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Mr. Chairman and members of the Subcommittee. I thank you for inviting me here this morning to give testimony regarding the potential psychological effects of anti-drug messages in the media. My comments today will center around the findings of a study conducted under my supervision by Mr. Carson B Wagner as part of his Master's thesis in the Spring of 1998. The specific methods and results of this study are available in a paper presented earlier this year in a peer-refereed forum.[1]

Although two decades of research has shown that anti-drug public service announcements (PSAs) are enormously successful in reaching the intended target audiences, and although PSAs are shown to promote anti-drug attitudes among our youth, we have not seen commensurate decreases in drug usage rates. In fact, we have seen increases in drug use among our youth over the years. These contradictory facts inspired us to pursue a novel line of research, namely the unintended effects of prosocial media messages. In particular, we wondered if anti-drug PSAs were somehow triggering cognitions that would influence behavior in an undesirable direction.

I interpret the contradictory findings from prior PSA research as yet another example of a

breakdown in the traditional Knowledge-Attitude-Behavior (K-A-B) hierarchy of media effects.[2] This hierarchy is premised on the belief that knowledge, attitudes, and behaviors are causally connected, and that, in order for us to change behaviors, we will have to first change knowledge and attitudes. In other words, the supposition is that knowledge that drugs are bad will lead to negative attitudes about drugs, which in turn will result in anti-drug behaviors. Despite lackluster empirical support, this theoretical formulation seems to be embraced whole-heartedly by advertisers, including apparently those that design PSAs — partly because there are no other seemingly plausible alternatives, but mostly because the K-A-B mechanism is so powerful in its intuitive appeal.

Viewed from the K-A-B perspective, the contradiction in the effects of anti-drug PSAs lies in the link between attitudes and behaviors. Since drug-related attitudes have already been extensively studied by others and shown expected results, we set out to explore behavioral indicators in our research. Since it is next to impossible to measure behaviors as a direct consequence of exposure to media messages, we focused on measures of what we call conation, i.e., behavioral intention.

In our theoretical explorations, we found the variable of "conative curiosity" to be particularly intriguing. We hypothesized that anti-drug PSAs would "prime" viewers to think about drugs, bringing to mind drug-related thoughts stored previously, and leading them to cognitively exaggerate the prevalence of drug use in society.[3] Such a perception of exaggerated norm would then lead to a perceived gap in information (i.e., others seem to know more about drugs than me), followed by a drive to narrow this gap by gaining experiential knowledge, thereby resulting in an expression of curiosity about experimenting with drugs.[4]

We proceeded to test this hypothesis through a simple experiment involving 65 high-school seniors as participants in one of two conditions. Participants in the control condition saw an unaltered version of a prime-time television program complete with commercial breaks, while those in the experimental condition saw the same program, but with four anti-drug PSAs edited into the commercial breaks. Following the program, participants in both conditions filled out an identical questionnaire containing, among other things, five items that elicited their level of curiosity toward illicit drugs.[5] These five questionnaire items were in the form of statements, and participants were asked to indicate their level of agreement with each one of them:

1. There are no benefits to using marijuana
2. Marijuana use is associated with a weak will
3. It would be interesting to know what using marijuana feels like
4. It might be interesting to try marijuana

5. Using marijuana might be fun

Higher the participants' scores on items 3 through 5 and lower their scores on items 1 and 2, greater is their level of curiosity.

We found that participants in the experimental condition — i.e., the high-school seniors who saw the program with the four anti-drug PSAs — expressed significantly greater curiosity than their counterparts in the control condition (i.e., those who did not see the PSAs). We also found that they tended to exaggerate the norm of drug use. Compared to those in the control condition, participants in the treatment condition gave significantly higher estimates when asked for the percentage of high school students who have used marijuana in the past year and the past month. We, however, did not find a significant relationship between these perceptions of norms and level of curiosity.

Therefore, it appears that anti-drug PSAs independently increase both curiosity about drugs and perceived prevalence of drug use. But, this is only a modest first attempt at showing a relationship, and the results should be viewed with skepticism until more evidence is generated.

A few caveats must be kept in mind while interpreting these findings. The study we conducted is an experiment with a small sample in a controlled setting. While experiments of this kind have the advantage of demonstrating causation between variables, it would be premature to generalize their findings to the real world without extensive further study. My co-author and student, Carson Wagner, replicated the experiment this Spring in a different state with a slightly older sample of 28 participants, and using a different set of PSAs. Unpublished data from this replication indicate again that those who were exposed to PSAs expressed greater curiosity toward drugs than their counterparts not shown the PSAs. Moreover, they showed a higher acceptance of experimentation with drugs. Similarly other researchers, using different sample of participants as well as PSAs, would have to replicate the study before we can declare this a robust effect of anti-drug PSAs. In addition, future research should examine the duration of the curiosity-arousing effect. Our experiments only measured immediate effects, not long-term effects. We have also not established a connection between curiosity and actual behavior.

Clearly, our research raises more questions than it answers. This exploratory piece of research has brought to the fore the potential of PSAs to arouse curiosity, but our data are unable to specify the exact theoretical mechanism by which exposure to PSAs affects one's level of conative curiosity. In our paper, we discuss a number of possibilities, such as the absence of resolution and violation of expectations in PSAs leading to some of the demonstrated effects, but these are merely speculative at this point. Others have suggested that this could be an example of the "forbidden

fruit" effect, i.e., the tendency among adolescents to be drawn toward that which is forbidden or taboo. Future research can explore these possibilities.

By presenting our findings, we are certainly not claiming that curiosity is the only outcome of anti-drug PSAs. This just happens to be the variable we examined. There could be many other variables that indicate positive outcomes, as other researchers have shown, which may have far greater beneficial effects on our youth than the potential negative consequences of arousing curiosity.

We are also not recommending that national anti-drug media campaigns be abandoned, as has been incorrectly implied in certain media reports of our study. If anything, we are very interested in ensuring that such campaigns have the intended pro-social effects by minimizing their potential, if any, to have unintended negative consequences.

Our research has implications for at least two areas of current anti-drug media campaigns. They are: Message Design and Evaluation.

Since our findings raise the possibility that a mere mention of drugs can serve to prime audience members to think about drugs when it wasn't there before (potentially leading to unintended message effects), an immediate suggestion would be to design PSAs that provide our youngsters with examples of alternative activities that are healthy and can take the place of drugs in their lives. However, as my co-author Carson Wagner mentioned during the presentation of this study at the International Communication Association, the fact that these are alternative activities cannot be explicitly mentioned because this requires identifying that to which the activities are alternative, namely drugs. This is where the message designers have to get creative.

Another implication for message design suggested by our study is a move away from the Fried-Egg paradigm of social marketing. The genre of ads that promote the brain-on-drugs message, including the recent Frying Pan advertisement, is enormously effective in that it powerfully attracts audience attention. In fact, advertising classes in communication schools use these types of ads as good examples for promoting what they call TOMA (Top-Of-Mind Awareness). While TOMA is desirable for commercial products because it promotes brand identification in grocery store aisles, it may be inappropriate for advocating preventive health behaviors because it might needlessly make salient unhealthy behaviors. Social psychologists call these ads Fear Appeals.6 While fear appeals have been shown to have good recall rates among viewers, our research suggests that they might trigger curiosity. Most of the ads used in our experiments were fear-appeal ads, and perhaps the curiosity effect we discovered is due to this kind of appeal. There are other health communication

models available for message design, such as health belief model and social learning theory,[7] which may result in different types of message elaboration in the minds of viewers, leading perhaps to desirable behaviors. Future research should be directed toward discovering those appeals that optimally produce desired positive outcomes while minimizing undesirable negative consequences.

In addition to motivating a closer look at message design, our research has implications for evaluation research. In particular, it demonstrates the need for controlled laboratory and field experimentation in order to isolate outcome variables such as curiosity. Our research demonstrates a departure from prior PSA research — not just because it measured unintended negative effects of well-intentioned media messages (these effects are usually measured as a function of clearly anti-social entertainment genres such as sex and violence on television), but because it showed differences in effects as a function of the very existence of PSAs. This is in contrast to traditional experimental research in the area that assesses the relative effects of two or more PSAs (i.e., participants in different experimental groups are shown different PSAs) without a pure control condition that has no exposure to PSAs.

The larger implication for evaluation is that our study calls for more research on effects of PSAs in particular, not just PSA campaigns in general. The latter is achieved through large-sample surveys and can produce useful correlational data, but we can never be sure if survey respondents were ever really exposed to the PSAs and if so, which particular ones, and whether and how they were directly affected by it. Moreover, given the sensitive nature of the subject matter, survey respondents could be prone to give socially desirable answers to researchers. Small-sample experiments, on the other hand, can ensure exposure and measure effects in a controlled fashion, but their generalizability is suspect. Of course, both methods have their pros and cons. Ideally, a combination of experiments and surveys should be used to evaluate the overall effectiveness of anti-drug media campaigns.

I thank you again for inviting me to testify at this hearing today. I really appreciate this opportunity to appear before this Subcommittee and discuss theoretical as well as methodological issues concerning media effects of anti-drug campaign information.

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