wireless devices.

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So it is a whole new way to look at how we are delivering content to our audience and really bring them into the process of actually participating in the content that we have put together.

VICTORIA RIDEOUT, M.A.: But you know, one of the things that I found so interesting here is this notion that television really still dominates. So I'm kind of as an outsider looking in have this impression that a network like MTV really has to scramble to adapt to the fact that they have got to get media on all these different platforms and so on but yet not only are kids spending a lot of time, many hours a day watching television, most of the time they are just watching television.

IAN ROWE, M.B.A.: Yeah, it is interesting. Ulla made the point that I think that research, it really is a moment in time. Television definitely is still the primary platform, but we have to be platform-agnostic because while television is still essentially a passive activity, it is a very short period of time before the convergence happens between their computer and the television, and it is already happening on - if you look at You Tube, someone could be watching a video right now and simultaneously they could be rating that video, commenting, sharing with their friends. And again we are working on an application right now where you can be watching a show about Angelina Jolie fighting

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extreme poverty in Africa. While you are watching you can simultaneously access the lesson plan associated with that show, be able to interact with other young people who are watching it at the same time, so I think it is just a very short period of time before television becomes that interactive experience just like everything else acceptable to multiple media tasking.

VICTORIA RIDEOUT, M.A.: Are you a little bit shooting yourselves in the foot, though? The more opportunities like that you offer your viewers, the more their attention is going to get scattered.

IAN ROWE, M.B.A.: Well, this is the premise: If we want to be a central part of young people's lives, we have to be where they are. So if they are on their iPod or watching television or on their wireless device, we have got to be platform-agnostic, so our content has to live on all of these platforms in different shapes and sizes but it is appropriate for that given platform.

VICTORIA RIDEOUT, M.A.: Okay, I want to just take a second and ask the audience how the sound is for them. Are you able to hear the panelists okay? Everything good? Okay. Jordan Grafman, you have been quoted in a lot of the media pieces that I have read raising some alarms about the possible implications of all of this media multitasking on young people, and I want to read you a quote of yours from

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Time magazine that I highlighted. You said, "Kids who are Instant Messaging while doing homework, playing games online and watching TV, I predict aren't going to do well in the long run." That is going to be something coming from the chief of the cognitive neuroscience section at the National Institute of Neurological Disorders wrote that is going to alarm a lot of parents. Tell us why you feel that way. What is happening that causes you such concern?

JORDAN GRAFMAN, PhD: First of all, I use all these tools, just to let you know, so it is not the tools here that I personally - it is not the tools that are the issue. The issue is going to be in the long run how we utilize the tools and we are only scratching the surface of the tools. Eventually, you will be able to have a monitor right in your eyeglass and you will be doing things as you walk on the street much less any other activities you are going to be doing, so this is not just looking at a point in time but are you going to help predict the future?

So this kind of judgment about how to use these tools clearly resides in the frontal lobes of the human brain and we know that the frontal lobes are not mature, that is they don't reach their adult maturity until the late 20s so when pre-teens, teens are doing these kinds of activities, they are doing it and they are forming their brain while they are

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doing it. So, all these activities affect how they are going to optimize their brain.

Now, keep in mind there is an area of the brain devoted to this well before the advent of these tools so it does have an adaptive function to be able to multitask and the question is, how do you use it judiciously? The quote revolves around the idea that if you are flitting back and forth between all these activities, it doesn't allow you to do any deep deliberation and I think this is the main issue and in fact I think some of the presentations touched upon that. It depends on what your outcome measure is in a way. If simply completing an assignment utilizing quotes from the web as your goal, multitasking is going to be pretty good, but if you have to invent something, if you have to design something new, if you have to have a different take on an issue, there is no way you are going to be able to do that affectively if you are multitasking compared to if you narrow down at least the input and this is, in my view again, an issue that has sort of a continuum. If you have Art Tatum in the background and you are listening to jazz piano while you are doing a particular kind of task, that may interfere less than if you are trying to instant message in some way to a friend while you are doing a verbal task. So the relationship of the conflicting task to the primary task will also affect the decrement in your performance how well you do, so that

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also needs to be taken into consideration when you have this particular outcome of finishing your homework, getting an A, and so forth, and by an large when I said that, I wasn't also referring to sort of the top level cream of the crop kid who is going to adjust no matter what kind of multitasking they have, they are endowed with brightness and they will tolerate this or the lower level kid who is really struggling and no matter what you do, single task or multitask, they are going to have trouble. It is really the kids in the middle who can be lured to this or not lured to it so the issue for me there was deliberation, deep thinking about an issue, and if you can't do that very well, you are not going to be competitive in certain arenas with kids who are doing that, for example, or adults who are doing that, but you may be very good at using the technology to go back and forth but what is that value?

VICTORIA RIDEOUT, M.A.: So, are you saying that not only are they, if they are spending all their time doing all this multitasking, they are not engaging in the deeper thinking right now but are they also sort of training their brains in a way that makes them less skilled, likely to be less skilled at being able to focus and concentrate when they might need to later on in life?

JORDAN GRAFMAN, PhD: There is no doubt that is going to be a piece of it, but what they are also doing is

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optimizing a tendency which we see in younger kids which is to be stimulus driven so anybody, I have two young kids at home, but anybody who has raised kids knows that if you have something that is a bright visual feature, a unique sound, a bright color, kids are drawn to it, even if they are doing something that you think they like what they are doing, all of a sudden they are off doing this other thing while this kind of multitasking has an element of that, so it is really appealing to a more primitive tendency rather than what the long terms affects of a mature frontal lobe are which is to forestall immediate gratification, have longer term goals, and inhibit immediate reactivity so there is a little bit of a conflict between the thrill of multitasking and the goal of the mature frontal lobe to guide our behavior.

VICTORIA RIDEOUT, M.A.: At the same time, though, everybody does need to multitask in life and probably more so this day than ever before. So the kids who are doing all this multitasking now, are they getting better at that and so likely as adults they will be better at that part of life and maybe not as good at the part where you have to concentrate and focus?

JORDAN GRAFMAN, PhD: Perhaps, but then you have to say, well, what good is that in some sense? They would have to be in a very unique situation that optimizes that skill and there are some circumstances where you might want

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somebody to be very good at that but they tend to be just a few things and not preparatory for the kinds of higher level decision making that you would need later in life to succeed as an adult.

VICTORIA RIDEOUT, M.A.: Okay, Patricia Greenfield, as a development psychologist, you have looked at this issue from a little bit of a different perspective, can you give us an overview in your opinion what you think are some of the, maybe some benefits if you see some to all this multitasking and what you see as the possible downsides as well?

PATRICIA GREENFIELD, PhD: Okay, thank you. I loved the video. It was absolutely great. One thing, a comment to add to something that Ian Rowe said about what you can see as some benefits and then I will talk about the research on costs and benefits is, the kids are not only having the opportunity to connect more widely but there is also a creative aspect, those kids made those videos. They were given the cameras and that was a big project and they did it extremely well and I think this, sometimes we make a mistake in thinking everything is a decrement because we are thinking for example of creating an old media but now here there is a new medium to create and clearly that is being fostered by the multimedia environment that is going on. They had a lot of understanding, sort of literacy about the medium I think,

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in the way they scripted their own videos if you noticed that.

So let me start with the benefits and then go on to the costs. I will start with some cognitive benefits. In our research, which started more than 20 years ago, we started with divided visual attention in action video games as the earliest precursor of what is now called multitasking and these were action video games where you have to pay attention to more than one location on the screen and together, the studies in our lab and in other labs suggests that video game experts are better than novices at monitoring two or more locations on a game screen and that game practice improves strategies for monitoring low probability targets, things that don't happen very often on the screen.

So this gets at your question, Vicki, about do people get better at it? Yes, they do. The studies show that video game training in short can have immediate short term effects on the development of divided attention strategies and that expert game players also have more developed, divided attention skills than novices which indicates some long-term effects, and the studies also suggest some transfer effects from the video games to other attentional tasks, so sort of segueing now to the present, though these games are still extremely important, so you can say that divided attention to multiple locations on a screen prepares you to attend to

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multiple windows on a computer and I think that this is probably the most distinctive feature of computer and internet visual displays that you have multiple windows and each window represents a different activity, hence multitasking.

So I am going to speak a little bit about this phenomenon of using multiple computer - well, we could talk about using multiple computer applications or, for example, the Internet and word processing applications or we could also talk about multiple windows of the same application, for example multiple Instant Message windows and it is very common for kids to be instant messaging with five people at once and this is a little different from media multitasking although obviously it overlaps with it but media multitasking being more, using different media at the same time although the report we have just heard clearly, in looking at the computer as a center of multitasking, is taking into account the fact that you can have multiple windows open on the computer.

VICTORIA RIDEOUT, M.A.: Let's pause there for one second.

PATRICIA GREENFIELD, PhD: Can't I get into the costs?

VICTORIA RIDEOUT, M.A.: Okay.

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PATRICIA GREENFIELD, PhD: I really think that - because otherwise, I might be seen as, for example, opposing Jordan Grafman, which I agree with him - so when I get into the costs that will be, at least I agree with him on some things, so I want to get into the costs, I think the convergence aspect of our opinions will become clearer.

So, we are just beginning to accumulate knowledge about the cognitive and neural effects of processing multiple tasks and multiple visual displays present at once. My colleagues at UCLA, [Inaudible], who are cognitive neuroscientists, have found that multitasking, in their study it was doing two tasks at once, that it decreased the acquisition of what they call meta knowledge which I think is very similar to what Dr. Grafman is talking about, prefrontal lobe doing. Basically meta knowledge is knowing about knowing, or knowing how you know, so it decreased the acquisition of meta knowledge about a weather prediction task that is when they were doing two tasks at once rather than just the weather prediction task by itself, they didn't learn as well what queues were associated with what weather outcomes. Compared with working on a single task on the neural level, that is on the task level, the activity level, but on the neural level they found that multitasking shifted the neural processing of the task from the medial temporal lobe which supports flexibly accessible knowledge and

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supports meta knowledge, it shifted the part of the brain that was used to the striatum, which supports habit learning, so obviously a much lower level. It was very interesting that although the neural processing differed, if location differed, the basic task performance, that is just being able to use the queues to predict the weather didn't differ under the multitasking vs. the single task condition. So under multitasking conditions they could do the task - that is, they could use queues to predict the weather, but they could not say how they had done it. Under the single task condition, they were able to both do the weather prediction task and they were also aware of how they had done it, what queues they were using to carry out the tasks. So there, it is clear what suffers and what doesn't suffer, and it is also clear that there is a shift in the part of the brain that is recruited under multitasking conditions.

Other colleagues, Calvert & Wells, found some different cognitive costs. They asked college students to write a critique and also there was no difference between, they divided their participants into heavy and light multitaskers, and although there was no difference between the heavy and light multitaskers with regard to the quality of the critiques, the college students who were heavy multitaskers took twice as long to write the critique so there is a different kind of cost, a cost in time, so let me

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summarize the cognitive costs of multitasking and then say a little bit about the social costs. So while the tasks are different in the different studies, both of these studies suggest that multitasking produces a decrement in higher level or executive processing skills, exactly what Dr. Grafman was talking about. And the study by Ferda and colleagues suggests a neural basis for the decrement, a shift in processing from medial temporal lobe to striatum.

VICTORIA RIDEOUT, M.A.: Before you move to the social stuff, I just want to stick with this cognitive point for one second. You know, one thing I found interesting about that study that you were citing there, the Poldrack study, is first of all it involved 14 college students. It was really more of a class exercise than a real study. Secondly, it was having, you know, you are stuck in an MRI and you are assigned two different mental tasks at the same time, one was you had to count the number of sounds you heard going off and the other was you had to pay attention to the weather forecast or something like that and then at the end you had to give the answers to both of these challenges that you have been given, and they didn't do any worse on the task at the end. They couldn't remember how they knew what the weather was but they still knew what the weather was going to be.

So to my mind, just playing devil's advocate a little bit, maybe I will throw this to you, Dr. Grafman, I mean,

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doesn't that show that they didn't really suffer that much from doing that multitasking?

PATRICIA GREENFIELD, PhD: Sure, yeah. If all you are trying to do is find out what the weather is, that is fine. It is important, whatever activity you are doing, to also be aware, then it is not fine. But also the reason I wanted to respond was it sounded like you had a little less confidence in that because it was 14 subjects but I have to tell you that in an fMRI study, 14 subjects is a very respectable and even a large sample and it was published in a *Neuroscience* journal, indicating that, so I really wouldn't worry about that. I think it is more how do we want to interpret it, which is the question you are throwing out to us.

VICTORIA RIDEOUT, M.A.: Well, you know, Dr. Grafman, earlier you were saying that there aren't really a lot of jobs where you do need to multitask. What is the usefulness of being able to multitask? But then I was just thinking while others were commenting, well, if I am, I'll bet they are! I mean, if I am a fighter pilot, I need to be making my plane stay aloft, listening to instructions, and killing people at the same time. [Laughter]

JORDAN GRAFMAN, PhD: So, fighter pilot, you might think, well, what about air traffic controllers, for example, these kinds of positions, but if you actually look at the

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position descriptions, in some of these circumstances they actually involve situated cognition. What that means is even though you are doing some multitasking, you are sharing the tasks with others, so others give you information that you don't really have to look up at the same time and you work cohesively as a group. That is a little bit different in terms of goals and in terms of the task itself and what we are talking about.

And I just want to emphasize that you really have to examine the task in order to determine whether the combined activities you are doing is going to be a cost or not. So for example, in the weather prediction task, that is often used in an implicit way, that is people get better. They are shown these images and they have to predict is it going to be rainy or not, this kind of weather, and often people get better without knowing how. It is sort of considered a procedural learning task and that is a little bit different than the kinds of tasks these kids were doing that we just saw in the video. They weren't doing sort of a habit learning task. The habit learning was simply in the multitasking but not in the content of the messages, not in the content of what they were trying to accomplish and that is a different issue.

VICTORIA RIDEOUT, M.A.: Okay, Ian, you know, we have just been, there are a lot of alarms that have been raised in

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the media lately and even on this panel so far about the whole issue of multitasking, kind of as a representative of your audience, how do you see it?

IAN ROWE, M.B.A.: Well, it is a speeding train that can't be stopped. It is a reality.

VICTORIA RIDEOUT, M.A.: Do you think it is bad or dangerous for them?

IAN ROWE, M.B.A.: Well, to some degree, it is hard for us to make that judgment because we are not cognitive neuroscientists to make that kind of analysis. Our take more is young people have been given the opportunity to use these tools. They have been overwhelmingly supportive that these tools are now an essential part of their lives. If these tools are now an essential part of their life, then we have to figure out how to capitalize on this situation and hopefully exponentially make the presence of these new tools a positive for their personal lives as well as for our larger society as a whole so when we are looking at for example our prosocial campaigns and we engage young people, we start with what are the tools that young people are using? How do we figure out how to get time sensitive information on the platform that they are most using for that particular issue and get them the information they need to be able to take action?

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Because I think, at least from our perspective, wringing our hands and trying to figure out good or bad, we will be losing out on an opportunity to engage a whole new generation of young people on how to use these tools in the way that we think can have the most benefit.

JORDAN GRAFMAN, PhD: So, for example, one way I might use it is I might be working on a paper and I am looking for this reference so I quickly, I'm working on the paper, I have that screen open, I go to a search engine and I get the reference, but then I am not sure how valid a paper this is, so I Instant Message your colleague and say, have you read this? And they say yes and I return back to the paper. So what I have done is I have sequenced. It seems like multitasking but actually, you are just sequencing things correctly, but then I go back to the main task and I continue and I don't continue talking to my friends and I don't continue randomly searching.

So part of the issue is here, how do we instruct people how to use the media as it presents to us and can we give them guidelines for optimal use of it? Because you are right, it is here and it is going to get better. It is really kind of cool. So, we want to use it and we want to adjust to it but if you don't teach them, the only way they know how to use it is what attracted them when they were younger. And as I mentioned before, one of the issues is that

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is a primitive way of responding to stimulus and so you want to sort of mature them into an appropriate use of this fantastic technology, and that is my view.

IAN ROWE, M.B.A.: And I think it is also important to listen to them. To give you a specific story, MTV.com, we just relaunched our new Web site. If anyone has spent any time there, it is a multimedia extravaganza. But we made a decision that we wanted to have a persistent media player, persistent video, right so that when you go onto MTV.com right now, automatically you are hit with video and audio that you didn't choose and so far, because we thought, well, this is the M generation, they want media all the time, and we are getting incredible feedback. But you know what? No, put me in control. Let me decide when and what content I want to play during my experience and so we are learning as well that it is not that they want media constantly. They, I think it is more, how do we give them the tools to control the kind of media experience that is most beneficial to them?

VICTORIA RIDEOUT, M.A.: Okay, at this point, I kind of want to shift the discussion a little bit to what all of this multitasking means, if anything, in terms of how we craft messages that we want kids to get which I know, Ian, you have touched on a little bit but things like public education campaigns and the like. And Ian, I am going to ask if you can move your microphone a little bit closer to you

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and I also want to tell the audience that if you have any questions at any point for any of the panelists, please just raise your hands and signal one of the folks with microphones back here and just get my attention and I will call on you.

I am thinking that there may be something health groups and others who are trying to do prosocial campaigns might be able to learn from the commercial world, Debbie, and so I want to start with you, what do you know about how engaged young people are with the messages that they are consuming? I mean, when they are getting five different inputs at once, are they retaining it? What are the implications for the commercial advertising world? What kind of advice do you give your clients in that world?

DEBRA WILLIAMSON: Right now, that is one of the big question marks with regards to media multitasking, is that there have been some studies done by Kaiser and a few other organizations, what teens and adults do in terms of multitasking but there have been very limited studies done on exactly how that impacts the way they receive messages and interpret messages, whether they be the content they are looking at or the advertising messages that companies are trying to get or social organizations are trying to get across to them, that piece of the puzzle hasn't been put into place yet. And I think people are working on that, but there just isn't data out there right now that will say

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definitively that focusing on one media means that you retain that message better than if you have four things going on at the same time. I haven't seen that information out there.

VICTORIA RIDEOUT, M.A.: Interesting, and you don't know of anybody testing ad messages like having the kind of testing that they do of ad messages shift to testing them within the context of a multimedia environment?

DEBRA WILLIAMSON: Not per se. There are some organizations. There is a company called Big Research out of Ohio that has studied I think they call it simultaneous media usage, SIM studies, but one of the things that they talked very heavily about is that if you are so deeply absorbed and engaged in one activity, it is difficult to be interrupted and that is the goal of people who want to get advertising messages across or who want to get social messages across is to interrupt you so engagement is important and I am putting words a little bit into Big Researchers' mouth. But this is my understanding: Engagement is important but it is intermittent engagement and that is where multitasking becomes more important and actually opens up windows in certain environments for messages to be given to teens and possibly retained, although the retaining part is still under discussion.

VICTORIA RIDEOUT, M.A.: Well, there are a lot of folks in the audience who are from different organizations

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that are trying to reach youth with prosocial messages and so I want to ask Ian and Ulla if you have recommendations for them as they are trying to craft a media-based public education campaign. Given all the multitasking that is going on, what advice would you offer them?

IAN ROWE, M.B.A.: Well, repetition across multiple media platforms is first and foremost. This generation is the most heavily marketed so again, outside of prosocial, just this generation is getting bombarded constantly by advertisers who have \$100 million-dollar budgets to get a certain message across within a certain demographic and so if we are trying to get a prosocial message across which is usually complex because you are not only trying to communicate about an issue, you are also trying to communicate a clear call to action and the resource to go to, all of that can't be done in a 30-second spot anymore. PSAs I think are necessary but not sufficient.

So, I think it is thinking about television, not necessarily the only or even the first place that young people are learning about issues. I think looking at non-television venues actually can be very attractive because they are things that you can do through viral marketing and on the internet that are potentially more effective, more impactful, and less expensive, especially for smaller non-profits, especially if you have a clear call to action with a

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clear set of resources, it might be hugely powerful to use the viral technologies that are now existing and ultimately this idea that young people can have the tools to self-express, to self-publish, to self-organize and self-collaborate, in many ways they become your biggest advocates for whatever the issue is that you are focused upon because they are communicating in a language that other young people respond to. They have a credibility with other young people and so if you can find young people to actually take on your issues, suddenly they will be posting their ideas on You Tube and My Space and Face Book.

I mean, earlier this year, those flash mobs that organized around illegal immigration, a lot of that was driven by young people with their My Space accounts and their buddy lists and suddenly you had thousands of young people coming together around an issue that they cared about and a lot of it was getting their buddy list and their think tanks and their friends to say this matters to me, come do this thing with me, so I think engaging young people on that level and letting them know that they are part of the process. We are no longer in a top down world. It is very much bottom-up and I think that is very healthy.

ULLA FOEHR, PhD: I would absolutely just reinforce what Ian said. I think the media synergy is a really big part of it, get kids seeing your message across all platforms

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if possible, get them forwarding, talking, attaching, in any way you can. The one place where I may differ is I do actually think that for now and this is a very temporary thing, television, which is a very expensive medium, but I do still think that is one good way to reach kids and it may just be one of many but it does appear from the research to be a place that kids spend the most time and they are the most focused when they are using television, at least they may be doing other things but they are not actually trying as often to take in other media messages so it may be less of a cognitive experience and more of a habit, the habit kinds of activities like eating or chores while you are sitting in front of the TV.

So I would put a plug in for T.V. but other than that, the synergy and just having the information available. I mean, these kids are so media savvy and particularly if it is an issue that they want information about, that is going to be the best time to reach them with it and if the information is findable, they will get it.

VICTORIA RIDEOUT, M.A.: Okay, we have one question from the audience here. If you can say who you are and where you are from?

ROBERT KESTON: I am Robert Keston from Center for Screen Time Awareness which is TV Turnoff Week and I just wanted to ask do either of you two, since you are the only

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ones that aren't doctors [laughs], ever think about the health issues when you do your programming or when you recommend things to clients? It is known that television increases obesity which is a crisis not only here but around the world, violence increases with increased viewing of television. I mean, there are certain things that, the studies are out there for a very long time, increase in smoking, increase in drinking, increase in early sexual activity. Do you ever consider those things when you do what you do or is it more about how to draw that audience in? I hate to be nasty, but just about the money?

IAN ROWE, M.B.A.: It is certainly central to our role within MTV which is to engage young people explicitly on those issues and every single one that you just noted with obesity, sexual activity, body image, all of those issues are especially for our audience because they are just developing their views on all of these. And so we spend a lot of time thinking about how to make the most compelling programs so that we can actually cut through a lot of the noise that they see because few, honestly, few networks are really honestly speaking to young people in a language that they can understand about these issues and giving them actionable information that they can say, you know what? Okay, that story actually does relate to me. That is a situation I can

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see myself in. And so yeah, it is an enormous part of what we do, to answer your question.

ULLA FOEHR, PhD: Yeah, and I would add the majority of our clients are commercial marketing firms so they are interested in reaching consumers, not just teens, in whatever media makes sense and for teens, it is a fact of life that TV is still extremely important but they also have these multiple touch points that we have already discussed here across a variety of media and it makes sense if you are going to be using TV in a marketing campaign to make the most of those other touch points. Just last night, I was actually doing some multitasking of my own. I was finalizing some information for this presentation and I had the TV on in the background and I happened to overhear a television spot for U.S. military.com, which is a Web site for all of the branches of the U.S. military and the end of it, the tag line was "make it a two-way conversation, U.S. military.com," which I thought was brilliant. It was aimed at young people and it invited them to interact with another medium, to get out of the "sit on your butt" and watch TV and go to your computer and get some more information. And so I went to U.S. military.com and checked it out and it is actually a community forum site that uses a lot of the engagement techniques that you see on a My Space or Face Book in terms of getting people to post profiles and interact with each

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other. So I really see a lot of that happening going forward where you see the multiple links between the media just in an effort to reach people as you said, wherever they are.

VICTORIA RIDEOUT, M.A.: Okay.

IAN ROWE, M.B.A.: Just one other point, I totally recognize that what we do exists in a for profit context at MTV because it is an enormously profitable company and so part of what makes it even sometimes more credible to young people is when we integrate these prosocial messages into the shows that they purely view as pure entertainment, so "Pimp My Ride" we are about to do a special episode where they convert the car to run on Bio diesel fuel and it is part of our campaign around global warming and the simple things that you can do to convert your car to run on alternative fuel. It is incredibly powerful but for our audience they are attracted because they love "Pimp My Ride" and then suddenly they are also hearing this other message. And last week we had "Real World," we had a blowup amongst the kids, you know, one of the young people called another young person the "N" word and it created this huge controversy on the show and we used that as this teachable moment where during the show it says if this is an experience you have had, go to think.mtv.com. And so there was a lot of information there about how to handle racial discrimination.

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So it is also just trying to not ignore the fact that this is a for-profit business but there are ways to use the for profit world to connect with young people on the issues that they care about because they are living in that world, too, like they don't segment their life like I am only listening to music now but now I am concerned about getting into college. It is all part of one life.

VICTORIA RIDEOUT, M.A.: You know, to me that is one of the biggest lessons from this study in terms of getting messages out to young people is the power of storytelling because, and I think messages that are embedded in stories and with characters and plots because we see that the kids are less likely to multitask when they are watching television and I think part of that is opportunity, but part of that is because they get engaged in the story. And so if it is just something they are doing on the Internet or something, they are not necessarily following the storyline in that way and so I think embedding messages we want them to hear and that kind of content is really key and I don't think the power of storytelling is going down.

We have folks from the Association of National Advertisers here. Maybe they will comment for us a little later about where they see this research going or the lessons they have taken from these trends, but I think we had another question from the audience.

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CLAIRE GREEN: I am Claire Green with Parents' Choice Foundation and I am really bad at multitasking so I can only ask one of my 43 questions. I think this goes to both Ian and to Debra. Ian, you were talking about addressing people not only in the media in which they communicate but where they are and when they are there. And Debra, you were talking about not being interrupted. Well, a two-part question: How do kids prioritize the messages that they receive across these platforms? Do you see, is TV the bigger priority? Is it instant message from mom a priority? How do they prioritize that, and the second part of that is, Debra, you talked about being interrupted. Do kids consider multi messages, simultaneous messages an interruption or just part of the process?

IAN ROWE, M.B.A.: That is a good question. I think in terms of priority, I think it is not so much what the message is. It is who the message is coming from. So, if I feel that I am getting a message which is purely a marketing selling me a widget-type message, kids are very able to discern that stuff but if it is video, there you go multitasking [laughter]. But if it is a piece of user-generated content that my friend has just sent me about this experience that they had last night, then I am much more likely to want to spend time because it has been endorsed, right? So I think there is usually some kind of third-party

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endorsement and so, frankly if you have got a clip, if a young person gets a clip of an MTV special about a young person facing a certain situation, our belief and our hope is that it has a higher probability that a young person will actually take it so I think it is very dependent on who literally is sending the message.

DEBRA WILLIAMSON: To answer the second part of your question about is simultaneous messaging an interruption or part of the process, I would say yes. [Laughter] I think interruption is part of the process and I think, just to use a couple of real-world examples, how many times are you lost in thought, perhaps working on a project, but you can't get to the next level and you are dying for an interruption, just something that will jar you to do something different for a second. Or how many times do you pop over and just obsessively check your e-mail just because you need to feel like you are doing something when you are supposed to be thinking about, I don't know, maybe I am the only one who does that. [Laughter]

For me, that is part of the process and that is a very important part of the process and I think for teens and getting multiple messages at the same time is part of their lives and that is how they are growing up. They are the computer generation. They are the Internet generation and this is part of the way they are growing up and they don't

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know any other way at this point. And is it up to us to teach them another way? I think it is important, maybe we have turn off, tune off days or something like that in the future instead of having school where you go back and try to live in pioneer times, maybe they try to go back and live in 2000 or something, the year 2000 where you didn't have all these devices and see what happens to the teens.

VICTORIA RIDEOUT, M.A.: I think there was a question or a comment over here.

STEVEN LOGWOOD: Steven Logwood, Positive Records. I am interested in the role of music. I know a couple of themes that you mentioned, stories, what MTV is doing and the role of music versus TV for nonprofits to be able to communicate health messages, academic messages, it is not as long as a TV show but like "Schoolhouse Rock." Some of you might remember those kids of things where within a three- to four-minute time frame, you can pack in a lot more information. So what do you think the role of music is in helping nonprofits deliver their messages?

VICTORIA RIDEOUT, M.A.: Maybe we will have Ian, since he is from a company called Music Television, talk to us. [Laughter]

IAN ROWE, M.B.A.: Well, we just launched the first ever hip-hop music video on global warming just for this purpose, because we discovered that when you talk about

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issues of climate change and global warming, it is not an issue that low-income minority youth typically are concerned about. But we also find that global warming and climate change disproportionately affect the poor, as most people saw in Katrina, and so we wanted to find a way how could we, again knowing where our audience is, figure out the right device. And we decided there are virtually no hip-hop stars talking about global warming and climate change as their issue. So we actually worked with Cool Keith, if you know him, to create a hip-hop video and it is now running on MTV so music, absolutely, it is always start with the audience first, what is the most effective vehicle to reach them, then figure out the right distribution strategy.

VICTORIA RIDEOUT, M.A.: Another question or comment down here?

DONNA VELOE: Hi, I am Donna Veloe, of American Legacy Foundation. We create the "Truth Campaign." I was really struck by the fact that income or socioeconomic status was not a factor in the study that I believe Ulla you conducted and I sort of put this to the panel, in general, about what is the role of class as it relates to multimedia tasking and one of the things that we are very concerned about is the 18- to 24-year-olds who are non-college because their smoking rates are really high, so I wonder if you could

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just sort of talk a little bit, about how class really impacts technology use and how that affects behavior.

ULLA FOEHR, PhD: Well, one thing I would like to start off with is in a regression analysis you control from all the factors, so part of the reason, race, age, some of those factors may not have been significant variables is because it is counter balanced by time with media opportunity, and I really think that opportunity and income and race may be, they are so intertwined that it is really the opportunity and it is perhaps the young people who can't afford the technologies. It is just having the media that is so important and having the opportunity.

The other part about the measures is that in this study the income measure was based on median income based on zip code so it is not actually the best measure for income and that is something we have acknowledged in the study time and time again, so it partly may be that we don't have the best measure for income and with any research like this, I think a one time shot is not the best way to approach it. It is really, we need more studies on this, we need more information. This is kind of a guide for what at the moment are the important factors, but I will let the other panelists speak to the importance of class and income.

VICTORIA RIDEOUT, M.A.: Well, one thing I want to say is our studies do consistently show that lower-income and

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minority youth spend more time with media in general, so in terms of a platform to reach that audience with messages and content, it is a good one. We just find that when you control for all the other factors in this study, income and race do not appear to be independent factors in terms of the proportion of your media time that you spend multitasking.

DEBRA WILLIAMSON: Can I go ahead and add? I have also studied African-American and Hispanic Internet usage and while you see greater use of media such as TV, radio, you actually do still see less use of the Internet and Hispanic, because particularly Spanish-speaking Hispanics as well as African-American community, so the multitasking that might take place in those communities is to a much lesser extent going to revolve around the computer and the activities done on the computer. I think that is really important to remember. Just as a side note, English-speaking Hispanics, actually their use of the Internet is just about equal to English-speaking Caucasian or white people.

VICTORIA RIDEOUT, M.A.: The other thing, Donna, that is I think of interest to groups like yours is the conclusion that Ulla found that kids who are high on this sensation seeking scale are more likely to be multitasking and, Ulla, maybe you want to talk a little bit about what it means for a kid to be a sensation-seeker and what you found.

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ULLA FOEHR, PhD: Sensation-seekers are kids who are averse to boredom. They are thrill-seekers, adventure-seekers, and it makes sense that they are the ones who are most interested in media multitasking. They can't stand boredom. They can't stand to not be doing something and I think it poses an interesting dilemma in terms of trying to reach this group of kids. I think they are going to be one of the more elusive audiences but I think that is where an edgy approach to a message is something that is going to kind of bring them in and keep them interested.

VICTORIA RIDEOUT, M.A.: And research has shown, as I am sure you know, Donna that sensation seeking youth are the ones who are most likely to be engaging in risky behaviors, not surprisingly, whether it is smoking or doing drugs or having unprotected sex, so they are ones that we are often trying to target the most with public education campaigns and media campaigns so it is important information to know that they are the ones who are most likely to be multitasking as well. Did you have another comment or question back there?

FEMALE SPEAKER: National Youth Anti-Drug Media Campaign, I wanted to follow up. Ian, you have talked a lot about user generated content and letting kids take control, and I know a lot of our consultants are always kind of pushing us to do that, but in terms of public health, I think we have some concern about the kind of comments that are

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generated on messages around anti-drug use or the parodies that come up are prevalent in social networking pages, and I am wondering if you could comment and the panel comment on how if there is some research around that or how to best handle that so we can kind of meet kids where they are but not, you know, continued misinformation.

IAN ROWE, M.B.A.: Right, no, the power of UGC does not absolve us of the responsibility of ensuring that there is quality information so that when they get to these sites, they have accurate information. That is one of the reasons MTV, that we partner with folks like the Kaiser Family Foundation for all of our programming around sexual health and HIV, with the Gates Foundation around education issues just for that reason. Left to their own devices, without any guidance, there could be a tremendous amount of misinformation and so it is an important part of the top-down and bottom-up responsibility in terms of giving young people the platforms, but also ensuring that we have got quality information around sexual health, around education, whatever the issue might be.

VICTORIA RIDEOUT, M.A.: And I think we have something over here?

RONA HARRIS: I think I can talk loud enough.

VICTORIA RIDEOUT, M.A.: We are recording, so want to get your question.

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RONA HARRIS: Hi, my name is Rona Harris from Sesame Workshop. My question related to I guess the question that came up in the research that the gaming activities were decreasing as kids were getting older, thus more multitasking, more access to interactive computer technology. My question relates to that transition: Are we seeing a difference in tweens and younger children in terms of cognition, in terms of their ability, or is it that we are seeing an increase in the media available to teens, therefore that transition in the behavior and their activity?

ULLA FOEHR, PhD: Well, you know, I will kick that off and I think that we have seen for a long time the trend that as kids get older, the older teens spend less time with television than the tweens and the younger teens do, and more time with computers and more time with music, and that is a pattern that we have seen consistently and since the multitasking tends to revolve around the computer, it makes sense that there is more multitasking going on among the older kids. There is also a lot more people to socialize with, your social life has become that much more important and a lot of multitasking has to do with socialization as well.

RONA HARRIS: [Inaudible] younger as there is more and more opportunities for younger children to engage on computers and Internet.

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VICTORIA RIDEOUT, M.A.: Anybody have a thought on it?

IAN ROWE, M.B.A.: Probably.

VICTORIA RIDEOUT, M.A.: Probably, you know tweens use the most media of any age group. I mean, they are consuming vast amounts of media time so, yeah, I would have to guess that as they become accustomed to multitasking at younger and younger ages, then it is probably going to be something they are going to want to do but we don't know. I do want to put a question to the panelists and ask them about the future, because Jordan Grafman raised an interesting point earlier on about what the media is going to look like in the years ahead and that is something that all of us who are interested in, either media's impact on kids or how we reach young people with media messages want to know what is around the corner. So I wanted to ask those of you who want to chime in, what do you think the future holds in terms of how kids will be consuming media five years from now or 10 years from now?

JORDAN GRAFMAN, PhD: I know probably the least about this, so I will start off. [Laughter] One of the things I have stumbled upon recently because I work with economists is this second life I think it is known as and this is sort of a parallel world in which you have agents that are you and you can decorate them as you wish and they interact in meaningful

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ways with other people all around the world and you have this sort of virtual culture and it is, for the people that get into it, it becomes extremely attractive and this kind of technology has been limited I think by the technology, that is how easy it is to use, how rich and diverse it is and what you can do with it. But I guarantee you, it is going to be a lot easier to use and will become extremely attractive compared to what we are talking about now for people to enter into and treat as real because initially you could just go in and you would have fake money and these kinds of things but now you can buy property and people spend sometimes an enormous amount to get that property including rock groups and other kinds of corporate entities have actually bought in to this virtual world. You should really, if you haven't seen it, I advise you to take a look because I think this is part mixed in with actual real media that is going to be very difficult to know what is real and what isn't real on some of these Web sites and the more you can carry this technology around with you.

VICTORIA RIDEOUT, M.A.: Tell us about the eyeglass thing. [Laughter]

JORDAN GRAFMAN, PhD: Well, anybody who is interested in this kind of augmented cognition should go to the MIT media lab and you will get a real nice idea of where the technology is headed to and yes, now it seems experimental

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and costly because of what they are trying to miniaturize basically. But I guarantee you in 30 years, for example, this is going to be much more accessible, so if you are walking - let's say you are walking, you walk about multitasking now, say you are walking down the street or you go to work, you don't know everybody at work but maybe you have seen them before. You have voice recognition technology, miniature cameras that can recognize different faces that will print out on a screen who this person is and whatever you enter about that person so it will be much less embarrassing to meet people, hey, what is their name, this kind of thing, which seems nice but it doesn't have to stop there and the very same lures you are finding now on your computer, you are going to carry with you and it will be a lot easier to use, and much more instant because you would really be interacting with the world.

That is my view. I think that is a very realistic scenario which again points to the importance of how we utilize and how we teach about the best way to achieve your goals by using the technology.

VICTORIA RIDEOUT, M.A.: Do you think there might be like, I am walking down the street and there is a window open in my eyeglasses that is taking up part of my vision that is showing me some kind of message, maybe an ad message saying there is a -

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JORDAN GRAFMAN, PhD: For sure, or your contact lens. I think people will wear optical devices not because they need them to see, but because they need them to communicate with others and to read about what they are seeing and to get knowledge instantly. You won't have to recognize them. The computer is going to, so it is going to substitute for a lot of your cognitive processes and that will be a real shift I think. This is nothing compared to what is coming.

VICTORIA RIDEOUT, M.A.: Is there anybody else who wants to offer any insights into what they think the future holds?

FEMALE SPEAKER: I will jump in. Quickly, before I get to the future, I just wanted to address your point about the parodies of social campaigns or antidrug messages, and I think one important thing to remember is that in this day and age of user generated content and genes, people feel very comfortable saying what they want, when they want, how they want, whether it is on a blog or posting or something like that and I think that the important thing to remember is if someone has taken the time to create a parody of your ad, they have actually taken the time to see your ad [laughter] and to digest enough of it to spew out something as a parody and your decision as a company or as a social organization is how to respond to that and a lot of major marketers these days are being counseled that they should not respond and

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that this is part of the process and this is part of engaging teens and young people is allowing them to have that freedom to respond to their own message.

As far as the future, I think TV is the wild card here. We have talked a little bit about how more and more TV is moving online and at this point, TV is not that much multitask in terms of number of minutes of time, but as more and more TV programming is moving online and as more and more things like You Tube pop up, I think that really is the wild card for people in marketing, people in media, social organizations, is where is the attention span going to go once we are watching TV on our computers regularly?

VICTORIA RIDEOUT, M.A.: Anybody else?

ULLA FOEHR, PhD: I will say one thing following my pattern on the plus side and one thing on the minus side, on the plus side, think about media in general, not multitasking in particular, the skills involved in using new media are becoming more and more precocious or happening younger and younger. So, for example, I went to visit my grandson's, who is 5, classroom for a little presentation and they were all doing multimedia presentations where they were projecting their poems on the screen even if they couldn't read and write, and they were doing animation using kid pics and then I found him doing animation at home using kid pics. I still can't do animation so I think that there is going to be this

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moving downwards of skills that are important in our environment.

On the negative side, I see one social cause that started and I hate to think this, but I think it is going to get worse and that is the political cost. When we, now candidates win or lose not on their issues but more on their kind of style and I think that this has to do with a decrement in analysis and reflection that comes along with multitasking and I think it is a very dangerous situation for a country in the world politically.

VICTORIA RIDEOUT, M.A.: You know, one of the things Dr. Grafman was just talking about, this whole cyber-reality where you can go in and there are whole kinds of relationships and exchanges and so on, that brings me to this question we put aside a little earlier about the social implications of all of the multitasking. Patricia Greenfield, your colleague at UCLA, Eleanor Oaks, is doing a study where she put video cameras in the homes of a bunch of families and watched every minute and every interaction of their daily lives and one of the things she was surprised to find was how all of the media multitasking that is going on is taking away from the family interaction time and she said in fact they looked at how often the parent who comes home from work is even greeted by the kids who are already engaged in their little media products and she says the returning

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parent, generally the father, was greeted, actually greeted only a third of the time. When they were greeted, it was usually with a perfunctory hi. About half the time, the kids ignored him or didn't stop what they were doing, multitasking and monitoring their various electronic gadgets. We also saw how difficult it was for parents to penetrate the child's universe. We have so many videotapes of parents literally backing away, retreating from kids, who are absorbed by whatever they are doing. What do you think about - does anybody have a comment about the social and emotional implications of all of this new media multitasking that is going on. Patricia?

PATRICIA GREENFIELD, PhD: I was incredibly impressed with that study and there are other kinds of studies that back that up. For example, a study in Norway on cell phones where they found that cell phones undermine family rituals in favor of peer communication. So on family occasions, the teens would be talking on their cell phones to their friends rather than interacting with their families. It is the same kind of thing I am sure, in Eleanor Oaks study that many of the kids when their parents came home were communicating with their friends but I think even within peer groups and I think this may come out in the video, if you think of one activity as being interaction, face-to-face interaction and then you think of media as being another activity, there is a cost

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even within peer groups of cell phones or Blackberries and so forth in terms of face-to-face interaction because your face-to-face interaction is interrupted by the cell phone call to somebody who is not present. So you are dividing your attention among multiple conversationalists and therefore losing focus on the person you are interacting with face to face and I think this is an area where we need a lot more research. It is really important.

VICTORIA RIDEOUT, M.A.: You lose the focus on when you are having a cell phone conversation with a teenager, as you know they just will start talking to the other person that they are with while they are talking to you and you don't even know who they are talking to half the time. It drives me insane. Do any of you have any advice for parents? Yeah, go ahead.

JORDAN GRAFMAN, PhD: Let's just keep in mind we all try to individuate, too. Right? I mean there was some point we wanted to see ourselves as differentiating from our parents so that is going to continue. That is independent, I think, of this issue of multitasking. Of course they are going to talk with their friends rather than you when they get to be teenagers and that you just have to accept, or not, but it is going to happen so wake up. I think the other point, though, that Patricia was talking about is very important and that is you are designing cognitive trends with

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this media and the brain is adaptive and it is in evolution. We haven't stopped evolving and so before it used to be environments that helped shape our brain, you know, that we have to get out of where we were and go somewhere else to survive and this kind of thing and that might have led to longer terms goals being important rather than worrying about what is in your immediate environment while the technology can shape our cognition, too.

Now, we don't have crystal balls to know what would be the outcome, necessarily. We can talk about pros and cons but we ought to at least be aware we are doing it and be thinking about it and that kind of thinking can help us lead to what are some sort of strategies we can at least make people aware of that might help them use it in a way we think is sort of proactive positive and leads to a better world then use it in a way that is going to in essence demean their cognition and make us less competitive and let other cultures and worlds maybe we don't prefer have advantages.

IAN ROWE, M.B.A.: That is a great example. In our work with the Gates Foundation around the high school drop-out crisis, one of the central factors they site for young people that don't graduate from high school is this idea that they are not part of a college going culture, like college is not an expectation either in their home or their school so is it possible to create this idea of a third space in which

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they can become part of the college going culture, not necessarily with kids within their own home town but the ability to meet young people in a different city, in a different part of the world, and yet now with the technology, again these are the ways that hopefully we can figure out now that we have these tools how do we use it for the betterment of both individuals and the society?

So, it is one of the examples and how at least we are hoping to create, using the technology, create this media environment which in a sense can become this third space, this third college-going culture.

VICTORIA RIDEOUT, M.A.: Patricia, did you have another comment?

PATRICIA GREENFIELD, PhD: Actually, let me add something to this about the third space and the role that the new media, the Internet specifically, can have in overcoming disadvantage. I recently edited a special section of *Developmental Psychology* journal and on the Internet and development, and one of the articles that was submitted was about how teens in Ghana are using Internet bulletin boards for health information and the really interesting thing was that from our perspective the more, they had two groups, one group had completed high school and one group had dropped out before the end of high school, or didn't have the means to continue through high school. And the interesting thing was

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in terms of using these Internet bulletin boards to get health information, the dropout group was using it proportionally more than the group in high school, so the ones with the least access, presumably, to medical care were able to somehow compensate through this means were able to currently compensate for that lack through the Internet. What was the other question you asked me?

VICTORIA RIDEOUT, M.A.: I don't think there was one. Oh, advice for parents.

PATRICIA GREENFIELD, PhD: Oh, yeah, advice for parents, yeah, I think the best advice for parents is to keep the computer, especially the computer with the internet connection, in a public place in your house and for a lot of reasons, in terms of just the multitasking thing, that way if your child is using it for a task that is like writing an essay for example that is not really compatible with multitasking, you can discuss it with them and perhaps restrict it. Another thing is to possibly consider restricting phone conversations by everyone in the family during meal times in order to enhance intergenerational and face to face communication.

JORDAN GRAFMAN, PhD: Just a couple more points: I think many of us, at least what I have heard today, people talking really have genuine interest in helping people and motivating but probably, given the internationalism of the

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web, the majority of sites are concerned about getting you to those sites and selling you or convincing you or persuading you and they are likely to do it by sex, they are likely to do it by appealing to more basic, what we would say limbic system structures, things that really boost the chemicals that are involved in reward or pleasure or something like that and that is one of the bigger dangers in multitasking. And you will find, and I think you can see this if you just peruse the Web yourself, even so-called legitimate sites, news sites. If you go to MSNBC as a Web site, you will see in the headlines they are going to show "Entertainment Tonight" stuff that has to do with the sexual activities of movie stars and that is going to always be a sort of competition when you are doing these kinds of multitasking studies and things like that so I think that is something always to be kept in mind.

PATRICIA GREENFIELD, PhD: Okay, we have time for one very quick last question back in the corner.

MARY KING: I am Mary King from the American Diabetes Association and my question is really about, we want to create a place for kids to interact. We want to engage in the places where they are interacting. Our parent volunteers across the country and we are concerned about child predators, how do you handle that? How do you create that place for interaction in the face of child predators?

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IAN ROWE, M.B.A.: It is a great question. We are in the midst right now of trying to create our own online community around youth activism, very focused on issues important to young people and so we spent a lot of time looking at those communities that are out there that are really popular amongst young people and obviously My Space, you know, huge, but My Space, anyone can join right and so when anyone can join, anyone can join and if you talk to kids about their My Space identity, it has nowhere near the amount of trust and ownership and a sense of safety as when you ask kids about their Face Book account. And it is interesting, the distinctions that the two different strategies that those two community sites decided to use. Face Book created a community based on essentially, again, this idea of third-party endorsement that you had to have an e-mail address with a .edu extension which essentially meant that the only way you can get that kind of e-mail address meant that you had to be part of a college community. So while it was not a perfect barrier to entry, it was enough of an impediment or a deterrent to membership that most predators seriously and adults would just go to another community where there is less of a barrier to entry.

So we are looking right now exclusively how do we create a community with the kinds of deterrents to membership so if you are in a particular high school, the only way you

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can get in is if you know a secret question about that high school, so there are ways to set up online communities that we think can significantly decrease the presence of predators and just to make it much more of a pain in the butt for them to enter this community as opposed to just going somewhere else.

PATRICIA GREENFIELD, PhD: I'm afraid that is all we have time for. It was part of the formal program, but if you do have comments or questions, we will all try to stick around for a few minutes up here so come up and join us. I want to thank our panel for a really excellent discussion and presentations. Thank you all for coming.

[END RECORDING]