The Influence of Presumed Influence

By Albert C. Gunther and J. Douglas Storey

Although direct influences of media have been the primary focus of mass com-munication research, recent theoretical developments have suggested powerful and important indirect effects as well. Derived from the third-person effect hy-pothesis and related research, but describing a broader range of phenomena, the indirect effects model proposes that people (a) perceive some effect of a mes-sage on others and then (b) react to that perception. We call this model the influence of presumed influence. The general model was tested with evaluation data from a maternal health campaign in Nepal. A key aspect of the campaign was a serial radio drama directed at clinic health workers. Results showed, how-ever, that many women in the general population also listened to the serial. The program had no direct positive influence on this population, but we found a significant indirect influence on their attitudes and reported behaviors when mediated by their perceptions of impact on the target population of clinic health workers.

Interest in modern mass communication has focused primarily on the influ-ences—direct influences—of mass media on individuals and on society. How-ever, developments in theoretical research over the past 2 decades suggest that mass media may exert powerful and important indirect effects as well. The indirect effects model outlined in this article is based on the idea that people perceive some influence of a communication on others and, as a result, change their own attitudes or behaviors—what one might call the influence of pre-sumed influence.[1]

Arguably the most salient instances of such indirect effects take place in an unintended audience, a group that is not the target of a message but, in a

[1] Communication models such as two-step flow and second-level agenda setting may also be called "indirect effects." We use the term here specifically to describe indirect media effects via presumed influence.

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roundabout way, is affected by it nevertheless. For example, a mother, concerned about the influence of violent cartoons on her children, unplugs the television set. A politician, believing that news reports about health care fraud will galvanize public opinion, calls for public hearings. A sixth grader, worried about his parents' reaction to his latest report card, does household chores without being asked. In all of these examples, people are reacting to their anticipation of the influence of a message on others. Interestingly, such reactions occur whether the perception of influence is accurate or not.

This paper will report on one test of the indirect effects hypothesis by analyzing effects of a radio campaign designed to improve maternal health care in Nepal.

There is no organized body of research specifically examining the indirect effects of mass communication on an unintended audience. A substantial amount of work, however, primarily in social psychology and communication, focuses on individuals' perceptions of the effects of mass media messages on others, the consequences of those perceptions, or both. This is a diverse literature, including extensive research on the third-person effect (e.g., Perloff, 1993), the spiral of silence (e.g., Noelle-Neumann, 1977), and some work in pluralistic ignorance (e.g., Fields & Schuman, 1976). All of this research contributes, in some respect, to the idea that people may change attitudes or behaviors because of their perceptions of the influence of a mass media message on others.

Although much of it is closely related, however, none of this theoretical work precisely describes the indirect effects model we wish to explore here. Most directly relevant is the third-person effect hypothesis, a two-stage process that suggests (a) that people may systematically perceive greater influence of communications on others (potentially overestimating these effects) than on themselves, and (b) that they may demonstrate attitudinal or behavioral reactions as a result of such perceptions. In several recent studies, for example, data indicate that the majority of people in representative samples reported a greater influence on others than on themselves for pornography (Gunther, 1995), for misogynic rap music (McLeod, Eveland, & Nathanson, 1997), and for violence in media (Rojas, Shah, & Faber, 1996). In all three studies, support for restrictions on such media content was stronger among those who perceived a greater self-other discrepancy. The perceptual component of the third-person effect has proved to be a robust finding in empirical research (Paul, Salwen, & Dupagne, 2000; Perloff, 1993). Evidence for attitudinal and behavioral consequences of those perceptions, usually the outcomes of real significance, is sparser, although, as noted above, such findings have been reported more frequently in recent years.

One critical aspect of the third-person effect model has been that it only appears for messages with apparently undesirable consequences, a condition we call the negative-influence corollary. This corollary is linked to theoretical work on the third-person perception favoring an optimistic bias explanation: People tend to feel they are smarter or more knowledgeable or less vulnerable than others, and thus less susceptible to media influence. Support for this explanation has been demonstrated by the fact that the third-person perception is

evident when a message has low benefit likelihood, or a perceived negative influence, but disappears when the message has potentially positive consequences (David, 1998; Eveland et al., 1999; Gunther & Mundy, 1993).

As a consequence of this negative influence corollary, the types of attitudes or behaviors examined in the second component of the third-person effect model are rather tightly constrained. They have been limited primarily to aspects of influence prevention, and research has focused on support for censorship (Gunther, 1995; McLeod et al., 1997) or other kinds of restrictions on mass media (Rucinski & Salmon, 1990).

However, a more inclusive approach to this model has emerged in recent years. Whereas such studies still focus on the self-other difference in perceptions of media effects, the attitudinal or behavioral changes have been linked simply to the extent of perceived effect on others (Gunther, 1998; Salwen, 1998). Thus, the consequence variables are not dependent on any overestimation of influence on others, nor on the magnitude of the self-other difference, a significant departure from standard conceptions of the third-person effect.

The indirect effects model proposed here, although similar in ways to the third-person effect and others, is a more general one. It proposes a simpler process, but one with broader application: People perceive some influence of a message on others and then react to that perception of influence. One significant difference from the third-person effect is that the general presumed-influence model does not depend on a message with perceived negative consequences. In the general model, the perceived influence of media on others can be negative or positive; either direction may result in some reaction. A second difference is that the attitudinal or behavioral consequences do not rely on any perceptual distinction between self and others.[2] Perceived effect on self, in fact, is not a necessary part of this model. Both differences allow for many more types of attitudinal and behavioral consequences compared to the restrictive third-person effect prescription.

In fact, the third-person effect is just a special case of this broader general model.

The conceptual distinction between the third-person effect and the general indirect effects model is important for two reasons. One, an attitudinal or behavioral response to a self-other difference, compared to one based on the simple perception of influence on others, may be attributed to different theoretical explanations. Two, taking the latter approach frees our speculations from the constraints of the traditional third-person effect model and opens up new research territory.

As noted earlier, the third-person perception has been explained by theories related to optimistic bias, the notion that people feel they are smarter or less vulnerable than others. The broader idea of presumed influence, which does not depend on self-other differences, must be built on distinctive theoretical

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[2] This second difference is closely connected to the first one, and to the negative-influence corollary. The logic behind the optimistic bias explanation argues that it is perceived undesirable message content that makes people feel others will be more influenced than they are themselves, and this is the root of the self-other difference.

ground. Some of that groundwork can be found in research on the persuasive press inference (Gunther, 1998). The persuasive press inference logic argues that people (a) attend to mass media and form impressions of the extent and slant of media content; (b) assume that this content is representative of content more generally (an extrapolation effect); (c) also assume that this media content has a broad reach; and (d) further assume that media content influences the opinions and attitudes of others. Thus, the persuasive press inference hypothesis predicts that individuals' perceptions of media content will predict their subsequent perceptions of public opinion. Two experiments showed that manipulations of the slant of media content produced corresponding differences in perceived public opinion (Gunther, 1998; Gunther & Christen, 1999). Additional support for this idea has been found in survey research on attitudes toward press content and public opinion (Gunther & Christen, 2002), in a field experiment on the effects of two community newspapers (Mutz & Soss, 1997), and in an experiment demonstrating the extrapolation and reach components of this hypothesis (Gunther, Christen, Liebhart, & Chia, 2001).

Our premise about presumed media influence on others forms the basis for the first component of the indirect effects model, but this research goes beyond that notion to examine the consequences of such presumptions. Although it is theoretical in nature, the second component—the *influence* of presumed influence—covers a potentially lengthy catalogue of phenomena. Within this model are a variety of potential audience reactions. Such reactions could range from the impulse to censor mass media to changes in an individual's attitudes, beliefs, or behaviors made to accommodate an audience that has presumably experienced some influence. These numerous potential outcomes, specific to particular situations and communication messages, may result from different theoretical processes.

Context of This Study

Since the first attempts to harness mass media for persuasive purposes, strategic communication efforts have been mounted against a host of worldwide concerns—hunger, human rights, the environment, public health, and population growth, to name just a few. Many of these strategies involve campaigns that direct their information and persuasion efforts at specific problems and specific audiences. The effectiveness of such campaigns in changing audience attitudes and behaviors in desirable directions has naturally been the primary concern of campaign planners. Indeed, campaign evaluation traditionally focuses on the information, attitude, or behavior changes in the target public that result from message exposure.

Such an approach to documenting direct effects is intuitively sensible, and it is not our intention to question it. Instead, we intend to explore the kind of indirect effects of an information campaign suggested by the empirical and theoretical literature summarized above.[3] This literature suggests that evidence

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[3] The documented failure of many information campaigns (see, e.g., Hyman & Sheatsley, 1947) may be attributed, in part, to a failure to look for campaign effects in less obvious places.

for indirect effects may best be found in those situations in which one can identify an unintended audience, an audience of people who are aware of the campaign, who may even have a stake in its outcome, but who are not the campaign's target. Effects on such an unintended audience are potentially important because (a) they are not necessarily anticipated in the campaign design, (b) they may have significant consequences for the desired campaign outcome, and (c) they could be a means to enhance campaign goals if they were documented and better understood.

To examine one case of indirect effects on an unintended audience, this article will report on data from a radio campaign designed to improve reproductive health, family planning, and gender relationships in Nepal. Nepal is the 12th poorest country in the world, with a per capita GNP of $210 and one of the highest infant mortality rates in Asia: 70 deaths per 1000 live births compared to only 7 in the United States. Social pressure to bear male children (Stash, 1996) combined with poor nutritional status creates enormous stress on women's health. Nepal's maternal mortality is estimated at 529 maternal deaths per 100,000 live births, one of the highest in the world (NFHS, 1996). Fewer children and more widely spaced childbirths are two of the most effective ways to reduce maternal mortality. Although 28% of married women of reproductive age in Nepal say they want to space or limit childbirths, they use no form of contraception (NFFPHS, 1991). Besides cultural factors, one of the main reasons for this unmet need is poor health service quality and widespread recognition of this fact by clients (Shrestha et al., 1993).

A major element of the radio campaign, designed jointly by the Nepalese Ministry of Health and the Center for Communication Programs of the Johns Hopkins University School of Public Health, was aimed at Nepal's nationwide system of health care workers, who provide birth control services that include supplies, information, and counseling on family planning and reproductive health. Many of these providers work in small and remote rural clinics. A critical concern for Nepal's Ministry of Health has been the quality of client-provider interactions and service delivery. A national needs assessment in 1993 (Rimon & Lediard, 1993) identified poor public images of services and health service providers as a major constraint in the use of health care services and family planning adoption among Nepalese of childbearing years. Thus, although the health care providers are a crucial link in the delivery of family planning services, negative public perceptions of these providers has been an obstacle to achieving program goals.

To address this problem, the campaign design included one component – a distance education radio serial titled *Service Brings Reward*—specifically directed at clinic health workers. The radio drama program, aired from December 1997 through December 1999, aimed at improving health workers' interpersonal communication and counseling skills and technical knowledge using a dramatized format. The serial modeled desirable health worker attitudes and behaviors, such as greeting the client politely, asking questions to explore the client's needs and concerns, ensuring confidentiality, providing information in a clear and nonpatronizing way, and encouraging questions and return visits,
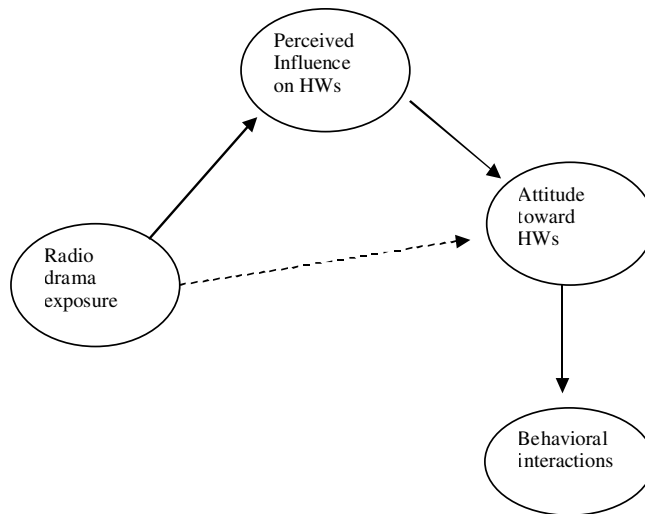
Figure 1. Hypothetical paths illustrating direct campaign effect (dashed line) and the influence of presumed influence (solid lines).

especially with one's spouse. It also modeled desirable client attitudes and behaviors such as asking questions, expressing opinions, and requesting clarification. It was broadcast twice a week (54 episodes) at the end of the clinic workday so that clinic staff could listen to the broadcast together and discuss it before going home for the day. A comprehensive description of the Nepal Radio Communication Project is available in Storey, Boulay, Karki, Heckert, & Karmacharya (1999).

Because the radio drama program was aired nationally on Radio Nepal, we expected that, in addition to the target audience of health workers, it might attract casual or even purposeful listeners from the general population, especially those who had an interest in the issues of reproductive health or family planning. This group of people from the everyday Nepalese population, those we will call the "client" population, constituted the unintended audience in our model. They were a potential secondary audience for the program, but not its intended target.

We also expected that those in the client population who listened to the radio drama would be aware of its target audience of health care workers and would form some expectation about (a) their exposure to the program and (b) to what extent they might be influenced by it. More specifically, we hypothesized that as client population exposure increased, client perceptions of health worker exposure and influence would also increase. This perception of increased health worker exposure and influence is a critical condition, for it sets the stage for hypotheses based on the general model of indirect communication effects outlined above.

Working from the indirect effects model, we hypothesized that in the second stage of the process people in the general population who perceived health workers to have greater exposure to, or to be more influenced by, the radio drama would demonstrate more positive attitudes toward health workers themselves.

In turn, we expected that those in the general client population who indicated more positive attitudes toward health workers would report improved interpersonal interactions with the health worker they encountered in their most recent clinic visit. We also expected those clients to have greater self-confidence, or self-efficacy, in their own encounters with health workers.

However, one serious rival explanation to the indirect effects model in this context is the possibility that more positive attitudes toward health workers and improved client-health provider interactions might be a direct effect of the radio drama program on the unintended audience. That is, people in the general client population might exhibit attitude and reported behavior changes simply as a result of their own exposure to the radio drama program, rather than because of their perception of program influence on the intended audience of health care workers. To test for this possibility, we additionally hypothesized that the relationship posed above would remain significant when controlling for the direct effect of the radio drama program on attitudes toward health care workers. Figure 1 illustrates the hypothesized indirect path via perceived influence and, with a dashed line, the potential direct campaign influence.

With this set of conjectures, we are proposing that the client population's perception of health worker exposure to and influence from the radio drama program is acting as a mediating variable. This mediating variable is causally dependent on clients' exposure to the radio drama program and in turn acts as a significant causal influence on their attitudes toward health care workers. Support for these hypotheses will indicate that the radio drama program has significantly improved key factors in the health care delivery process, and more importantly, these improvements will have come about via an indirect influence on an audience the campaign was never overtly intended to address.

Method

The data reported here were obtained from two sources: clinic-based monitoring of client-health worker interactions ($N = 300$) and a survey of married people of reproductive age who constitute the client population ($N = 3,817$).

The survey of married men and women between the ages of 15 and 49 was conducted in four districts, Dang, Dhankuta, Chitwan, and Sunsari, in January–February 1999. These four districts were fairly representative of Nepal as a whole. A multistage cluster sample was drawn using the NFHS 1996 sampling frame, yielding a sample that was representative at the district level. We randomly selected Village Development Committees (VDCs) and then wards within the VDCs. To achieve a sample that was distributed in proportion to the population of each VDC, The survey team enumerated households, then selected at defined intervals from a random start. Only those respondents who reported

visiting a health facility in the 6 months prior to the interview and who had ever listened to the radio drama serial (n = 731) were selected for analysis in this study.

Clinic-based monitoring consisted of observations of 40 female client interactions and 10 male client interactions with a service provider at each of six sentinel health posts in Dhankuta and Chitwan districts, followed by exit interviews with the same clients. These data were collected in December 1998.

Client exposure was measured by the number of times a client said he or she listened to the radio drama serial in the past month. In both the exit interviews and the survey, perceived exposure was measured by asking, "What proportion of health workers in this area do you think listen to *Service Brings Reward*? For perceived influence, we asked, "What proportion of health workers in this area do you think are affected by listening to the radio drama serial?" Both questions used a four-level categorical response scale: none, few (< 25%), some (25–50%), or many (> 50%).

For analysis of the exit interviews, we collapsed the perceived exposure and influence questions into "none" versus "few or more" to reflect the perception of no versus some exposure and of no versus some influence. For analysis of the survey data, we collapsed the exposure and influence questions into three categories because the sample was larger and responses more evenly distributed. These categories were none, some but less than 50%, and more than 50%.

We constructed an index of client attitudes toward health workers, dubbed "health worker image," from a set of attitude items included in both the exit interview and impact survey questionnaires. Factor analysis identified these attitude clusters: (a) Health workers treat their clients with respect; (b) health workers understand my concerns; (c) I trust the health worker to help me; (d) health workers understand clients' problems; (e) health workers are trained to give the facts; and (f) health workers will offer to help if I have a problem. The resulting index had an acceptable level of reliability (exit interviews α = .66; survey α = .86).

All clients who came to the sentinel health posts for maternal or child health services during the observation period were observed in interaction with a health care provider. During each interaction, trained observers recorded the incidence of 24 provider behaviors (both verbal and nonverbal) and 12 client behaviors based on an instrument developed by Kim and Lettenmaier (1995). Following each of the 300 observed client-provider interactions, clients were interviewed about the interaction that had just occurred.

From the observation data, indexes of client and health worker behaviors were constructed. Providers and clients received one point for the presence of a positive behavior (e.g., asking open-ended questions, seeking providers' opinion or advice) and one point for the absence of each negative behavior (e.g., disagrees with client). In addition, clients were asked in the exit interviews whether the provider had performed these 10 behaviors: Did the health worker you just spoke to . . . (a) greet you in a friendly manner? (b) make you feel at ease? (c) assure you that your discussion would be confidential? (d) ask for your opinion about family planning matters? (e) ask you about your health

concerns? (d) encourage you to ask questions? (g) reassure you about your concerns? (h) ask you to schedule a return visit? (i) ask you to come with your spouse next time? and (j) ask you to talk to your spouse about family planning? We also used these items to construct an additive index.

Finally, we assessed client self-efficacy during interaction with the health worker in the exit interview by asking six questions: Did you feel confident that you could . . . (a) ask the provider for more health information? (b) ask the provider about his/her own background? (c) ask for clarification if you did not understand? (d) ask for the health worker's opinion? (e) tell the provider about your concerns or worries? and (f) ask questions about family planning methods. These items were also combined into an additive index with acceptable reliability (α = .64).

For the survey respondents, we obtained matching assessments of provider behaviors at their most recent visit to a health center in the past 6 months. As in the exit interviews, we assessed the 10 behaviors and measured client self-efficacy with the same battery of six questions used in the exit interviews. These two indexes also had acceptable levels of reliability (α = .79 and .84, respectively). All index variables were normally distributed except self-efficacy, which was moderately skewed toward the high end of the scale.

Results

Correlations, analyses of variance, multiple regression equations, and structural equation modeling were used to test associations between exposure in the client population, client perceptions of exposure and influence among health workers, and client attitude, self-efficacy, and reported behavioral interaction scales.

Bivariate analyses of the survey data provided some initial support for the hypotheses in this study. For the first step in the model, presumed influence, Pearson correlations showed a significant relationship between client exposure to the radio drama serial and client perceptions of health worker exposure to, r = .19, n = 712, p < .01, and influence from, r = .18, n = 712, p < .01, the serial.

We next conducted analyses of variance to test the effects of presumed influence on clients' attitudes toward health workers, client self-efficacy, and clients' reports about their most recent interaction with a health worker. Results supported the hypothesized model. Clients' images of health workers were more positive the more they perceived health workers listened to, $F(2, 728)$ = 10.1, p < .001, and were influenced by, $F(2, 728)$ = 15.0, p < .001, the serial. Clients were also more likely to report increased self-efficacy and positive interactions with health workers the more they perceived that local health workers listened to the radio serial, $F(2, 728)$ = 30.3, p < .001 and $F(2, 728)$ = 4.3, p < .05 respectively, and were influenced by the serial, $F(2, 728)$ = 34.0, p<.001 and $F(2, 728)$ = 10.9, p <.001 respectively.

These patterns were replicated in part in the monitoring data gathered during and after the actual client visits to village clinics. Significant differences

were found in health worker image and in client-reported self-efficacy depending on how much clients thought that the health workers had been exposed to, $F(2, 298) = 7.4$, $p < .01$, and $F(2, 298) = 4.2$, $p < .05$, respectively, and influenced by $F(2, 298) = 5.1$, $p < .05$, and $F(2, 298) = 2.8$, $p < .05$, respectively, the radio drama. However, in neither case did clients report significant differences in interactions with health workers. Observers, witnessing the actual interactions, also noted no differences in behaviors of either clients or health workers associated with client presumptions of health worker exposure or influence.

It is not clear why clients interviewed during clinic monitoring exhibited some but not all of the effects of presumed influence demonstrated by survey respondents. The differences may lie in perceptions based on direct and immediate experience versus exposure to media content, a question we will discuss further below. However, this latter result has an important additional implication that supports the theoretical model. A plausible rival hypothesis in this model is that improved health worker image and client self-efficacy result from actual improvements in health worker care delivery (perhaps a direct result of the radio drama) rather than an indirect effect via presumed influence. However, the lack of relationship in the monitoring study between client-health worker interactions and client perceptions of influence (especially as gauged by observers) indicates that it was not actual changes in health worker behaviors that influenced the presumed influence variables. Instead, clients' perceptions of health workers appear to be influenced by the degree to which they think health workers themselves are listening to and being influenced by the radio serial.

To pursue our analysis more broadly we returned to the survey data to calculate multiple regression equations. We used regression approaches to control for other potential causal factors, including number of living children, education, age, current use of modern contraception, and number of modern contraceptive methods known.

We first regressed the health worker image scale on perceived health worker listening and influence along with control factors. Perceived influence of the radio serial and client's level of education both had a positive effect on health worker image, but perceived health worker listening was not a significant predictor. This suggests that clients recognize it is not enough for health workers to merely listen. Instead, the more the serial is perceived to influence health workers who do listen, the more positive clients' attitudes toward health workers become.

Then we added level of client exposure to the radio serial to the equation. If health worker image were directly affected by the serial, instead of being mediated through perceived influence, the coefficient for perceived influence and its significance level should decline. As we hypothesized, however, the addition of client's level of exposure to the model resulted in negligible changes to the relationships. Interestingly, the effect of client exposure to the radio serial on health worker image was significantly negative. This may indicate that the positive role models portrayed in the radio serial were at odds with most clients' direct experience with health workers and may have served to bring real-

Table 1. Means and Covariance Values for Structural Model Variables

	Mean	1	2	3	4	5	6	7	8	9	10	11	12
1 Exposure	.91												
2 Perc'd influence	2.25	.18											
3 Respect	3.51	-.04	.15										
4 Concern	3.45	-.04	.15	.77									
5 Trust	3.46	.03	.20	.42	.42								
6 Understand	3.41	-.09	.13	.65	.69	.43							
7 Facts	3.61	-.05	.15	.49	.43	.35	.60						
8 Help	3.42	-.03	.10	.48	.48	.37	.57	.44					
9 Behavior 1	11.95	.00	.13	.24	.25	.17	.22	.12	.16				
10 Behavior 2	21.14	.10	.14	.10	.09	.05	.10	.07	.04	.55			
11 Behavior 3	31.56	.09	.12	.09	.08	.06	.11	.02	.07	.45	.65		
12 Education	.97	.03	.31	.02	.09	.17	.08	.07	.15	.08	.08	.08	
13 C. knowledge	6.88	.05	.19	-.01	-.01	.06	.00	-.02	.01	.17	.15	.10	.29

life deficiencies into sharper focus. This finding also strengthens the argument that health workers who are perceived to be positively influenced by the radio serial will be regarded in a more favorable light, even if one's overall attitude toward health workers tends toward the negative.

We used two additional regression analyses to further test the hypothesized causal model, namely that exposure affects perceived influence, which affects attitudes toward health workers, which in turn affects reported behavioral interactions and client self-efficacy. This time we regressed reported health worker interactions and client-reported self-efficacy on all previous predictor variables. Then, health worker image was added to the models with the expectation that, if health worker image mediates the effect of perceived influence, then the direct effect of the perceived influence variables, if any, would decline.

As in the previous regression analysis, perceived influence but not perceived health worker listening was a significant predictor of client self-efficacy and reported interactions with health workers. As expected, knowledge about modern contraception was also significant for both, and contraceptive use was a significant factor in reported interactions. Client exposure to the radio serial was not a significant predictor of self-efficacy or of health worker interactions, additional evidence of the importance of indirect communication effects via perceptions of campaign influence on health workers.

When health worker image was added to the equation predicting reported interactions with health workers, the significance of perceived influence was slightly reduced. When health worker image was added to the self-efficacy

equation, perceived influence dropped below the significance threshold. Health worker image was the strongest predictor and made a substantial contribution to explained variance. Both patterns are consistent with the hypothesis that client attitudes toward health workers mediate the effect of perceived influence.

Finally, to test the simultaneous effects of all variables in this multistage model and to verify the role of presumed influence as a mediating factor, we constructed structural models using Lisrel 8.3. This approach additionally allowed us to estimate direct, indirect, and total effects; total variance explained; and the effects of control variables where the regression equations indicated they would make a significant difference. (A full covariance matrix is presented in Table 1.) Readers should note there are three latent variables—health worker image, reported health worker interactions, and client self-efficacy—composed of multiple indicators in these models. In accord with standard representation, we have pictured observed variables as rectangles and latent variables as ovals. We set the first listed indicator as a reference variable for each latent term. Two of the latent variables are derived from categorical data, raising the possibility of spurious dimensions in the measurement model (Bernstein & Teng, 1989). To correct for this potential problem we combined the categorical into miniscales, a strategy recommended by Gorsuch (1983).[4]

The structural model illustrated in Figure 2 affirms that exposure to the radio drama had a significant effect on perceived influence of the radio drama, which in turn significantly improved health worker image. Improved health worker image in turn produced more positive client reports of behavioral interactions with health workers. The structural analysis also affirmed that the direct influence of exposure on health worker image was negative. These key relationships remained significant when the control variables—education, knowledge of conception, and use of contraception—were incorporated into the model. The theoretical model generally fits well with the data, although the $\chi^2(df = 73,$ $N = 731)$ is 138, less than desirable but likely a result of the relatively large sample size. All other fit indexes are very satisfactory: The nonnormed fit index (NNFI) is .97, the standardized root mean square residual (RMSR) is .042, and the root mean square error of approximation (RMSEA) is .035, with a 90% confidence interval of .026–.044.[5]

We observed a similar result with client self-efficacy as the ultimate outcome variable. In this case, however, perceived influence exerted both a direct and indirect effect on self-efficacy, suggesting that perceived influence is mediating the relationships between exposure and health worker image and also be-

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[4] For the latent variable labeled "reported interactions," we combined the first three interaction items into scale 1, the second three into scale 2, and the last four into scale 3; for the "self-efficacy" variable, we combined the first three self-efficacy items into scale 1 and the second three into scale 2.

[5] Generally a lower and nonsignificant χ^2 means a better fitting model, although this test is less valid with larger samples. For the additional fit tests we subscribed to Hu and Bentler's (1999) cutoff criteria when these tests are combined: NNFI = .95 or better, RMSEA < .06, and SRMR < .08.
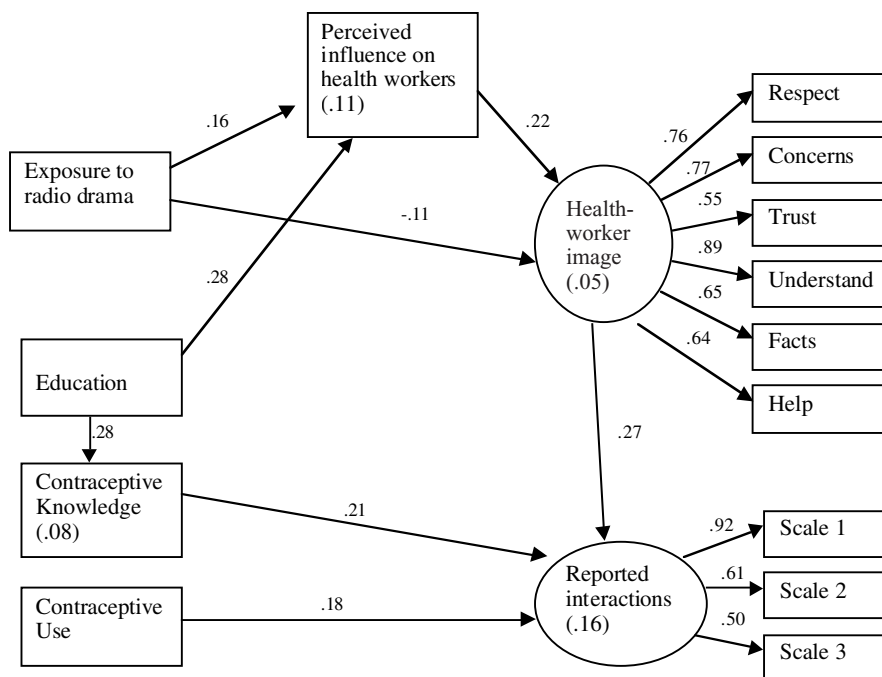
Figure 2. Structural model of variables predicting health worker image and client-reported interactions. Parameters are standardized coefficients and R^2 values are reported in parentheses. Rectangles represent observed variables; ovals represent latent variables. All paths are significant at $p < .05$ or better.

tween exposure and self-efficacy. This model also makes a good fit to the data. The $\chi^2(df = 50, N = 731)$ is better at 93, the NNFI is .98, SRMR is .037, and the RMSEA is .034, with a 90% confidence interval of .023–.045. The model explained 11% of the variance in perceived influence, 6% in health worker image, and 18% in client self-efficacy.

Discussion

We found that the radio drama program, apart from any influence on the target audience of health care providers, had an indirect effect on significant numbers of people in the general client population. Moreover, the influence of the radio drama on this unintended audience came about in a surprising but nevertheless theoretically predictable way.

The data support an indirect model summarized by the following steps. One, people in the general client population observe and attend to the content of an information campaign, even though they are not part of the target audi-

ence.[6] Two, these people anticipate influence of the information campaign on the target audience, the clinic health workers, and a corresponding change in these same health workers. Three, these perceptions of change lead people to develop more positive expectations about the professional qualities of health workers. Four, as a result of these expectations, people form more positive attitudes toward health workers. Finally, more positive attitudes cause the client group to perceive (and perhaps even contribute to) more positive and productive client-health worker interactions and to feel more confident about their own efficacy in dealing with health workers.

The radio drama was not designed to improve client attitudes toward health workers or build client self-confidence. Instead, it modeled how health workers were supposed to act with their clients. The data suggest, however, that many clients listened to the serial and reached the conclusion that health workers were learning to treat clients better. This, in turn, improved their reported encounters and their self-efficacy in dealing with health workers.

This entire theoretical process, and its desirable benefits, can occur regardless of any actual positive influence of the campaign on health service providers. It is theoretically conceivable that the campaign may have no direct effect on the targeted group, but achieve the same goals via the indirect process demonstrated here. That is, the quality of interactions between health workers and their client population may significantly improve because of secondary effects on the client population rather than direct effects on health workers.

Some evidence for this point is suggested by the fact that clients in the monitoring study, interviewed shortly after an actual clinic visit, were not more likely to report improved interactions with health workers if they perceived more radio drama influence. Their perceptions are most likely a reflection of their clinic experience, whereas the survey respondents' perceptions may result instead from exposure to the radio drama. In an important sense this finding further supports the hypothesis; the consequences of presumed influence are subjective perceptions more likely driven by mass media content than by actual experience.

Equally important is the fact that these effects of the radio drama program can be observed only when mediated by perceived influence on the target audience. The radio drama makes a significant difference for women in Nepal, but that difference is evident only when we examine the indirect path.

Also, although this research design examined the influence of presumed influence by means of the perceptions of an unintended audience, that is not a necessary condition for such effects. Individuals may be just as likely to demonstrate changes in attitude or behavior, or other influences, based purely on their perception of media influence on others, even others in their own reference group.

The data, meanwhile, give no support to the most likely alternative explanation—that more positive attitudes and interactions might simply result from a direct influence of the radio drama on the client population. Results, in fact,

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[6] This attention will depend on the salience of the topic to such client populations.

showed negative direct effects of the campaign, particularly after accounting for the indirect path.

Might these results also be explained, however, by significant effects of the radio drama on its target audience? One might ask whether improved client perceptions could result from a clinic visit with a service provider who actually has been influenced in a positive way. Although this scenario is possible, it is not supported by these data. Results of any direct campaign influence on health workers should be manifest in interactions with the entire client population, but we found the desired outcomes only for those individuals who *perceived* more campaign influence.[7]

The survey data contain no direct observations with which to validate client's perceptions of interactions with health workers. However, the importance of subjective perceptions in the influence process should not be underestimated; whether they are accurate or not, perceptions can have a self-fulfilling effect on the realization of communication goals.

In addition, causal order is a concern here, as it is with all cross-sectional data. Although our hypothetical model proposes that perception of positive influence from the radio drama would lead to improved health worker image in the minds of clients, it is quite plausible that positive health worker image leads clients to perceive health workers as more influenced by the radio drama, or that the relationship is reciprocal. Only new research designs, perhaps incorporating time order, can resolve this causal question.

Finally, we should note that the initial independent variables relied on single-item measures, partly a product of time constraints in the instruments. A great deal of research on media exposure and perceptions of influence has relied on similar measures, with good apparent reliability and validity. Development of multiple indicators, however, would be a useful addition to this research agenda.

Given the potential breadth of the indirect effects model, one can speculate that many similar campaigns may have unlooked-for effects that also help realize their goals. Many organizations, for example, launch extensive publicity or information campaigns on the assumption that they must first change the tide of public opinion so that politicians and policy makers, sensitive about their own accountability, will be compelled to answer with new legislation or other actions. An alternative view is that political figures, who are arguably more attentive to the drift of public sentiment than most people, may presume public opinion will follow from press coverage and therefore take actions merely in anticipation of such media influence. Protess et al. gave an anecdotal account of this notion in their 1991 agenda-setting study about media coverage of home-health-care fraud in Chicago. They noted that some politicians organized public hearings because they assumed forthcoming news stories would raise this issue on the public agenda.

Thus, it is tempting to speculate that actively bringing a campaign to the attention of an unintended but nevertheless involved audience may heighten

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[7] The results could, however, also be caused by a statistical interaction between campaign influence on service providers and perceived influence by clients—another prospect for further research.

the level of assumed influence and further enhance the indirect influence process. It is also important to point out, however, that the effects of presumed influence may be easily extended beyond campaigns with identifiable target audiences to the general media environment. Many other social phenomena may quite possibly have some connection to the assumption of media influence on others: Court cases are settled, politicians withdraw from races, investors move their assets, poll results are restricted, scientists abandon controversial technologies, doctors prescribe more pain medications, legislation is enacted or defeated. All these actions may occur in part because of the presumed influence of mass media coverage of these topics.

This article has proposed theoretical models at two levels of abstraction, one relatively specific and the other fairly general. The specific model examines one kind of accommodation, the hypothesis that people who assume positive influences of mass media on a target audience will adapt their own attitudes and behaviors to correspond to these assumptions. The theoretical element in the general model is broader: Assumptions of mass media influence may explain many types of outcomes. This study has presented just one such scenario. The wide array of situations potentially falling under the general indirect effects model suggests that productive work may result from more tests of the influence of presumed influence.

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