Bridging the Gap:
An Examination of Diffusion and Participatory Approaches
in Development Communication

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I.   Introduction

The field of development communication is dominated by two conceptual models: diffusion and participation. These models have distinct intellectual roots and differing emphases in terms of program designs and goals. Comparing the objectives and outcomes of projects based on these models and examining the extent of the gap and the overlap between them is the central focus of this report.

The meaning of the word development is the first of several definitional quagmires in this undertaking. Over time it has been used by analysts rooted in different theoretical perspectives to denote the promotion of Third World countries "catching up" with Western societies' standard of living, the redressing of global structural inequalities, and the advocacy of community control of resources. Development communication is the use of communication to move toward those goals. It has been defined as "the strategic application of communication technologies and processes to promote social change" (Wilkins 2000: 197).

This report examines development communication approaches, their strategies, and their outcomes to see which approaches yield which results – in short, what works? It is based primarily on working papers and published studies that examine specific interventions – commonly termed "campaigns" or programs.[1] Typical development communication campaigns promote certain practices in a given area over a period of months or years.

Development projects have many goals including educational, ecological, and economic improvement. This report focuses on – but is not strictly limited to – interventions concerning health, particularly infant health, HIV/AIDS, family planning, and general health promotion. It favors studies published in the last decade, and focuses on – but again is not limited to – interventions carried out in what has come to be called the developing world – Africa, Latin America, and the less-industrialized countries of Asia.

The outcomes to be examined fall largely into categories that derive specifically from differences in the diffusion and participatory approaches. Figure 1 summarizes the two approaches.

Figure 1. Summaries of diffusion and participatory approaches
(See Waisbord 2000)

Diffusion model

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[1] Although Eisele et al. (2000) argue that there is a distinction between the meanings of "intervention" and "program," the terms will be used interchangeably here.

Definition of communication: information transfer - vertical

Definition of development communication: information dissemination via mass media

> *Problem*: lack of information
> *Solution*: information transfer: Knowledge → Attitudes → Practice
> *Goal*:   outcome oriented: behavior change

Frameworks: *Types of interventions*
   Modernization   Social marketing
   Diffusion of innovations   Entertainment-education

Participatory model

Definition of communication: information exchange/dialogue - horizontal

Definition of development communication: grassroots participation via group interaction

> *Problem*: structural inequalities/local knowledge ignored
> *Solution*: information exchange/ participation
> *Goal*:   process-oriented: empowerment, equity, community

Frameworks: *Types of interventions*
   Social change/praxis (Freire)   Empowerment education
   Social mobilization/activism   Participatory Action Research (PAR)
                                        Rapid Participatory Appraisal (RPA)
                                        Community Involvement in Health (CIH)

The diffusion model, derived from Everett Rogers's (1962) "diffusion of innovations" theory, regards behavior change as the goal of a communications campaign, and views the purpose of communication campaigns as to persuade individuals to change their behavior by providing them information. The standard formulation of this model is Knowledge/Attitudes/ Practice, or KAP: information provides Knowledge, which leads to a change in Attitudes, which in turn leads to Practice – the desired behavior change. Within the diffusion model fall such activities as entertainment-education and social marketing.

The participatory model emerged in part as a reaction to the underlying assumptions of the diffusion model (Waisbord 2000: 17). It holds that development communication is not a vertical process of information transmission from the knowledgeable to the less- knowledgeable, but rather a horizontal process of information exchange and interaction. Proponents of this approach stress the model of empowerment adopted from the work of Brazilian educator Paulo Freire (1970). This model posits that the purpose of development is to empower people to have greater control over decisions that affect them and in this way to foster equity and democratic practices. In its purest form, the participatory approach sees development interventions "less as means to an end than as offering ends in themselves: the emphasis is not on outcomes but on processes." People are regarded "as agents rather than objects; capable of analysing their own situations and designing

their own solutions" (Cornwall 1995: 1670). Many participatory health researchers cite as a guiding principle

the 1978 World Health Organization Declaration of Alma Ata which states "the people have the right and duty

to participate individually and collectively in the planning and implementation of their health care."

The essence of the participatory approach lies in working with community members to determine their

needs and design programs to address them, rather than imposing an intervention from above. Community

participation can extend from the formative research phase through program planning and execution to

evaluation of the program (Cornwall and Jewkes 1995; Roe et al. 1997). Such activities as "empowering

evaluation" (Roe et al.), "empowerment education" (Wallerstein, Sanchez-Merki and Dow 1997: 196),

participatory learning (Laverack et al. 1997), Participatory Action Research (PAR), Community Involvement in

Health (CIH), and Rapid Participatory Appraisal (RPA) fall into the participatory communication category.

Although participatory communication is often defined in contrast to the more traditional diffusion model,

the two are not polar opposites. As Waisbord (2000: 5) explains, the diffusion model has evolved in a

participatory direction since its initial formulation. Further, participatory projects necessarily involve some

element of information transfer. Nonetheless, most development communication projects tend to identify

themselves quite clearly as belonging in one or the other camp.

II.   Overview of Studies Examined

The studies included in this report were selected on the basis of the following criteria: each was an

empirical study of one or more communication interventions that included information on the objectives and

nature of the intervention, the method of evaluation, and the outcomes. Some studies that do not meet these

criteria are referred to, but this review is based on studies for which that information is provided. These studies

are summarized in Figures 2 and 3, pp. 40-49. All of the studies, regardless of their framework, were

examined for evidence of outcomes identified with the diffusion model – that is, changes in knowledge,

attitudes and practices – and outcomes identified with the participatory model – that is, empowerment,

community building, and social equity. Figure 2 lists key aspects of the studies, grouped by the type of health

or other outcome fostered by the project. Figure 3 charts the objectives, methods, and reported outcomes of

the same set of studies, grouped according to whether they are categorized as diffusion or participatory

interventions. As exercises in data reduction, these figures are necessarily oversimplified and interpretive.

The studies included in this report comprise an opportunistic sample of working papers and published studies on development interventions. They were found through keyword searches for such terms as "health communication," "public health," "participatory research," and "community participation" on the ProQuest, First Search Sociological Abstracts, and other databases, as well as by tracing bibliographical and Internet references. The collection of studies included here reflects the holdings of accessible research libraries, the caprice of full-text databases, and the vagaries of Inter-Library Loan. There exist many more such studies than are included here. Although the 40 projects examined in this report do not constitute an exhaustive collection of relevant material, the inclusion of more studies seems unlikely to produce patterns undetected from this partial review.

1. Diffusion framework

This report examines 23 published articles and working papers concerning 26 studies of interventions based on the diffusion model. Twelve of these studies explicitly defined the interventions they analyze as belonging to the subcategory of entertainment education. Most of the rest can be characterized as social marketing.

Goals: The goals of these programs were to change health-related behaviors, including practices related to family planning, infant health, and HIV/AIDS. At times, researchers specified the aim of institutionalizing the programs so that the diffusion process could continue after the departure of outside researchers and agencies. Institutionalization is likely to have been a goal of most of the projects, but this was not always specified. Reflecting the diffusion model, most of the studies couched their objectives and their evaluations in terms of changes in knowledge, attitudes and practices.

Methods: The methods these projects used to achieve their ends centered on mass media interventions of various sorts, including radio and television programs and advertisements, leaflets, banners and other print materials. The media materials were designed to inform the audience about health-related services and practices and the benefits of using them. In some cases, training of health workers was also noted as a key component of a campaign. Again it is likely that such training was part of most or all of the projects, but this was not always explicitly noted.

Evaluation: Of 26 diffusion model studies included here, the majority (14) used pre and post-intervention surveys conducted face-to-face as their principal method of measuring change. The surveys were often supplemented with clinic data, interviews with health care providers or members of target audiences, or other measures.

Outcomes: In the aggregate, these studies generally found positive results for media campaigns to improve knowledge, attitudes and practice related to desired health outcomes, with a tendency to find greater increases in knowledge and attitudes than in practice. Figures 2 and 3 summarize those outcomes that were explicitly noted for each study.

2. Participatory framework

The search for studies concerning participatory projects led to a smaller body of material: 13 articles that covered 14 projects. As researchers have noted, "[a]lthough there are many Freirian-inspired programs throughout the world, few efforts have been made to research the processes created by these programs or to evaluate their health and social outcomes" (Walelrstein, Sanchez-Merki and Dow 1997: 203).

Goals: As Figure 3 indicates, while the diffusion projects examined concerned primarily family planning and infant health, participatory projects tended to focus on general health promotion and other ends.   The goals of these projects were twofold: to promote development through changes in health or other behaviors, and to do so through processes that would empower individuals and communities to have greater control over their lives. These goals were expressed in participatory terms: "to create a collaborative relationship between the researchers, local organizations and community members that would facilitate co-learning and collaboration" (Sarri and Sarri 1992: 107); to test a "participatory approach to the expansion of reproductive choice that emphasizes organization development" (Díaz et al. 1999: 2); to "strengthen … Nepal's health-related institutions' capacity to meet health needs through: (i) community-based participatory development, (ii) management strategies, and (iii) health personnel training" (Purdey et al 1994: 331).

Varying degrees of local participation are considered to be grounds for definition as a participatory project (Rifkin 1996; Hancock et al. 1997: 230). Some participatory projects focus on community input in identifying the needs to be addressed by interventions. Others include some combination of community involvement in formative research for the planning, direction and undertaking of the intervention itself, or evaluation of the

intervention. Susan B. Rifkin identifies two frames of reference within the participatory model. The first, which she terms the "target-oriented frame," sees community participation as "a means to the end of health improvement." The second, the "empowerment frame" sees participation as a more active way in which people can "have power over decisions which affect their lives" – "an end in itself." Each frame envisions distinct roles and levels of involvement for community members (Rifkin 1996: 81-3). The projects reviewed here fall into both categories. Some might more properly have been categorized as community education, as there was little or no community input in their design or implementation stages. The mix of means and ends and the variety of levels of involvement taken to constitute community participation complicate comparison, but the attempt here is to consider the studies in terms of their stated goals.

Methods: The methods these projects used to achieve their ends generally involved community meetings and workshops guided to a greater or lesser extent by researchers or development agency representatives. At community meetings, participants discussed local needs and how to address them. For example, in a South African Community Involvement in Health project: "the community prioritized the needs and chose the programs, in partnership with the researcher, at open meetings held in the township" (Hildebrant 1994: 249).

Evaluation: In most cases, outcomes of participatory projects were evaluated through case studies involving participant observation and interviews, sometimes supplemented with clinic data or small surveys.

Outcomes: In almost all of the participatory studies, the participation objectives were judged to have been significantly met. All studies reviewed found evidence of increased local involvement in community decision-making or other outcomes that the authors classified as indicative of increased empowerment.

III.   Outcomes

The following section takes on the central task of this report. It examines the set of studies for evidence of what works in development communication.

1. Methodological considerations

While some evaluations were manifestly more rigorous than others, for the most part researchers' assessments of outcomes are accepted at face value. There are several reasons for not delving into issues of research methods, reliability and validity, or justifications for claims about results. These reasons concern the

amount of detail reported for each study, unresolved conceptual and operational definitions of participation and empowerment, and the varying requirements of the journals in which these studies appear.

First, every research method has its own set of potential pitfalls. Studies based on comparisons of control and treatment areas need to establish that the areas are well matched. Panel studies run the risk of sensitizing the respondents to relevant issues. The soundness of survey research – the predominant tool in diffusion studies – depends not only on the suitability of the statistical tools employed and the researchers' skill in interpreting them, but also on the quality of the sample. Pre- and post-intervention surveys must have comparable and appropriate samples. Most behavior change as measured by questionnaires is based on asking people what they do. But self-reporting of health and lifestyle behaviors is notoriously unreliable, especially when it concerns such delicate subjects as contraceptive practices. Furthermore, the wording and sequence of items in a questionnaire, as well as the interviewers' skill and consistency in administering the questionnaire, can greatly affect the responses.

Ideally, research reports should contain enough information to assess how study designers have dealt with these issues. Yet many of the studies reviewed here contain insufficient detail about how the evidence was gathered to gauge the quality of their conclusions. Some quantitative studies specify how their samples may or may not represent the population of interest, but not all of the articles include this information. Most of the survey-based studies do not include copies of the questionnaires used or verbatim transcriptions of key questions. The absence of explicit information on sampling procedures and questionnaire content impedes assessment of survey validity.

Likewise, the studies based on qualitative methods – the prevailing approach for evaluating participatory projects – generally provide few details of their procedures. Evidence for claims of community empowerment comes in the form of brief excerpts from interviews or meetings, or descriptions of interactions. At times no evidence is provided; the researchers simply assert that empowerment has occurred. These problems are exemplified by the author of a participatory study who flatly rejects standard evaluation norms, and then proceeds to make a claim about results:

> This presentation of findings neither evaluates the project nor establishes cause-and-effect relationships between specific project activities and certain participatory outcomes. Notwithstanding, some relationships are evident…. The data show that, over time, the [subjects] thrived as individuals and as a group and became known and respected in the community (Dickson 2000: 195).

Without extensive descriptions of contexts, interactions and other bases for researchers' interpretations of events, it is difficult to assess claims based on ethnographic methods such as participant-observation.

A lack of methodological exposition is not unique to this body of material. A team of researchers reviewing write-ups of community action health programs found that none of the 17 articles they looked at provided sufficient information on "sampling and control procedures, reliability and validity of instruments, analysis techniques, and specification of details of the intervention" to allow "rigorous scientific evaluation" of the studies (Hancock et al 1997: 229). A review of 41 articles about HIV/AIDS prevention campaigns concluded that "conceptual and methodological rigor in reporting fundamental communication components can be improved" (Myhre and Flora 2000: 41).

The second reason that this report does not deeply scrutinize methods is that there is a question of comparable measurability. Participatory outcomes of empowerment and equity are less amenable to measurement than such outcomes as the percent change in vaccinations before and after a campaign or even slippery hypotheticals such as the intention to use contraception in the future. As Eng Briscoe, and Cunningham say, "Participation is not an objective that exists in specific quantities or that can be measured in particular units to be compared over time," nor is it "simply a yes-no variable that is either present or absent" (1990: 1350). Similarly, Wallerstein, Sanchez-Merki and Dow assert that empowerment is "a dynamic construct that … cannot be measured through a universal or global measurement" (1997: 207). Laverack et al. (1997: 26) put this more starkly: "it is not very clear what measures of outcome can be used for demonstrating that an individual or group has become 'empowered'."

Finally, although most published articles have been subject to peer review, studies written up in different types of journals focus on different aspects of the research process and supply varying depth of detail. If this report is to have material to consider, it must take these studies seriously, not reject them out-of-hand for providing insufficient evidence to support their claims. For all of these reasons, the studies discussed here are for the most part examined and evaluated on their own terms, with the occasional raising of the skeptical eyebrow.[2]

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[2] For critiques of development communication research see Yoder, Hornik and Chirwa (1996); Sherry (1997); McKillip (1989); Servaes (1999: 95-117). Freedman's (1997) critique discusses selection bias; Westoff and Rodríguez (1995) discuss problems of inferring causal direction.

2. Results by framework

Most development communication campaigns use multiple means to reach their intended publics. The categorization that follows, therefore, is necessarily inexact, but it attempts to group projects by their central focus.

a. Diffusion framework

1. Outcomes attributed to mass media interventions

Interventions based on any variety of the diffusion model center on mass media. Because of the emphasis on mass media in development communication, this section looks at outcomes attributed solely to messages transmitted via the media. These messages may be part of interventions that use only media channels, or of mixed interventions whose analyses allowed for sorting out the effects of different communication channels on the outcomes. The section divides mass media-based interventions into two categories: social marketing and entertainment-education.

a. Social marketing

Many development interventions are in effect advertising campaigns for such "products" as contraception or immunizations. The use of established advertising techniques to promote development goals via media such as TV, radio, newspapers and billboards has been dubbed social marketing (Kotler and Roberto 1989: 24). Social marketing has adopted not only the forms of marketing, but also its tools: consumer research, pretesting, and audience segmentation (Backer, Rogers and Sopory 1992 : 32). It is the basis of many public information campaigns (Waisbord 2000: 7). Most media-based development projects can be placed into the social marketing category.

Social marketing campaigns have produced varying degrees of success. At one end of the range of outcomes are studies that found no effect for mass media interventions. A childhood immunization campaign in Zaire that included print and radio material and the training of health workers found that while radio listening did lead to increased knowledge about immunization among poorer, less-educated people, this knowledge was not extended into practice: "no evidence was found that radio spots or programs about immunization influenced people to have their children immunized" (Yoder, Zheng and Zhou 1991: 38). A study of a campaign to distribute Vitamin A to children in Central Java found increased use of the vitamin, but statistical

analysis of survey data showed that this was not attributable to the media campaign (McDivitt and McDowell 1991).

Other studies found some effects traceable to mass media. A study of a Nigerian media campaign promoting immunizations found few effects attributable to media, except a limited correlation between radio exposure and knowledge about whooping cough (Ogundimu 1994: 236). A Bolivian family planning campaign featuring 11 TV and radio spots found exposure to the campaign associated with increased knowledge, positive attitudes, and, to a lesser extent, increased adoption of contraception (Valente and Saba 1998).

Two family planning campaigns – one in The Gambia and the other in Mali – combined social marketing and entertainment-education techniques, with interestingly contrasting results. An evaluation of the campaign in The Gambia found improved knowledge, attitudes and practices in people with no education who heard the radio drama (Valente et al 1994: 98). The association between campaign exposure and education level was reversed in Mali. Evaluating a multimedia campaign, Kane et al. found that uneducated respondents were not affected by campaign exposure, while those with some schooling were. Overall they claimed a "positive and significant" impact of the campaign on contraceptive knowledge, attitudes and practices (Kane et al. 1998: 320).

Other projects have claimed broad success with social marketing techniques. A media campaign in the Philippines had clearly positive effects. "The evidence suggests that the mass media information campaign was largely responsible for the improvement in vaccination coverage" (McDivitt, Zimicki and Hornik 1997: 111). Also in the Philippines, an evaluation of a TV-based social marketing campaign to decrease fertility found an increase in modern contraceptive use, judged to be a significant direct effect of the communication intervention (Kincaid 2000). Data from a project in Nigeria "suggest very strongly that mass media interventions can play a major role in promoting family planning use in certain situations" (Piotrow et al. 1990: 272). An analysis of DHS data in Kenya found that "mass media can have an important effect on reproductive behavior" (Westoff and Rodríguez 1995: 31).

This examination of outcomes attributed to mass media interventions based on social marketing techniques has revealed no overall pattern of effects of media campaigns on health behaviors. The next section examines those few interventions that fall squarely into the subcategory of entertainment-education.

b. Entertainment-education

Entertainment-education interventions combine entertainment with education by incorporating educational messages into entertainment programming on radio or television. These messages may be carried by, for example, a soap opera or popular song specifically written for that purpose, or in vignettes inserted into variety shows. The key characteristic is that the media fare is not presented in an overtly didactic way; it is presented and meant to be consumed as entertainment. Enter-edu is based on Albert Bandura's (1977) social learning theory that posits that individuals imitate the behavior of role models. As Lettenmaier et al. put it (1993: 5), enter-edu projects "can persuade listeners to change attitudes and practices because people tend to adopt the behavior of those they admire, whether that person is real or a fictional character."

Big claims have been made about the power of the enter-edu strategy. For instance, "the combination of mass media and popular entertainment formats can be a potent force in health promotion" (Lettenmaier et al. 1993: 9). "Entertainment – through television, radio and music – is one of the most effective communication strategies for reaching the public to promote family planning and other public health issues" (Singhal and Rogers 1989: 39). Yet an examination of empirical studies reveals that not all interventions have achieved the desired effect. Researchers in India, for example, found that while exposure to a prosocial soap opera did elicit viewer involvement with the characters, it did not achieve its central aim: "a single TV series did not significantly affect viewers' awareness of beliefs that promote womens' status" (Brown and Cody 1991: 135). An examination of a radio soap opera in Zambia designed to disseminate information about AIDS found changes over time in some behaviors, but "little credible evidence … that exposure [to the radio drama] produced effects on risky behavior related to AIDS or on knowledge or other outcomes" (Yoder, Hornik and Chirwa 1996: 200).

Conversely, many enter-edu projects have been judged to be successful. A group of researchers studied radio soap operas promoting family planning in four African countries. They found it difficult to separate out the effects of radio drama from other factors but concluded that "despite these analytical problems, however, the evidence strongly suggests that the soap operas do motivate many listeners to adopt modern contraceptive methods" in Ghana (Lettenmaier et al. 1993: 9). Another finding of positive effects comes from Piotrow et al. who state that enter-edu material inserted into popular TV programs "influenced knowledge about clinic services and contributed to increased clinic attendance" in a family planning campaign in Nigeria (Piotrow et al. 1990: 269). Everett Rogers and his collaborators used a field experiment to examine the effects of an enter-

edu radio soap opera meant to encourage family planning in Tanzania. One area of the country received radio broadcasts; another did not. Using a variety of measures, they found that the soap opera had "strong behavioral effects on family planning adoption" (Rogers et al 1999: 193). Douglas Storey et al. (1999) attribute a direct effect on family planning attitudes and use of contraception to a family planning radio drama in Nepal.

Enter-edu has been enthusiastically embraced by many development communication practitioners (Singhal and Rogers 1989; Lettenmaier et al. 1993; Piotrow et al. 1990). Enter-edu television and radio programs tend to be highly popular with audiences (Singhal and Rogers 1989; Brown 1991:118; Lettenmaier 1993: 7; Ume-Nwagbo 1986: 161). Their generally high production values may be a factor in their popularity, but, crucially, the programs are produced in local languages, and feature local settings and situations. It is increasingly recognized in media studies that audiences favor local content when it is available (Hoskins, McFadyen and Finn 1997: 32-5; Straubhaar 1991). Perhaps some of the enthusiasm among practitioners for enter-edu interventions is due to the indubitable popularity of the shows, which would be evident to researchers in the field. But popularity is not equal to efficacy. Their popularity indicates that these shows entertain; the mixed results of these studies suggest that they do not always educate.

2. Outcomes attributed to media plus interpersonal communication

One aspect of development campaigns that shows up in study after study is the contribution of interpersonal communication to behavior change. The role of interpersonal communication in information transmission has been highlighted by communications researchers dating back as far as Lazarsfeld, Berelson and Gaudet's classic formulation of the two-step flow process (1944), and Everett Rogers's *Diffusion of Innovations* (1962).

The essence of the notion of two-step flow is that media influence operates in two stages: first, "opinion leaders" absorb information from the mass media; and, second, the opinion leaders pass along the information to others via interpersonal communication. The diffusion of innovations theory similarly posits that an innovation first becomes known through the media and is taken up by "innovators" and "early adopters." The rest of the population evaluates an innovation and decides whether or when to adopt it based on interpersonal contact with its earlier users.

Many studies note the role of media in sparking interpersonal communication, which in turn leads to changes in behavior. This section considers the role of both formal and informal interpersonal communication as reflected in these studies.

a. Media plus formal channels of interpersonal communication

One thing that health promotion campaigns attempt to do is stimulate demand – for contraceptives, immunizations or other health services. For a campaign to result in behavior change, therefore, a supply must be in place to satisfy the demand generated. This requires distribution and coordination. It also requires health personnel to be able to administer the program and dispense the materials, whether these are leaflets or contraceptives. This also converts the health system into a purveyor of campaign messages rather than simply the destination of an intervention. This section considers evaluations of development communication interventions that explicitly examined interpersonal communication through the formal channel of the health system.

As with other types of interventions, these have had mixed results. Some have shown media to be more influential than interpersonal communication. A family planning campaign in Zimbabwe used enter-edu, print material and "motivational talks" to encourage men to take a more active role in family planning. In this case, the interpersonal channel was not judged effective; researchers found that "[b]ecause of radio's extensive reach, the soap opera was responsible for changing the behaviour of more than four times as many men as the pamphlets and motivational talks combined" (Lettenmaier et al 1993: 9). Similarly, an evaluation of an immunization campaign in the Philippines found that exposure to campaign messages through mass media, not through contact with health workers, resulted in increased knowledge, which led to increased practice. The researchers do not mention the role of informal interpersonal channels, but focusing on the Philippine health care system, they establish that "contact with or information from organized interpersonal channels did not contribute to the change in vaccination knowledge" (McDivitt, Zimicki, and Hornik 1997: 111).

Some campaigns have shown the converse, with formal interpersonal communication proving the key to behavior change. A study of a media-based immunization campaign in Nigeria found the vast majority of respondents naming the clinic or health personnel as the most important source of vaccination information with a far smaller percentage of respondents citing radio messages as their information source (Ogundimu 1994:

233). A Central Java campaign to distribute Vitamin A to children involved radio spots and banners, training of health workers, and the production of training manuals. The intervention covered only some areas of the country. Researchers found increased awareness of Vitamin A in intervention areas but not in control areas. However, Vitamin A use increased significantly only in communities that had access to the health care system – communities with a "health post." Statistical analysis showed that the increase in use was due to contact with the health system, not to the media campaign. Demographic variables – mothers' educational level, and the age of the child – were also associated with Vitamin A coverage (McDivitt and McDowell 1991).

In Zaire, formal interpersonal communication channels in a child health campaign accounted for an improvement in practice. Radio messages had scant coverage, and some print materials were not distributed. Thus the bulk of this campaign was interpersonal. Researchers attributed improved health behaviors to the training of health workers and volunteers and suggest that "intense interpersonal training may produce changes in behavior among a small number of people in a short amount of time" (Yoder, Zheng and Zhou 1991: 13).

b. Media plus informal channels of interpersonal communication

The previous section considered the role of formal interpersonal communication – that is, interaction with health service workers – in campaigns. But as much research has indicated, a salient factor in many people's decision-making is informal interpersonal communication with friends, family, peers, and other potential opinion leaders, innovators, or early adopters. Mass communication can trigger such interpersonal communication.

A study of a family planning campaign in The Gambia found that exposure to an enter-edu radio drama "was associated with interpersonal communication about contraceptives with partners or friends" and that these discussions, rather than the radio programs directly, led to increased clinic visits (Valente et al 1994: 99). A family planning campaign in Ghana (Hindin et al. 1994), and family planning and AIDS campaigns in Tanzania (Rogers et al. 1999; Vaughan et al. 2000) report similar findings.

Patil and Kincaid (2000) examined an AIDS education social marketing campaign in the Philippines. They found that the campaign did not affect knowledge about AIDS, which was already at a high level in the country. Practice – condom use – did improve, however. Statistical analysis of survey data uncovered an

unanticipated relationship. Campaign messages and either the intention to use condoms or current use of condoms were not, as the researchers had expected, directly related. Rather,

> [t]hese analyses reveal that there are myriad indirect paths for information to process from a campaign to behavior change and condom use through interpersonal communication and perception of peer use of condoms. In fact, it is the indirect exposure not direct exposure that creates the path from the campaign to the desired behavior (Patil and Kincaid 2000: 17).

The researchers' collapsing of responses indicating intention to use condoms and current use of condoms together into the "behavior" category might be questioned, but that does not affect the issue under examination here: the distinction between direct campaign exposure and indirect exposure through interpersonal channels.

While Patil and Kincaid reported an unforeseen finding of the importance of interpersonal communication, some communications interventions rely on this channel. Family planning campaigns are often designed to encourage spousal communication about contraception, which has been shown to be associated with contraceptive adoption (Rogers et al. 1999). Storey et al. evaluated a campaign that used enter-edu, health worker education and other tools to promote family planning in Nepal. Among the explicit means of doing so was by promoting husband-wife discussions of contraception. The researchers found significant effects of the campaign "primarily through its effects on interpersonal communication about family planning with health workers and with one's spouse" (1999: 290).

A radio drama broadcast in Zambia included the message that married people should discuss AIDS with their spouses and children. Evaluation of the project suggested that exposure to the program did spark family conversations about AIDS (Yoder, Hornik and Chirwa 1996: 196).

Several studies posed research questions about the relative merits of interpersonal and mass media channels in achieving behavior change. Valente and Saba (1998) explicitly sought to compare the influence of mass media and interpersonal communication in a family planning campaign in Bolivia. They found that media exposure led to increased knowledge and attitude change, and to interpersonal communication itself, which was more strongly associated with behavior change. They also found that media could, in effect, substitute for personal contact by providing information to those respondents who did not have contact with contraceptive users (1998: 114-16).

Storey et al. employed multiple research methods to evaluate an enter-edu and health worker training family planning campaign in Nepal that focused on improving interpersonal communication both between

husbands and wives and between service providers and clients. They concluded that "[t]he theory-based strategy of linking interpersonal and mass communication processes in a single campaign by (1) modeling client-provider and spousal communication and (2) training health workers in interpersonal interaction skills appears to have worked" (1999: 290).

b. Participatory framework

Diffusion interventions focus on mass media and, at times, their relationship with interpersonal communication channels. Participatory campaigns concern interpersonal channels almost exclusively. Their principal communication channels are group meetings, workshops, and sometimes localized "small media" such as community theater (Boeren 1992:47; Kalipeni and Kamlongera 1996) or interactive posters (Laverack et al. 1997).

The evaluation of participatory campaigns has a dual focus, because these campaigns have two sets of goals. They seek to achieve some specific development end – referred to as an outcome and evaluated by "outcome indicators" – and also to empower communities via participation – referred to as process and evaluated by "process indicators." Outcome and process indicators correspond to Rifkin's (1996) distinction between target and empowerment frames, and, as Rifkin establishes, different intervention philosophies may lean in the direction of one or the other frame. Evaluation of outcomes can be undertaken by observation of results such as clinic records. Evaluation of processes, empirically a less straightforward undertaking, was often a greater focus in the studies reviewed here. This is complex territory for several reasons. First, the participatory approach suffers from definitional imprecision; there is no agreed-upon definition of community or of participation (Manderson 1992: 9). Nor is there agreement on what constitutes empowerment. In the words of Wallerstein, Sanchez-Merki and Dow, "[r]esearch into Freireian programs poses special difficulties, because … change targets evolve over time" (1997: 203).

These caveats notwithstanding, researchers involved in participatory projects found evidence of success in their case studies. Dickson examined a Canadian health promotion project for older Aboriginal women. The women participated in meetings, planning committees, workshops, and consultations with government organizations concerning health education and services. Dickson's case study focused on process indicators. Citing as evidence brief excerpts from gatherings, she found: "many examples of the [subjects] reaching out

and establishing external community connections, relationships, and partnerships; learning more about and critically analyzing community issues that are important to them; becoming activists, speaking out on issues and being involved in decision-making; and being recognized and honored by the community at large" (Dickson 2000: 207).

Purdey et al. report on participatory projects in Nepal that were part of a Canadian initiative to support community-based participatory development. The participatory aspect of this project began with community members choosing the projects to be supported. One project concerned irrigation. Villagers' attempts to build a reservoir had not succeeded, and the outside facilitator worked with them "to enhance the reservoir group's interaction skills and confidence," to encourage "everyone, regardless of caste or gender to participate and have their say," and to promote liaison with government agencies. As outcomes, the researchers report that reservoir was near completion when the article was written, and the group "gained confidence in their ability to work together and influence agencies… [and] overcome not only physical, bureaucratic and interpersonal difficulties but also the dependency attitude unwittingly created by outside development agencies" (Purdey et al 1994: 334).

A write-up of another project supported by the same agency similarly concluded with a list of "empowerment outcomes" noted by the researchers: "a strong sense of community identity, an open decision-making structure, many people with recognized leadership skills… increased sensitivity toward gender and social equality, heightened self confidence in dealing with local issues, better two-way awareness of/interaction with resource agencies" (Purdey et al. 1994: 342).

Wallerstein, Sanchez-Merki, and Dow describe a project to reduce morbidity and mortality among high-risk adolescents in New Mexico. This high school-based intervention was meant to facilitate community activism through "empowerment education." The program consisted of 7-week intensive workshops with at-risk youth. In this case, the participatory aspect of the project consisted of group discussions of possible "action strategies to make healthier choices for themselves and their communities" followed by work in a peer-education program or a community action project. To evaluate the program, in addition to observation and interviews, the researchers administered a questionnaire to participating students and control students. They found that youths who participated in the intervention showed a statistically-significant increase in "socially

responsible efficacies" compared to the control population (Wallerstein, Sanchez-Merki, and Dow 1997: 196-7, 206).

Another type of participatory project was a "healthy lifestyle" project in Australia. The intervention was designed to encourage health behavior to prevent obesity, diabetes, and cardiovascular disease in an Aboriginal population susceptible to these conditions. This program was participatory because community members worked with a nurse-educator to identify factors contributing to the high level of diabetes in the community and then designed a program of diet and activity changes. Aboriginal health workers were employed by the project, which included education and exercise sessions.

Program outcomes were evaluated through interviews and the analysis of clinical data such as body mass index and glucose tolerance. In terms of outcome measures, tracking four years after the start of the program showed a significantly reduced percentage of sedentary people and a significantly greater proportion of people reporting attempts to lower their fat and sugar consumption, but no decrease in diabetes prevalence in the community. Program participants showed some improvement in some clinical measures. In terms of process measures, six years after its inception the program was still in operation, had community support, and was run by community members. This, state the reseachers, is "in our opinion, a measure of success in itself" (Rowley et al. 2000).

In some cases, researchers noted that participatory goals may have been overambitious. Laverack et al. evaluated a child health education campaign in Ghana. The participatory aspect of the campaign took the form of community workshops to develop health education materials for use in schools and clinics. The materials included such things as interactive posters and other materials designed to contribute to participatory learning. The outcome variable analyzed was simply whether the materials were used -- that is, whether people in the target audiences had been exposed to and liked the materials. The researchers found that for various reasons, the materials were not being used as extensively as the campaign planners had envisioned. Looking at the process, the researchers comment, "situational factors posed genuine problems to the wider use of empowerment approaches and we often had to resort to a 'semi-participatory' approach" (Laverack et al.1997: 25).

The planners of a Navajo breastfeeding project in New Mexico also found that the reach of their empowerment goal exceeded their grasp: "the initial goal of community empowerment with reference to infant

feeding and health was clearly beyond the scope and time frame of this project, and required skills and connections beyond those already present … it was necessary to scale down this goal" (Wright et al. 1997: 637).

Sarri and Sarri point out that "work and daily survival requirements constrained participation" in participatory projects they were involved with (1992: 118). Rifkin has suggested that participatory interventions, whether rooted in target or empowerment frames, have set "unrealistic expectations." Reviewing several Community Health Worker projects, she concludes that community participation is an elusive concept and that health and social service professionals have been unable "to manipulate social change in the direction of their own preconceived notions of progress and development" (1996: 84-9).

A different sort of criticism of the empowerment model comes from Brunt, Lindsey and Hopkinson (1997) who ponder "the dilemma posed when the world-views of one culture are juxtaposed with those of another" (1997:19). Working with the rural ethnic Hutterites – a traditional anabaptist sect in Canada – the researchers found themselves

> challenged by the prospect of working with a culture in which an emancipatory, grassroots approach runs counter to community norms, expectations, and desires. For example, the approach of holding forums open to all members of a community is consistent with the process of empowerment… However,… [the Hutterite] deference to hierarchy rendered the grassroots approach, which is ideally predicated on widespread community participation, largely ineffective (1997: 25).

Criticizing "the ethnocentricity of empowerment," Brunt, Lindsey and Hopkinson conclude that the imposition of this model "may unwittingly undermine Hutterite cultural and spiritual values" (1997: 25-6). Waisbord (2000: 21-2) also discusses the notion that the anti-hierarchical aspect and other elements of the empowerment model may not be congruent with some groups' cultural norms.

c. Ends/means

Diffusion and participatory interventions tend to define their objectives in terms of diffusion and participatory ends. Few studies mention outcomes related to the other framework. Part of this disjuncture derives from the different methods of data-gathering favored by each approach. Certain sorts of results are amenable to certain sorts of measurement. Researchers are unlikely to find what they are not looking for and unlikely to look for what they do not believe they can measure. Nevertheless, a glance at Figure 3 indicates

there is some overlap not only in the aims but also in the outcomes of projects based on each of these frameworks. This section examines outcomes that cross over from one framework to the other. It presents only outcomes that are explicitly mentioned in the studies.

1. Participatory means, diffusion ends

Participatory communication interventions necessarily have goals beyond the primary Freirian ones of empowerment, equity, and community-building. Each project has a specific focus. While most participatory studies examined here claim at least some success in achieving participatory goals, some, though not all, also discuss the behavior changes that are the underlying rationale for the interventions. Some studies include little information on these. For example, Dickson (2000) concentrates her discussion on the empowerment outcomes of a health program for Aboriginal Canadian elderly women, mentioning but not detailing "knowledge and skills developed in some areas" (2000: 212). Hildebrant (1994) outlines a scale of "process criteria" for judging interventions but does not detail either process or outcome results.

Studies that do note outcomes as indicated by ethnographic measures include Purdey (1994), Sarri and Sarri (1992), and Wallerstein, Sanchez-Merki, and Dow (1997), all of which claim that community members became increasingly empowered over the course of the projects. Other participatory studies measured outcome indicators with clinic statistics. Rowley (2000) found some health behavior change in an Aboriginal Australian community, Wright (1997) found improved breastfeeding practices in Navajo mothers. These types of outcomes are typical of those sought in projects based on the diffusion model. Notably, both of these outcomes are demonstrated by statistical analysis of clinic data, which allows findings characteristic of diffusion studies.

2. Diffusion means, participatory ends

Few diffusion studies explicitly mention the types of outcomes typically sought in participatory projects. Nonetheless, diffusion campaigns may well reduce social inequality, an outcome consistent with goals of participatory interventions, by extending health care to all levels of society. Just such a finding was made in Ecuador's broad-based child immunization campaign. Asking whether the campaign's effects were "equitably distributed across the socioeconomic spectrum," evaluators found that compared to previous immunization efforts, which had resulted in much greater immunization coverage in higher socioeconomic strata, the

increases in immunization coverage "were shared at least equally among social groups and possibly were relatively larger among the worse-off groups" (Hornik et al 1991: 4).

Other diffusion studies that mention participatory ends include a radio-based family planning campaign in The Gambia that was felt to have "an empowering influence" on uneducated respondents because "other forms of education rarely reach these women directly" (Valente et al. 1994: 100). An enter-edu soap opera in Tanzania was found to increase "listeners' sense of self-efficacy with respect to family-size determination," an empowering result (Rogers 1999: 205).

3. Combinations

The studies described so far are clearly self-identified as diffusion or participatory in approach. Several studies straddle the approaches in interesting ways.

A literature search produced only one study that explicitly tested participatory and diffusion approaches to health communication against one another. Krishnatray and Melkote (1998) designed an experiment to compare condensed versions of two existing programs in India that sought to further the treatment of leprosy by destigmatizing the disease. Subjects from three villages were assigned to either a diffusion group, a participatory group, or a control group, with approximately 90 subjects per group. Each subject attended a one-day health education camp. The diffusion group was exposed to clinical information via video and slides; the participatory group engaged in dialogue with leprosy patients and health workers. Statistical analysis of pretest and posttest surveys showed that the participatory treatment was more effective than the diffusion treatment in effecting destigmatization. While they acknowledge the limitations of the laboratory setting, the researchers do not address other methodological matters such as how subjects were recruited or the comparability of the three villages. Moreover, this study might be better categorized as a comparison of teaching methods than of participatory and diffusion approaches. It does not meet the participatory criterion of some sort of community input into an intervention.[3]

Two other studies merit examination for the ways they link participatory and diffusion approaches and for their insightful analyses. Both of these studies describe process indicators related to the participatory aspects

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[3] As has been noted, some other interventions that bill themselves as participatory projects are similarly lacking in grassroots input (e.g. Antunes 1997; Díaz 1999; Pribadi 1986).

of the projects, and use quantitative measures as evidence for their conclusions about the outcome indicators – health behaviors.

A campaign to promote breastfeeding on the Navajo reservation in Arizona used techniques drawn from both social marketing and participatory frameworks. It began with an ethnographic study of Navajo perceptions about breastfeeding, carried out by Navajo researchers. Using the findings from this formative research, the intervention was designed to address barriers to breastfeeding. At the level of the health system, the program educated health care workers. At the community level, the intervention took the form of a social marketing campaign featuring radio spots, an infant t-shirt, a prominently-located billboard, and a slide tape shown at local health fairs and in clinics. Navajo consultants participated in the development of all materials. At the individual level, education materials were produced for new mothers. A layer of interpersonal communication was built in to the project: an elderly volunteer from an existing tribal "Foster Grandparent" program visited the maternity ward of the Indian Health Service hospital to talk with mothers about the benefits and procedures of breastfeeding. The participatory aspects of the program consisted of the collaboration with community members in the initial research and the preparation of materials, and "numerous attempts … to facilitate local discussion of the issues involved in infant feeding" (Wright et al. 1997: 631).

The program was evaluated through examination of medical records for all babies born the year before and the year after the intervention. These data showed statistically significant improvement in breastfeeding practices, including initiation, duration, and age at which formula was introduced, following the intervention.

This program doubtless owes its success to its carefully targeted intervention, its multiple message channels, and the cultural awareness embodied in its design and execution. Its clean evaluation is due in part to unusual characteristics that made it possible to study the entire community: Navajos receive free health care, most of them use Indian Health Service facilities, and standardized medical forms include information about infant feeding practices (Wright et al. 1997: 636). These factors allowed the straightforward assessment of the intervention's success in achieving its outcome goals. Its process goals, however, were judged to have been less successfully met and were scaled down during the course of the project (Wright et al. 1997: 637).

A second study that links participatory and diffusion frameworks employed quite a different research method. Eng, Briscoe and Cunningham set out to discover if there is a relationship between community participation in water supply projects and participation in other primary health care activities. To answer this

question they compared villages in two countries that had community-based water supply projects funded by the U.S. Agency for International Development. Togo and Indonesia were selected as having the best-matched sets of communities. For each country the researchers collected data from 30 villages: 10 with participatory water supply projects, 10 with non- participatory water supply projects, and 10 with no water supply projects.

As a gauge of community participation in other primary health care activities, the researchers selected participation in an immunization program – an activity that is not directly influenced by water supply, and for which detailed data are available. Analyzing immunization records, they found that villages with participatory water supply projects had consistently higher immunization rates on the immunization series selected as a measure than had the other two sets of villages. The researchers convincingly ruled out the possible alternative explanation that the findings were due to pre-existing differences between the types of villages that were chosen for participatory water projects. They thus demonstrated that immunization – a goal typically addressed by diffusion programs – can be achieved as a spillover effect of community participation in another social realm.

> The results strongly suggest that, as a consequence of participation in community-based water supply projects, communities have substantially higher rates of participation in immunization programs (Eng, Briscoe and Cunningham 1990: 1358).

3. Results by health objective of program

This analysis of development communication campaigns has revealed mixed results, with successes and failures attributed to campaigns based on different models and combinations of tools. Another way to categorize campaigns is by the type of health outcome they advocate. Perhaps it is the nature of the of service offered that explains success. For example, in this set of studies, enter-edu family planning interventions showed more positive results than did enter-edu interventions with other objectives. Perhaps this is due not to the type of interventions but to latent demand for contraception; perhaps family planning is so widely desired that any information about it will produce behavior change. Another consideration is that different types of behavior change require different levels of effort and commitment. Robert Hornik notes that some health behaviors are easily modified and their benefits are obvious, so providing knowledge may lead more readily to practice (1997: 55). The other side of that coin is that some health behaviors may be so difficult to carry out

that they are unresponsive to information. Obesity is a case in point. Researchers in Australia say "[w]e are unaware of any communication-based programs that have achieved reductions in the prevalence of obesity" (Rowley et al 2000).

To explore this notion, it seemed worthwhile to examine the same set of studies grouped by the objective rather than the framework. This approach, however, also produced mixed results. Separating the studies by their objective – infant health, family planning, AIDS education, and so on – again proved inconclusive. It may be that these groupings are too crude: family planning campaigns, for example, have different specific objectives, such as encouraging spousal communication, encouraging people to go to clinics, or promoting vasectomy. But overall it seems that even a more precise breakdown would not produce any heretofore unapparent pattern of results.

IV.   Discussion

    1. Problems of measurement

This section considers a pair of issues that may contribute to the difficulties of assessing what works and of comparing the two frameworks: the timing of evaluations with respect to campaigns, and the gulf between the types of measurement typically used in diffusion and participatory research.

    a. Time frame of analysis

One factor to consider when examining development projects and their outcomes is the time frame of the evaluation. Measurement immediately after a campaign could conceivably either understate or overstate the campaign's effects. It could understate effects because new ideas and behaviors may take time to diffuse through the population. Survey-based evaluations of diffusion projects often undertake post-campaign measurement shortly after an intervention ends. This procedure cannot measure long-term effects, as some authors themselves observe (Yoder, Hornik and Chirwa 1996: 189; Valente and Saba 1998: 115).

On the other hand, post-intervention measures could overstate campaign effects by reflecting an unsustainable spike in desirable behavior prompted by the intervention (Valente et al. 1994: 98; Dickson 2000: 212). Many projects have long-term goals that extend beyond the period of the study. Participatory projects are sometimes said to take longer to carry out than diffusion projects (Eng, Briscoe and Cunningham 1990:1317), although diffusion projects, too, can be long term: researchers evaluating an infant health project

in Papua New Guinea commented that "2 years is probably too short a time to complete a first-time social marketing project in a country" (Center for International, Health, and Development Communication 1991: 47). These time scales might affect judgements about the relative strengths of the two approaches.

In the end, evaluations provide only a snapshot – or, in the case of panel studies or repeated data-gathering, a brief home movie – that can be deceptive for what is left outside the frame.

b. Mixed fruit

In some sense comparing these two models is a question of apples and oranges. Participation and diffusion approaches have differing underlying frameworks. Diffusion projects focus on knowledge transfer leading to behavior change, participatory projects focus on community involvement as a catalyst for individual and community development. Although both approaches share the objective of improving health or other social conditions, participatory studies tend to focus more on the goals related to the empowerment ends than the behavior change ends. Program strategies are different: interventions in diffusion studies are centered on mass media; in participatory studies they are centered on interpersonal interaction.

Measurement tools are also different. Most diffusion studies are based on quantitative survey data; most participatory studies are based on participant-observation and other qualitative ethnographic methods. It is difficult to compare results obtained by such disparate means. This, too, has been found to be the case in other research reviews. Researchers evaluating literature on AIDS/HIV prevention campaigns encountered "many conceptual and measurement inconsistencies across studies" that hampered comparisons (Myhre and Flora 2000: 41). A group of specialists assessing the evaluation of malaria intervention projects in Africa found it difficult to compare study results because the studies did not have a common set of "standardized outcome indicators" for gauging outcomes (Eisele et al. 2000: 3). It might be too much to ask diffusion and participatory studies to share "standardized outcome indicators" but even within the category of participatory studies, "there is little consistency in how community participation is conceptualized and subsequently measured" (Eng, Briscoe and Cunningham 1990: 1350).

For all of these reasons it seems pointless to try to compare these studies as if they were apples and apples. What can be said is that many studies claim some success and that few studies claim complete success for the projects they evaluate. It should further be noted that this review of research may be

overstating the achievements of development communication interventions; as Robert Hornik (1997: 53) points out, published studies are biased towards successful campaigns.

2. Crossover

The sometimes-vast philosophical differences between diffusion and participatory practitioners, added to the differences in campaign strategies and measurement, may exaggerate the apparent gap between the approaches. Yet these studies show that the twain shall indeed meet. Comments from studies lodged in each framework indicate the acknowledged need for elements of the other framework.

Many diffusion studies conclude that community participation is important in development interventions. A project to encourage breastfeeding and child spacing in Jordan acknowledged that a problem with the campaign was that it centered on topics chosen by outsiders from foreign funding and administering agencies. While the breastfeeding component of the campaign showed positive results, the resources put into creating the child spacing campaign were wasted because the topic was considered too sensitive to be promoted in Jordan. Evaluators concluded with a hallmark of the participatory approach: "one lesson to be learned form this experience is the importance of local participation in the choice of topics to be addressed" (McDivitt 1991: 3).

Correspondingly, a researcher criticized some family planning efforts in India, not, in this case, because of the nature of the topic, but again because outsiders' standards were imposed; campaign materials were based on United Nations-defined motives for adopting family planning that were shown to be irrelevant to the intended audience. "The reliance on international motives to reach local minds invites distortion and rejection of messages," says William J. Starosta, who appeals for participatory communication: "The client must be given greater voice in defining his own needs …. communication materials should reflect the input of … groups of villagers" (Starosta 1994: 257-9).

Similarly, a critique of an immunization campaign in Nigeria criticizes its top down approach and failure to conduct adequate research into the local context (Ogundimu 1994). The success of a family planning intervention in Nigeria was attributed precisely to such research: "involving health workers and members of the intended audience in the process of message development proved invaluable," remark the evaluators, continuing with a statement straight out of the participatory communication canon:

> This process not only resulted in improved materials but also generated a sense of involvement in the process among health workers. Such involvement should be standard procedure in all communication projects, which need to emphasize that communication is a process, not a product (Piotrow et al. 1990: 266, 272).

While many diffusion researchers recognize the value of community participation, there also exists crossover in the other direction. Although participatory communication is often defined against the traditional diffusion model (Rockefeller Foundation 1991; Cornwall and Jewkes 1995; Laverack et al. 1997), evaluators of some participatory studies call for activities that fit clearly within the diffusion model of knowledge transfer.

One example of this is a Rockefeller Foundation report on communication for social change. Communication for social change is defined in participatory terms as "a process of public and private dialogue through which people define who they are, what they want and how they can get it … [it] empowers individuals and communities, it engages people in making decisions that enhance their lives…" (Rockefeller Foundation 1999: 8, 18). Yet the report poses a question that is couched clearly in diffusion terms:

> can we create a 'transfer of knowledge' or type of curriculum that can be exported worldwide easily and economically? What's in such a curriculum? Who are the trainers?… How do we reach people in those areas of the world most in need of this knowledge but who have the smallest number of resources to access such training? (Rockefeller Foundation 1999: 24).

Hildebrant explained the expansion of community participation and the consequent reduction in involvement of researchers and other outsiders in a South African health project in terms that suggest the diffusion model: "The amount and level of activity of the two groups varied inversely as expertise and organizational abilities of the outside people were transferred to the community people" (Hildebrant 1994: 284).

Another evocation of diffusion principles appears in a summary of community-based participatory efforts at malaria control: "Health education plays an important role in predisposing a community to intervention" says the researcher. Communities whose understanding of the causes and prevention of disease is not "in concordance with biomedical understanding" need "new information about disease transmission and vector control prior to the introduction of an intervention" (Manderson 1992: 13).

These comments illustrate, if such an illustration is needed, the folly of trying to rigidly isolate these approaches from one another. Laverack et al., noting that participatory and diffusion methods "are often presented as mutually exclusive," make a case for combining them: "a suitable strategy for many programmes will probably be a pragmatic mix of both approaches," a combination they term "semi participatory" (1997: 26).

The goal of community participation is not just a reflection of contemporary views concerning respect for all cultures. It is also increasingly recognized by diffusion-oriented policymakers as a means to enhance the effectiveness of development programs. On the other hand, even in the most grassroots-level participatory efforts, information does need to be passed along; people need to learn skills and gain knowledge to better take control of their lives. This possibly troubling aspect of participatory programs was noted by some authors:

> The analysis also … provides … evidence that that shows that successful community-based programs require a substantial, sustained input from properly-trained external collaborators in the planning, execution and operation phases of a project (Eng, Briscoe and Cunningham 1990: 1358).

Participatory communication activist and scholar Jan Servaes (1999: 157) echoes this point.

> Participation does not imply that there is no longer a role for development specialists, planners, and institutional leaders. It only means that the viewpoint of the local public groups is considered before the resources for development projects are allocated and distributed and that suggestions for changes in the policy are taken into consideration.

V. Conclusion

This report asks the question, "what works in development communication?", focusing on differences between the diffusion and participatory approaches. Examination of many studies shows that many types of interventions produce at least some of the desired results, but under different conditions they produce different results, some more successfully than others.

One reason that it is difficult to isolate "what works" is that most campaigns use some combination of strategies, but they do not use the same combination. Strategies vary depending on local needs, resources and politics, and program aims. It can be difficult, then, to sort through and attribute change to one or another piece of an overall campaign or to a certain combination of factors.

The Rockefeller Foundation report on communication for social change makes this case in terms of participatory projects: "Because dialogue and debate are the immediate objectives and are difficult to measure or attribute to any particular intervention, and because it is recognized that social change is likely to take a long time, this work is very difficult to assess and evaluate" (1999: 19). Concerning projects based on diffusion principles, Storey et al (1999: 272) similarly state: "the causes of any given health behavior change can be highly complex, so it is unlikely that any one message or act of communication will consistently produce action."

Certainly, the foregoing has revealed no clear pattern of success in development communication interventions. Interventions based on different theoretical models, communication strategies, measurement tools, and goals have met varying degrees of success at different times and in different places.

In the end, this report has been not so much about "what works" but about "why it's difficult to generalize about what works." Stated in terms of the scientific method, the question is: what can be replicated? But the prospect of generalizability and replicability of development communication campaigns seemingly remains out of reach.

Jan Servaes makes a virtue of this lack of replicability: "each society must attempt to delineate its own strategy to development, based on its own ecology and culture. Therefore, it should not attempt to blindly imitate program and strategies of other countries with a totally different historical and cultural background" (Servaes 1990: 38). It is not possible, maintains another scholar, "to identify a single solution to a complex set of problems which do not share a common history of creation" (Rifkin 1996: 90).

One of the basic discoveries of the globalization of commerce is that blanket multinational strategies for selling products don't work. Marketers are adopting local strategies based on research into the specificities of local cultures (Maxwell 1997). In this case development communication practitioners, who have long employed techniques of research and message diffusion drawn from marketing, again echo the marketers, and perhaps even anticipated this fundamental tenet. Participatory communication analyst Susan B. Rifkin could be in a corporate boardroom when she asserts "community participation can be seen as a set of views and activities which reflect a solution to a specific set of circumstances. The process under which solutions develop might have some universal characteristics but the solution itself will be local" (Rifkin 1996: 89). Even in the developed world, argue Hancock et al., interventions must be localized: "standard interventions may not be acceptable within the community setting. A standardized approach that includes flexibility to individual community variability may be more appropriate" (Hancock et al. 1997: 236).

Development communication researchers, like their marketing counterparts, have argued that foreign models and assumptions don't work (McDivitt 1991; Starosta 1994; Ogindimu 1994; Brunt, Lindsey and Hopkinson 1997) and that the more successful campaigns owe their success, at least in part, to their incorporation of local norms, vocabulary and understandings, not to mention participation (Wright et al 1997; Marmo da Silva and Chagas Guimarães 2000).

This may seem discouraging to campaign planners seeking a globally efficacious intervention template, but it is important to be aware that local communities retain their unique characteristics and expectations. Here, too, is a page from the marketers' book. For better or worse, Nike, Coke, and Ford are finding that solid research into local norms and values enhances their ability to turn a profit by shaping products and advertising to specific audiences. As has been suggested by researchers from both participatory and diffusion schools of thought, such research and its skilled application can also enhance the ability of development communication practitioners to achieve their ends.

The gap between diffusion and participatory approaches is being bridged by proponents of both models, who knowingly or unknowingly have borrowed elements from one another. Silvio Waisbord (2000: 36) observes that further integration may grow out of "the realization that communities should be the main actors of development communication." What will work in the local environment is not a question of which is the superior approach. It is a question of shaping project goals to community needs and finding the most appropriate means to pursue those goals.

Figure 2. Key Aspects of Studies Reviewed

Family planning

Author date Location	Goal of intervention	Framework	Type/duration of intervention	Research design	Timing of data gathering	Reported Outcomes / Comments
Bertrand, et al. 1987 Guatemala a. Coatepeque _ _ _ _ _ _ _ _ _ _ b. Mazatenango _ _ _ _ _ _ _ _ _ _ c. Escuintla	vasectomy K A P	Social marketing + interpersonal _ _ _ _ _ _ _ _ _ _ Social marketing _ _ _ _ _ _ _ _ Interpersonal	Radio spots & pgms + health promoter/ 1 yr. _ _ _ _ _ _ _ _ _ _ Radio spots & pgms. 1 yr. _ _ _ _ _ _ _ _ _ _ Health promoter 1 yr.	1. 3 similar communities w/different treatments + one control community 2. Pre/post surveys 3. Clinic data	Before and after campaign	Increased K A P compared to control community _ _ _ _ _ _ _ _ _ _ _ _ _ _ Increased K P compared to control community _ _ _ _ _ _ _ _ _ _ _ _ _ _ Increased P compared to all 3 other communities
Díaz et al. 1999 Brazil	Improve reproductive health services, participation	Participatory Action Research	Research: focus. groups, interviews, observation. Action: Training health personnel + community members, service modifications/ 4 yrs.	Observation, clinic data, focus groups, interviews	Throughout	Improved health services, some community participation
Hindin et al. 1994 Ghana	P- modern contraceptives	Social marketing	Multimedia campaign-Radio, TV, video dramas, leaflets, poster, song/ 20 mos.	2 post surveys	Mid-campaign	Increased P w/campaign exposure for both men and women
Kane et al. 1998 Mali	KAP-modern contraceptives	Enter-edu + social marketing	TV plays,TV spots, 2 songs -radio 3 months	Pre/post surveys-stratified random samples	Before and after campaign	Increased K, A, P Effect varied w/education
Kincaid 2000 Philippines	KAP-modern contraceptives	social marketing	Mass media TV, radio spots/ 3 mos.	Panel survey Representative natl sample - women	Before and after campaign	Increased K A P
Lettenmaier et al. 1993 The Gambia	KAP-modern contraceptives	Enter-edu + social marketing	Radio drama + spots/ 2 yrs.	Pre/post surveys, interviews, clinic data	?	Increased K A P (article also briefly reports on 3 other African countries)

Family planning, cont.

Author date/ Location	Goal of intervention	Framework	Type/duration of intervention	Research design	Timing of data gathering	Reported Outcomes / *Comments*
Piotrow et al. 1990 a. Nigeria – Kwara	Increase new acceptors at family planning clinics	Social marketing	TV, radio spots, print ad + posters, outreach/ 3.5 years	Clinic data	4 years – 1 year pre and throughout campaign	Increased # clinic clients
b. Nigeria – Enugu	Increase new acceptors at family planning clinics	Enter-edu	43 episodes inserted into popular TV drama/ 14 mos.	Recall survey- convenience sample. Source of referral survey of new clients + clinic data	6 mos. pre and throughout campaign	Increased # clinic clients
c. Nigeria – Ibadan	Increase new acceptors at family planning clinics	Enter-edu + social marketing	TV series, ads 6 mos	Recall survey, rep. sample. source of referral survey of clinic attenders + clinic stats	Throughout campaign	Increased # clinic clients
Piotrow et al. 1992 Zimbabwe	KAP men - modern contraceptives	Enter-edu + social marketing	Radio drama, educational talks, pamphlets/ 1 yr.	Pre/post surveys	Immed before and after campaign	Increased K A P w/campaign exposure
Rogers et al 1999 Tanzania	KAP-modern contraceptives	Enter-edu	Radio soap opera/ 4 years	Field experiment- treatment and comparison areas. Pre/post surveys Clinic data +DHS	5 annual surveys - pre and throughout campaign	Increased A P w/exposure. Increased self-efficacy concerning family size determination
Storey et al. 1999 Nepal	KAP + interpersonal communication - family planning, train health workers	Enter-edu + social marketing	Radio dramas, print materials, training workshops	Pre-post panel Pre-post test hlth wrkrs Clinic monitoring + client interviews, clinic data	Pre + post broadcast. Pre, during, + post educ. program	Increased K, improved P health workers. Increased clinic attendance w/campaign exposure. Contraceptive K P increased w/exposure.
Valente & Saba 1998 Bolivia	KAP- contraception	Social marketing	TV and radio spots/ 7 mos. –1994 (urban) + 3 mos. 1995-96 (natl)	1. Pre/post surveys- urban 2. Panel survey -1 city - married women	1. Urban -2 mos. before + just after campaign 2. Before & after 2nd campaign	Increased K A P w/campaign exposure

Family planning, cont.

Author date Location	Goal of intervention	Framework	Type/duration of intervention	Research design	Timing of data gathering	Reported Outcomes / *Comments*
Valente et al. 1994 The Gambia	KAP- modern contraceptives +STDs	Enter-edu + social marketing	Radio spots, radio drama w/listening grps., training, print materials/ 2 years	1. Pre/post surveys 2. Interviews w. new acceptors	1. Before and after radio drama series aired 2. During campaign	Increased KAP w/exposure – effect much stronger among uneducated respondents= "empowering influence"
Westoff and Rodríguez 1995 Kenya	P contraceptives	Enter-edu + social marketing	TV+ radio spots, print matls, TV soap	Statistical analysis of 1989 DHS data	--	Increased A P w/exposure. ------- *Researchers query causal direction*

Infant/child health

Author date location	Goal of intervention	Framework	Type/duration of intervention	Research design	Timing of data gathering	Reported Outcomes/ *Comments*
Eng , Briscoe & Cunningham 1990 Togo + Indonesia	Improving water supplies + vaccinations	Participatory	--	Comparison of immunization rates in 30 similar villages in each country: 10 participatory water supply villages, 10 non-participatory water supply villages, 10 villages with no water supply project- via interviews & clinic data.	--	Increased vaccination P in participatory villages in both countries. *Research question: Do communities that participate in community-based water supply projects have higher rates of participation in other primary health care activities? (immunizations chosen as test activity)*
Hornik et al. 1991 Ecuador	ORT, immunization, breastfeeding, institutionalization	Social marketing	Media + health system promotion, special vaccination days/ 2.5 yrs.	1. Pre-post surveys 2. Interviews, focus groups, observation of health facilities	1. Beginning + 2 midpoints of campaigns 2. Throughout	Increased P, Improved equity of effects, institutionalization incomplete
Laverack, Sakyi & Hubley 1997 Ghana	Child health promotion, empowerment	Participatory learning materials	Develop printed materials, train teachers & health workers to use them.	½ of participants surveyed to evaluate materials (random sample). Focus grps with target pops re exposure to/opinion of/recall of materials	6 mos after training	Materials reported used by teachers & health workers. Target group research indicated materials appreciated but underutilized ------------ *"semi-participatory"*
McDivitt 1991 Jordan	Child spacing, breastfeeding, institutionalization	Social marketing	Training health workers, radio/TV spots/2 yrs.	Pre/post surveys; interviews	Before and 4 mo. after	Increased breastfeeding K P Institutionalization incomplete
McDivitt and McDowell 1991 Central Java	Vitamin A/ Oral Rehydration Therapy, institutionalization	Social marketing + interpersonal	Print materials, training health workers, radio spots	Field experiment – surveys in treatement + control areas, interviews of staff	Early in campaign, 1 yr. into campaign	Vit. A - Increased K w/exposure. Increased P Vit. A in communities w/health post. Increased K + P ORT but not necessarily attributable to campaign. Inst. in progress.

Infant/child health, cont.

Author date location	Goal of intervention	Framework	Type/duration of intervention	Research design	Timing of data gathering	Reported Outcomes/ *Comments*
McDivitt, Zimicki & Hornik 1997 Philippines Also: Zimicki et al. 1994	Vaccination K + P	Social marketing	TV, radio, print ads/ 6 mos. Training health workers/ 14 mos.	Pre/post surveys low-income urban mothers + interviews – health center staff + mothers	Before and near end of campaign	Increased K P w/exposure to campaign
Ogundimu 1994 Nigeria	Immunizations	Media	Radio, TV ads, Posters/?	Post survey, interviews, field observation, focus groups w/experts, admin. data, materials analysis	?	Media mostly ineffective, contact with clinic workers most important source of info.
Wright et al. 1997 Arizona - Navajo reservation	Improve breastfeeding practice, democratization- community involvement, empowerment	Social marketing + participatory	Radio ads, print matls, slide show, training health wrkrs, facilitate local discussions, interpersonal-visits to maternity ward by community volunteer/ 1 yr.	1. To devel materials: Research re Navajo infant feeding practices + beliefs via interviews/ observation. 2. Clinic data used to compare feeding practices before and after campaign.	One year before and one year after campaign	Stat. sig. improvement in breastfeeding practices (initiation, duration, age formula introduced). Community involvement *community empowerment goal found to be overambitious*
Yoder, Zheng & Zhou 1991 Zaire	Immmunizations ORT	Social marketing	Print materials, radio; training health workers	Pre/post surveys	Before and after campaign	Increased K immuniz among less-educated. No evidence that radio materials increased immuniz. Increased P - ORT

HIV/AIDS

Author date location	Goal of intervention	Framework	Type/duration of intervention	Research design	Timing of data gathering	Reported Outcomes/ *Comments*
Antunes et al. 1997 Brazil	HIV/AIDS prevention – night school (young adults)	Participatory	Workshops for students; teacher education/1 yr.	Pre/post surveys in control and intervention schools	Before and after intervention	Increased risk prevention among females in intervention group
McCombie & Hornik 1992 Uganda	AIDS education	Interpersonal comm + film	Train peer educators- AIDS education in workplace, AIDS education film	3 surveys, interviews with peer educators	Various points during intervention	Increased K A P
Patil & Kincaid 2000 Philippines	AIDS prevention	Social marketing	TV, radio spots	Panel survey (men) 4 urban areas	Before and after campaign.	Increased P w/exposure to campaign - attributed to indirect causal path→ interpersonal communication/peers
Yoder, Hornik & Chirwa 1996 Zambia	K P AIDS risk reduction	Enter-edu	Radio drama/9 mos.	Pre/post surveys	Before and after campaign.	Increased K P *independent of* campaign exposure
Vaughan et al. 2000 Tanzania	HIV/AIDS prevention	Enter-edu	Radio soap opera/ 4 yrs.	Field experiment- treatment and comparison areas. Pre/post surveys	5 annual surveys - pre and throughout campaign	Increased K A P

Other - Health promotion

Author date location	Goal of intervention	Framework	Type/duration of intervention	Research design	Timing of data gathering	Reported Outcomes/ *Comments*
Dickson 2000 Canada – aborigines	Health promotion – older aboriginal women. Knowledge + skills, identity, leadership, community devel, collab. w/ other services, empowerment	Participatory action research	Meetings w/group and govt orgs, community committees, organize special celebrations/ 2.5 yrs.	Case study: participant-observation, interviews	Throughout project	Health education - knowledge & skills acquired, leadership, community development collaboration w/ other services, empowerment
Hildebrandt 1994 South Africa	Identify health needs of elderly & community, implement programs, empowerment	Participatory-Community Involvement in Health (CIH)	Needs survey by community members, community meetings to prioritize needs, implementation/ 2 yrs.	5-pt scale of degree of success, implementation analysis.	Throughout project	Needs identified, programs implemented (health & nutrition educ, literacy, food gardening), empowerment Article does not detail success of outcomes based on scale developed
Kalipeni and Kamlongera 1996 Malawi	Improve primary health care	Participatory-Theater for Development	Community theater- 3 villages. Training village health workers	Participant-obsrevation, pre and post intervention demographic and health data.	Before and after intervention	Improved A, Improved mortality and morbidity.
Krishnatray & Melcote 1998 India	Destigmatize leprosy	Diffusion and participation	Diffusion= video and slides Particip.=workshop	Experiment: diffusion, participatory and control groups in 1-day "health education camps"	-	Participatory strategy more effective. ------------ **Experimental setting**
Rowley et al. 2000 Australia-aborigines	Health promotion (diabetes); community decision-making, sustainability	Participatory	Education sessions, health screenings/ 2 yrs.	Community surveys, Clinic data	2 yrs. & 4 yrs.	Modest improvements in risk factors; community decision-making, program still in operation 6 yrs. later =sustainability
Wallerstein, Sanchez-Merki & Dow 1997 New Mexico. Also: Wallerstein & Sanchez-Merki 1994	Reduce high-risk adolescents' morbidity/mortality, empowerment, community action	Participatory	Intensive 7-week interaction with targeted youths	1. descriptive case study -4 grps. of 5 students – interviews, partic. obs. 2. pre/post survey – intervention and control youths; interviews with students not in program.	2 yrs.	1. Empowerment, leadership devel; equity 2. Intervention youths showed increased social responsibility

Other

Author date location	Goal of intervention	Framework	Type/duration of intervention	Research design	Timing of data gathering	Reported Outcomes/ *Comments*
Brown & Cody 1991 India	Promote womens' status	Enter-edu	Prosocial soap opera/ 18 mos.	Post survey	?	Exposure → involvement w/characters but NOT to prosocial beliefs
Purdey et al. 1994 a. Nepal	Irrigation project. empowerment equity, liaison w/govt agencies	Participatory	Assist village in building reservoir/ ?	Descriptive case study -participant-observation	Throughout project	Training, confidence equity, collaboration, leadership, empowerment
Purdey et al. 1994 b. Nepal	Construction of smokeless stoves. Equity, community organizing	Participatory	Assist women volunteers in learning to build stoves & promote stove construction in community/ ?	Descriptive case study -participant-observation	Throughout project	Training, equity, strengthen community, leadership, empowerment
Sarri & Sarri 1992 a. Bolivia	Assess local needs, Build org capacity, build collaboration between researchers/ community	Participatory Action Research	Rsch: Needs survey & interviews, community forums/meetings. Action: grant proposal, community meetings, training	Participant observation, citizen survey of needs	?	Needs=nutrition educ, consumer coops. Training, skill development, increased community control of resources, community development
b. Detroit	Evaluate rehab program for adolescent males. Assess local needs, involve residents, promote community K, participation	Participatory Action Research	Rsch: Surveys of youth, examine govt records, interviews w/comm members Action: grant applic, comm. meetings & service activities, vocational training	Participant observation	Throughout project. -------------------------- *Common to both programs (Bolivia & Detroit)* →	Community needs identified, programs designed, training of youth, volunteer activities organized, comm devel. --------- *needs identified, collab. between rschrs/govt/community, empowerment*

Table: Framework, Objectives, Measurement, and Reported Outcomes by Author(s)

Column groups — **FRAMEWORK**: media: entertainment-education, media: social marketing, media + interpersonal, participatory · **OBJECTIVES**: infant/child health, family planning, AIDS/HIV, other-health, other, empowerment, equity, democratization-community decis mkg, build ldrshp/organizational capacity · **MEASUREMENT**: pre-post survey, pre-post panel, post survey, quasi/field experiment, focus groups/interviews, participant-observation, clinic data, other qualitative, other quantitative · **REPORTED OUTCOMES**: improved K, improved A, improved P, empowerment, equity, democratization-community decis mkg, build ldrshp/organizational capacity, collaboration with govt/other orgs.

AUTHOR(S)	media: entertainment-education	media: social marketing	media + interpersonal	participatory	infant/child health	family planning	AIDS/HIV	other-health	other	empowerment (obj)	equity (obj)	democratization-community decis mkg (obj)	build ldrshp/organizational capacity (obj)	pre-post survey	pre-post panel	post survey	quasi/field experiment	focus groups/interviews	participant-observation	clinic data	other qualitative	other quantitative	improved K	improved A	improved P	empowerment (out)	equity (out)	democratization-community decis mkg (out)	build ldrshp/organizational capacity (out)	collaboration with govt/other orgs.
Bertrand et al. (3 sites)		X	X			X								X		X				X			X	X	X					
Brown & Cody	X								X							X									X					
Hindin et al.		X				X										X									X					
Hornik et al.		X	X		X									X				X							X			X		
Kane et al.	X	X				X								X									X	X	X					
Kincaid		X				X									X										X					
Lettenmaier et al.	X					X								X				X		X			X	X	X					
McCombie & Hornik			X				X									X		X					X	X	X					
McDivitt		X			X									X				X					X							
McDivitt & McDowell		X	X		X											X	X	X					X		X					
McDivitt, Zimicki & Hornik		X			X							X		X									X		X					
Ogundimu		X			X											X		X			X		X							
Patil & Kincaid		X					X								X										X					
Piotrow et al. Nigeria - a		X				X													X						X					
" b	X					X										X			X						X					
" c	X	X				X										X			X						X					
Piotrow et al. - Zimbabwe	X		X			X								X									X	X	X					
Rogers et al.	X					X								X				X		X	X	X		X	X	X	("self-efficacy")			
Storey et al.	X	X			X									X	X			X		X	X	X	X	X	X					
Valente & Saba		X				X								X	X								X	X	X					
Valente et al.	X					X								X				X					X	X	X	X				
Vaughan et al.	X						X							X			X					X		X	X	X	("self-efficacy")			
Westoff & Rodriguez	X	X				X																X		X	X					
Yoder, Hornik & Chirwa	X						X							X									X		X	(not causal)				
Yoder, Zheng & Zhou		X			X									X									X		X					

AUTHOR(S)	FRAMEWORK				OBJECTIVES									MEASUREMENT									REPORTED OUTCOMES							
	media: entertainment-education	media: social marketing	media + interpers	participatory	infant health	family planning	AIDS/HIV	other-health	other	empowerment	equity	democratization-community decis mkg	build ldrshp/organizational capacity	pre-post survey	pre-post panel	post survey	quasi/field experiment	focus groups/ interviews	participant-observation	clinic data	other qualitative	other quantitative	improved K	improved A	improved P	empowerment	equity	democratization-community decis mkg	build ldrshp/organizational capacity	collaboration with govt/other orgs
Antunes et al.				X			X			X				X											X					
Diaz				X		X							X					X	X	X					X			X		X
Dickson				X				X		X	X		X					X	X									X	X	X
Eng, Brisco & Cunningham				X	X												X	X	X						X					
Hildebrant				X				X		X											X				X	X				X
Kalipeni & Kamlongera				X				X		X		X							X	X		X	X		X	X		X		
Laverack, Sakyi & Hubley				X				X		X			X			X			X						X					
Purdey et al.- irrigation				X						X	X		X						X							X	X	X	X	X
Purdey et al.- stoves				X						X	X	X	X						X							X	X	X	X	
Rowley et al.				X				X		X				X					X				X			X		X		X
Sarri & Sarri - Bolivia				X				X					X						X							X		X	X	X
Sarri & Sarri - Detroit				X					X	X									X							X		X	X	X
Wallerstein, Sanchez-Merki & Dow				X				X	X	X				X					X	X						X			X	
Wright et al.		X		X	X					X										X	X				X					

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