

What Difference Does it Make?: Insights from Research on the Impact of International Co-Productions of *Sesame Street*

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Four decades ago, the children's television series *Sesame Street* was developed in the United States as an experiment designed to determine if television, then a relatively new medium, could be used as a vehicle to educate young children. Given the experimental orientation of the endeavor, a strong tradition of evaluative research linked to the program emerged. With over a thousand published studies (Fisch and Truglio 2001, p. xvii) of the series in the United States, which join a body of international work, *Sesame Street* has become the most researched television series in the history of the media. These studies, which have examined a range of aspects, from short-term early childhood educational achievement to long-term results, have established that the program is an effective learning tool and have provided insights into ways to improve it that have been implemented in subsequent production seasons.

This paper, through a presentation of several case-study examples from *Sesame Street*, describes the contribution that research has made in providing high quality educational television experiences for children outside the United States. It argues for the continuance and expansion of Sesame Workshop's established research tradition (and by extension, the application of that approach to other children's media endeavors), suggesting that both the complexities of the contemporary educational content presented and the advent of new media increase the need for not only more studies, but for additional measurement tools for conducting them. If children's media are to maximize their educational potential as powerful and compelling learning vehicles, research needs to play a key role.

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Sesame Workshop's International Work

The preschool television series, *Sesame Street*, has aired in various forms in over 130 countries (Cole, Richman, and Brown 2001). The program enters the airwaves in many ways. While the U.S. version has broadcast in several countries in English language and dubbed forms, Sesame Workshop's preferred mode of entry into a country or region is through indigenously created versions of the series developed by local production teams. These productions feature their own puppet characters and sets and are based on educational frameworks designed to promote the learning needs of children in a specific country or region.

Over the years Sesame Workshop has developed nearly 30 of these productions (see listing in Figure 1). They each take on their own distinguishing characteristics. The South African production, *Takalani Sesame*, for example, features a tall full body puppet (about the size of America's Big Bird) named Moishe modeled on the meerkat, an animal indigenous to the country. Moishe lives with his *Takalani Sesame* neighbors in a market place that is the equivalent of the urban neighborhood setting of the program in the United States. Similarly, on *Plaza Sésamo*, the Mexican version of the series, a large green parrot and his friends populate a festive plaza setting.

Figure 1. International Co-Productions of *Sesame Street* (since 1970)

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| 1. Afghanistan , <i>Koche Sesame</i> (Dari) | 14. Kosovo , <i>Rruga Sesam/Ulica Sezam</i> (Albanian and Serbian) |
| 2. Bangladesh , <i>Sisimpur</i> (Bangla) | 15. Kuwait , <i>Iftah ya Simsim</i> (Arabic) |
| 3. Brazil , <i>Vila Sésamo</i> (Portugese) | 16. Mexico , <i>Plaza Sésamo</i> (Spanish) |
| 4. Canada , <i>Sesame Street Canada/Sesame Park</i> (English with some French) | 17. The Netherlands , <i>Sesamstraat</i> (Dutch) |
| 5. China , <i>Zhima Jie</i> (Mandarin) | 18. Norway , <i>Sesam Stasjon</i> (Norwegian) |
| 6. Egypt , <i>Alam Simsim</i> (Colloquial Egyptian Arabic plus Satellite broadcast in Classical Arabic) | 19. Palestine , <i>Shara'a Simsim</i> (Arabic) |
| 7. France , <i>5, Rue Sésame</i> (French) | 20. Philippines , <i>Sesame!</i> (Tagalog) |
| 8. Germany , <i>Sesamstrasse</i> (German) | 21. Poland , <i>Ulica Sezamkowa</i> (Polish) |
| 9. India , <i>Galli Galli Sim Sim</i> (Hindi & English) | 22. Portugal , <i>Rua Sésamo</i> (Portugese) |
| 10. Indonesia , <i>Jalan Sesame</i> (Bahasa Indonesia) | 23. Russia , <i>Ulitsa Sezam</i> (Russian) |
| 11. Israel , <i>Rechov Sumsum</i> (Hebrew with some Arabic) | 24. South Africa , <i>Takalani Sesame</i> (Multiple South African languages) |
| 12. Japan , <i>Sesame Street</i> (Japanese) | 25. Spain , <i>Barrio Sésamo/Barri Sèsam</i> (Spanish and Catalan) |
| 13. Jordan , <i>Hikayat Simsim</i> (Arabic) | 26. Sweden , <i>Svenska Sesam</i> (Swedish) |
| | 27. Tanzania , <i>Kilimani Sesame</i> (Kiswahili) |
| | 28. Turkey , <i>Susam Sokagi</i> (Turkish) |
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The different characters and sets are designed to provide a culturally relevant experience for viewers. In a parallel way, each production has its own educational objectives that were determined by educational specialists of the country of origin. Because the productions are developed by individuals from a given country or region, they are easily tailored to meet the specific educational needs of the children they target. Consequently, the various projects set out to achieve different educational aims. Some have, for example, generalized curricula that cover a range of objectives including cognitive skills (such as early math, problem solving, and literacy), social skills (such as social interaction with others and learning about the family and neighborhood), and affective skills (such as gaining pride in self, appreciating differences, and valuing commonalities). The programs are designed to reflect the educational pedagogy common in a given country or region and the production process is elastic enough to allow variation as educational practices evolve in a particular locale.

The flexibility not only to change with the times but to accommodate a range of approaches is a hallmark of the *Sesame Street* process that has been a part of our international work since the beginning. One of our earliest co-productions, *Sesamstrasse*, the German program, illuminates this point. At the time the production was first being developed, German educators noted a contrast in the elementary education approaches common in Germany versus the United States. A primary distinction had to do with the ways in which literacy was taught. American educators were oriented toward teaching the early mechanics of reading (such as the alphabet and sight-words) and other cognitive concepts (such as counting). Having strong prerequisite reading skills before entering school was regarded as a developmental advancement and portend of school success. In contrast, German educational thinking was dominated by a more deliberate postponement of direct teaching of reading fundamentals, focusing instead in the preschool years on providing a social environment that permits implicit learning through play and positive interaction. Consequently, the *Sesamstrasse* curriculum is oriented toward presenting daily life experiences that promote learning through positive social modeling and that directly support children's curiosity and sense of discovery.

In addition to adapting to a variety of education pedagogies, Sesame Workshop's production process affords opportunities to customize specific aspects of the educational experience while still maintaining a broad curricular orientation. In the United States, each new season of the series has included a special content focus targeting a particular curricular area. This allows the producers to explore a given educational arena in greater depth and to provide particular material related to it, while still presenting a range of skills. A

recent season of the series, for example, is directed toward promoting healthy lifestyles, responding to a growing need in the United States to counter the country's obesity epidemic (Cole, Kotler, and Pai forthcoming). Other countries have adopted this strategy of including a specific target area within a broader educational framework. For example, *Takalani Sesame* in South Africa, which was developed in consultation with South Africa's Ministry of Education, presents a holistic literacy, numeracy, and life skills curriculum that supports the country's reception (first) year curriculum. Recent seasons of the project have also taken on a special HIV/AIDS education orientation because South African educators felt that the disease—in a country where, at the time, one in nine people was infected (Joint United Nations Programme on HIV/AIDS and World Health Organization 2001)—is such a potent part of everyone's life that to have any kind of educational endeavor without an HIV/AIDS focus would be remiss. The result has been the creation of a puppet character, Kami, who is HIV-positive and who is one of many vehicles used to promote age-appropriate information about the disease and the humanization and de-stigmatization of HIV-positive people (Segal, Cole, and Fuld 2002).

Testing Impact

Figure 2 lists the special educational focus of various *Sesame Street* projects. It offers a sense of the tremendous range of educational issues that can be appropriately addressed by *Sesame Street* projects. At the heart of each project is a thoughtfully designed *Statement of Educational Objectives* document detailing the specific messages educators working on the project want children to receive. These documents, which typically include a broad range of cognitive, social, and affective objectives (as well as sections detailing special focal areas such as those presented in Figure 2), are the educational backbone of the projects and serve as the foundation upon which all material is based.

In addition to providing a framework for the producers to develop material, the *Statement of Educational Objectives* documents also fulfill an important function in the research process. Because they outline the projects' intended learning aims they provide a kind of roadmap directing researchers in what to test. For example, if the curriculum states that the series aims to help children learn to count to 20, researchers are clued to then test whether or not children exposed to the program have learned that skill from viewing. While some curricular areas, such as counting, are relatively straightforward to measure, other content areas, including many in the socio-emotional range, are more complex. Conducting studies with young children poses singular difficulties. This is true particularly since many children live—in the case of *Sesame Street* co-

Figure 2. Special Educational Focus of Selected *Sesame Street* International Co-Productions

<p>Bangladesh</p> <ul style="list-style-type: none"> • Literacy and math • Bangladeshi culture <p>Egypt</p> <ul style="list-style-type: none"> • Girls' education • Literacy • Health <p>Israel</p> <ul style="list-style-type: none"> • Respect and understanding <p>Kosovo</p> <ul style="list-style-type: none"> • Respect and understanding 	<p>Northern Ireland</p> <ul style="list-style-type: none"> • Mutual respect and understanding <p>Palestine</p> <ul style="list-style-type: none"> • Self esteem • Boys' empowerment <p>South Africa</p> <ul style="list-style-type: none"> • Diversity • Literacy, numeracy, and life skills • HIV/AIDS education
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productions—in regions of the world where there is minimal precedent for research in education, few models to build upon, and limited practical capacity to conduct such research.

The pages that follow provide examples of various summative evaluations of *Sesame Street* international projects that illustrate the challenges researchers confront in examining effects. The examples focus on three central content areas: basic skills, mutual respect and understanding, and health. The discussion shows that, despite the inherent difficulties, we have learned much from engaging in these studies. They have helped us understand the strengths and weaknesses of the productions, offered important information that has improved future production, helped strengthen our approach to studying impact, and provided lessons for other producers engaged in projects with similar educational purposes.

Studying Basic Skills

Our *Sisimpur* project in Bangladesh aims to provide children, particularly those most vulnerable and disenfranchised, with a high-quality educational experience. It presents basic cognitive skills (literacy, math, and problem solving) in a culturally relevant context, and offers a good example of the challenges that arise when examining impact in a region where there has been very minimal related research conducted.

In designing an examination of the project we recognized early on that no single study could deliver the range of information we hoped for. Consequently, we decided to commission a collection of studies each tackling different aspects that, when looked at together, would provide a good sense of overall

impact. Building on this thinking researchers working on the project identified three primary areas of investigation: *learning*, *reach*, and *perceptions of cultural relevance*.

Studying children's learning from the program both within a naturalistic context and an experimental one was considered critical given the project's primary aim of making available a high-quality educational experience. But educational intervention, however strong, is only successful if children receive it, and for this reason the second area of study—an investigation of reach—was also considered essential. Finally, cultural relevance, the third area of interest, was considered key because we wanted assurance that we were attaining Sesame Workshop's goal of distributing a media experience that is truly local in nature and appropriate to children's life circumstances. To test this we commissioned a qualitative study conducted by an anthropologist to examine general reactions to and perceptions of the series in a manner that was more in-depth than the information that could be obtained from a quantitative survey or other measures.

The first study we commissioned was an experiment involving 480 children from low-income families in an urban (Dhaka) and a rural (Gazipur) area that examined *Sisimpur's* impact on children's performance on a range of curricular subjects including literacy, math, object relations, cultural knowledge, and various other life skills (Research and Computing Service; RCS 2006). This study, which compared two groups of children (one exposed to *Sisimpur* and one of children who participated in an alternative viewing experience), found, after exposure to only 10 episodes over a three week period, greater gains in learning in the *Sisimpur* group compared to the control group.

The findings gave us confidence in the potential of the project as an educational tool. But, because the study had been implemented in a contrived setting, it did not present information about what children would learn from the production when delivered to them naturalistically. While conducting this type of experimental study, which looked at pre- and post-exposure differences using a control group, is important because it is the best way to single out effects of the program from those of other influences, it falls short in several respects. First, it tested children's learning in a situation that necessarily differed from naturalistic exposure to the program and which took place at a different time than when the series was broadcast. (The study was conducted before the program aired so that results found for the control group would not be contaminated by possible naturalistic viewing.) In addition, controlling children's exposure to the series meant setting up a regular viewing situation in a formal setting that differed from how most children would view the series in their homes. The result is that the experimental situation was quite different

from the ordinary way children receive the program, something that has potential implications for what children learn. There were also questions about whether the length of the intervention (three weeks) was really long enough to promote lasting learning. (For a more comprehensive discussion of best practices with respect to intervention length, see Slavin 2008). Together, these factors leave open the question as to whether such a study is a fair assessment of the educational value of the program.

To address some of these issues and provide a more exhaustive picture of children's learning we commissioned a companion study, only this one was a longitudinal, naturalistic study (Associates for Community and Population Research; ACPR 2007). It filled in some of the gaps evoked by the experimental study, but admittedly, also introduced design issues of its own. The most ambitious of the group of studies, it included a representative, random sample from across the country of over 6,700 children and 6,700 parents using three data collection waves (one prior to broadcast and two follow-up waves). It surveyed mothers and children (four-to-eight years old) living in households who had had at least some exposure to television (although they did not necessarily have televisions in their homes). It examined both the reach of the program and children's learning from it.

Data demonstrated that the program was effectively reaching a large percentage of its intended audience, that children were learning from it, liking it, and that it was regarded as culturally relevant. In 2007 when the second data wave was collected, about two-thirds (69.8 percent) of the children sampled had viewed the series (which was a rise of about 21 percent from the previous year). Furthermore, children reported liking the program—it ranked first in terms of programs most viewed—and a majority (55 percent) nominated it as a favorite; in addition, a large percentage (93 percent) of mothers agreed that the series was made for Bangladeshi children and reflective of Bangladeshi culture. Importantly, in addition to the gauge of overall reach, the study also highlighted differences in the reach of the program in urban (86.8 percent) versus rural areas (61.7 percent). This unevenness in access with respect to locale pointed to a need for us to bolster our efforts to reach more children in rural regions, a finding that was punctuated further in the researchers' analysis of the data documenting children's learning. Strikingly, the researchers found, when compared to children who had not viewed *Sisimpur*, those exposed to the program demonstrated literacy skills at the level of children a year older. In addition, on the key literacy and math measures, children from lower income and rural areas benefited the most from viewing. (Interestingly, these results parallel those from the earliest study of *Sesame Street* in the United States [Ball and Bogatz 1970], which also documented impressive

gains linked to exposure, providing solid evidence of the value of the television series as a learning tool.)

While the ACPR study yielded important and helpful information that has been used to improve future production and which has provided us with general information about the educational worth of the production, executing this research was not easy and brings into question the practical feasibility of advocating such a large-scale study as a model for future studies. Several issues surface: First, there is the practicality of collecting the data. The study involved obtaining information on over 6,000 adults and children in multiple regions of a country where infrastructure (such as good roads and transportation) is inadequate and where limited access to technologies (such as household phones) necessitated door-to-door data collection. This required the research team to focus on basic logistics in a way that is not needed in parts of the world with more developed public works.

Second, while it was essential that the data be collected by natives knowledgeable of the region within which they were working, conducting this type of research in Bangladesh is not a widespread practice, and locating qualified individuals with experience was consequently not an easy task. It meant training a cadre of individuals specifically for the *Sisimpur* study, many of whom had not had firsthand practice in the field.

These factors also prompted the need to design a measurement instrument that was simple enough to be administered easily by novice data collectors. For these reasons, we had to make choices about what to test and how to test it. Because literacy and math were key elements of the curriculum, they became a priority. We stuck to the most easily quantified aspects of these concepts and developed measures that were relatively simple to administer and record, such as reciting the alphabet (data collectors had only to report the last letter of the alphabet the child could recite), counting (data collectors noted how far children could accurately count consecutively), and vocabulary. (For this we used our own variant of a picture vocabulary test that we had first tried in the experimental study [RCS, 2006]. On this test, children were asked to look at pictures of basics such as an egg, a computer, a peacock, and a lightning bolt, and identify them.) The daunting task of data collection on such a large scale, coupled with the need to build research capacity and design culturally relevant measures from scratch, are all elements that need to be considered when planning future research of this nature.

The final study in the group—which was designed to elicit very different information than the other two studies—was qualitative in nature. It rounded out what we learned by capturing data from adults and children about their perceptions of *Sisimpur*. Conducted by an anthropologist at Boston

University, the study was the first comprehensive and systematic examination of the cultural aspects of one of our projects (see Kibria et al. 2006 and Kibria and Jain 2009). It offers a rich array of information including firsthand reactions to the program. Findings from interviews and observations helped verify that our locally-oriented production model was working. Data analysis confirmed that the production was perceived as reflective of Bangladeshi culture, that children enjoyed watching it, and many regarded it as a favorite television program. Among other aspects, it provided evidence of the value of a mobile viewing program conducted by Save the Children that brings the series to rural communities via monitors installed in rickshaws equipped with electric generators.

The findings were remarkably consistent with those from the ACPR (2007) report. Both studies highlighted the success of the program and elements such as its high appeal, generally positive perception, and worth as an educational endeavor. In addition, both underscored the limitations of the rural reach of the program and noted that more needs to be done to bring *Sisimpur* to communities with limited access to the broadcast.

As a whole, the three studies illustrate the importance of designing research that examines the critical aspects of impact: educational effect, reach, and cultural relevance. It also highlights the consequent need for conducting multiple studies so that the pattern of findings can be reviewed. While none of the investigations presented provide a comprehensive picture, each gives important information about our effectiveness. Taken together they help illustrate the strengths and weaknesses of the program, which, in turn, help us to improve approaches not only in Bangladesh, but elsewhere. We learned, for example, that there was a critical need to continue to emphasize basic literacy and math elements on the program as many children demonstrated low skill levels on these fundamentals and have limited access to other ways of learning them during the preschool years. Furthermore, the need to better extend the project to rural areas became apparent, leading us to seek funding to further our reach into the most disadvantaged areas.

Mutual Respect and Understanding

In addition to *Sesame Street's* success in helping children learn basic cognitive skills (such as the alphabet and counting), promoting positive social relations has played a strong part in most of Sesame Workshop's international productions since the beginning. In the United States, we have been famous for our work in race relations (Lovelace, Scheiner, Dollberg, Segui, and Black 1994), and this success has been carried over to several projects designed for the special needs of children living in regions of conflict or post-conflict.

An examination of *Rechov Sumsum/Shara'a Simsim* (a program broadcast in Israel and West Bank/Gaza during the late 1990s) provides one example of many of the inherent difficulties confronting researchers investigating the impact of media in this domain (Cole et al. 2003). The study included a sample of 275 children from three different groups living in the region: Jewish Israelis, Arab-Israelis (that is, Arab citizens of Israel) and Palestinians living in the West Bank/Gaza. Figure 3 presents the demographic characteristics of the sample and illustrates some of the basic challenges in conducting this research. There was a fundamental imbalance in group characteristics that had significant implications. While gender distribution was more or less equal, other basics such as age and economic situation differed, with the Palestinian sample being younger by nearly a year and, in general, from less privileged backgrounds than children of the two other groups. It should be noted that the samples were not random, but created on the basis of practical feasibility. This was deemed expedient for a study being conducted in a region of conflict, but it significantly limited the generalizability of the findings.

Figure 3. *Rechov Sumsum/Shara'a Simsim* Study Sample Characteristics

	Group		
	Palestinian	Israeli-Jewish	Palestinian-Israeli
Mean Age (SD)	4.62 (0.61)	5.43 (0.78)	5.55 (0.62)
Gender			
Girls	49 (49%)	61 (54%)	29 (46%)
Boys	50 (50%)	52 (46%)	33 (52.4%)
Total	99	113	63
SES			
Low income	99 (100%)	53 (46.9%)	n/a
Higher income	0 (0%)	60 (53.1%)	n/a
Mother's Education* (SD)	12.09 (2.93)	n/a	9.75 (4.27)
Father's Education* (SD)	13.51 (3.21)	n/a	10.73 (4.15)

* Mean number of years; n/a = data not available

Delving further into the specifics of the study, it is apparent that other elements were not matched, the most important of these being that children living in Israel were exposed to a very different stimulus than those in the West Bank/Gaza. This is because different versions of the series aired in different places. *Rechov Sumsum* (the Hebrew version of the show), which was co-produced by Israel Education Television (IETV), was broadcast in Israel, and

Shara'a Simsim, which was produced by Al Quds Institute for Modern Media, aired in West Bank/Gaza. Though the two versions shared some content, each featured its own cast of characters and took place in its own setting: on *Rechov Sumsum* (which means "Sesame Street" in Hebrew) in Israel and on *Shara'a Simsim* (or "Sesame Street" in Arabic) in the West Bank/Gaza production. The IETV version featured more Arab-produced content than the Al Quds version featured Israeli content.

The situation reflects the reality on the ground and implications of the political situation, different levels of local capacity, and project funding constraints. It also provides evidence of some of the issues involved in the practical execution of a project developed in a region of conflict. We confronted similar challenges when conducting research in Kosovo that examined ethnic Albanian and ethnic Serbian children's learning from *Sesame Street* (Fluent Public Opinion and Market Research 2008). There, as in the Middle East, children from the two groups being studied had differing access to the program. While, in contrast to the *Rechov Sumsum/Shara'a Simsim* broadcast, the intervention itself (the *Sesame Street* program) was the same for the two groups (with the exception of the fact that it was separately broadcast in the respective languages of each group), a study of reach showed that a more limited percentage of the Serbian community was viewing the broadcast (Fluent Public Opinion and Market Research 2007). For the purpose of the educational impact study, researchers contended with this issue by setting up an experimental situation, rather than a naturalistic one, that tested the program's potential had the reach been equal to the two communities.

Despite these challenges there is much that can be gained from this type of research. The pattern of findings from the Middle East and Kosovo studies was strikingly similar. Both suggest that such projects can have a positive impact as both demonstrate measurable gains in children's positive perceptions after exposure to material featuring the "other" group. The two studies also provide valuable lessons for improving future production as well as the research designed to evaluate them.

One of the greatest contributions of these studies has been that they have helped us advance the measures we use to examine children's perceptions. For the study in the Middle East, the *Sesame Street* team worked with a group in the United States from the University of Maryland to develop a research instrument that became known as the Social Judgment Instrument (Fox et al. 1999). It was designed to measure key elements of the project's curriculum such as:

1. Palestinian and Jewish children's stereotypes of one another
2. Children's understanding of common aspects of the daily lives of Jews and Palestinians living in the region
3. Children's problem-solving and conflict-resolution skills
4. Children's awareness of cultural symbols and the everyday lives of the Jews and Palestinians living in the region.

The first part of the instrument was inspired by Daniel Bar-Tal's (1996) work examining Israeli children's perceptions of Arabs. It began with a simple question that was prompted by showing a picture of a man and telling children that he was either an Arab (in the case of the Jewish sample) or Jewish (in the case of the Palestinian and Arab-Israeli samples) and asking Jewish children to tell the researchers what they know about Palestinians, and Palestinian and Arab-Israeli children to state what they know about Jewish people. It was followed by a series of play scenarios involving conflicts between Arab and Jewish children. Researchers presented these to the children being studied who then answered questions about different ways to resolve the conflicts. The children's responses were then recorded and coded into categories denoting whether the child had expressed a positive, negative, or neutral view about the "other." They were also asked to identify pictures of symbols (such as a mosque and a menorah) from their own and the "other" culture.

The instrument itself yielded rich data about children's perceptions and their knowledge of symbols of their own and the "other" culture. It was striking that some of the children, even very young children, offered very negative and sometimes bellicose descriptions of the "other" in response to the simple question about what they knew about people from the other group. Comments included such remarks as "they are dumb" or "they want to destroy us." Yet, interestingly, the children's responses to the scenario questions—which involved child-to-child interactions, rather than a response to a picture of an adult which was the case with the first question—demonstrated prosocial reasoning that, for the most part, was devoid of negative stereotyped thinking about the "other." This supports a key finding of the study: the value, as the authors put it, of the use of "child-oriented intervention project[s]" to reduce inter-group conflict (Cole et al. 2003, p. 421).

The study in Kosovo (Fluent Public Opinion and Market Research 2008) also helped forward our research efforts. Building upon our earlier work in the Middle East, it used some of the same elements (such as questions designed to gauge children's sense of self and other), but advanced the approach by introducing an innovative index to analyze the data. Employing a

randomized control trial (RCT) design involving 536 K-Albanian and K-Serbian 5–6 year olds, the experiment compared the pre/post test performance of children who watched the series with that of a control group that did not.

To analyze the data, the researchers developed an index that included four factors: receptiveness to a foreign child, receptiveness to a Roma child (Roma being a disenfranchised group in Kosovo), receptiveness to another language, and receptiveness to another ethnicity. Statistical analysis (Cohen's alpha) showed that all four factors were related. Scores on this index ranged from 0 (no appreciation of mutual respect and understanding) to 100 (the highest measured appreciation) with a score of 80 or higher regarded as reflective of mutually respectful attitudes. At pretest only 28 percent of the children scored in the mutual respect range and there was no significant difference between the intervention and control groups. At post-test, the proportion of children scoring in the mutually respectful range rose to nearly half (49 percent) and was virtually unchanged in the control group (30 percent). The index's advantage is that it allows researchers to talk about the findings in a succinct way that meaningfully captures the complexity of the construct—mutual respect and understanding—that is being measured. By employing the index the researchers were able to summarize the findings in terms that were relatively easy to understand, despite the fact that they were studying a multi-faceted concept. They concluded, for example, that children in the intervention group were “74 percent more likely than children in the control group to demonstrate positive attitudes towards children from different ethnic backgrounds (odds ratio = 2.53, 95 percent confidence interval 1.73-3.71, $p < .01$)” (Fluent Public Opinion and Market Research 2008, p. 30). The codification of the information in a summary percentage proved to be a much more accessible and succinct way to capture the data than had been true in previous studies.

Taken together, the Middle East and Kosovo studies point to the difficulties of studying children's learning from media interventions designed to promote mutual respect and understanding, but also show that it is possible to structure studies to evaluate learning in this arena. While, admittedly, we are still in very incipient stages of developing good measures to study this content area, some progress has been made that not only suggests the success of these projects but also highlights the value of continuing to improve research designs and measures to study effects.

Health

Health, hygiene and good nutrition have been at the heart of several of Sesame Workshop's international projects, and the few studies that have examined their impact offer important insights for the direction of future study.

Studies of the impact of the HIV/AIDS education component of *Takalani Sesame* in South Africa have shown linkages between exposure to the program and changes in knowledge. Khulisa Management Services (2005) tested children's learning in four areas of the project's curriculum that were included in the series' content: basic knowledge of the disease, blood safety, destigmatization/discrimination, and coping with the illness. On tests of performance in these areas, children in an experimental group, when compared to those in a control group not exposed to the intervention, made greater gains.

Research also found value for adults. A companion study conducted by Health and Development Africa (2005) showed that caregivers who had watched a *Takalani Sesame* television special for adults entitled "Talk to Me" were more than two times as likely to report having discussions with children in their households about the disease as those who had not watched it. The findings held up even after accounting for demographic factors, such as income, race, and region, which can sometimes confound such effects.

As valuable as these studies are to our understanding of the impact of the health intervention, with the first study providing a good gauge of children's *knowledge* and the second offering evidence regarding *perceptions* neither offer data about the ultimately most desirable outcome: *behavioral* change. Social scientists have readily established that changes in knowledge and perception are far easier to influence and measure than behavior change. Yet, the point of most health interventions is usually to effect behavioral change, and it is too often the case that this most critical aspect is left unstudied. (See, for example, the 2004 article by P. G. Schraeder and Kimberly Lawless, who provide an interesting discussion of the need to study knowledge, attitudes and behaviors).

An example of one way to examine the influence of an intervention on behavior comes from a study of the *Alam Simsim* (*Sesame Street* in Egypt) community outreach project conducted by Social Planning, Analysis and Administration Consultants (SPAAC 2004). It included 300 parents and 200 children (ages 4–7) from middle-income communities in Cairo and Beni Suef. Half of the study participants were randomly assigned to an experimental group that received the intervention, providing general health, hygiene, and nutrition information. Half were not exposed. Similar to the findings from the 2005 Khulisa Management study of *Takalani Sesame* (Khulisa Management Services 2005), analysis of the results of surveys of both the children's and the parent's knowledge of health practices, hygiene, and nutrition showed that those who had participated in the intervention demonstrated significantly greater gains than those in the control group.

Yet knowledge level is not an indicator of practice. To investigate behavioral change an anthropologist conducted pre- and post-intervention observations of five families that had participated in the outreach program. Her examination showed that after exposure, families had begun incorporating specific aspects of the program into their home routines, including eating more fruit and vegetables and engaging in specific hygiene practices. The anthropologist also uncovered some important information that helped the project's outreach team adjust some aspects of the intervention. More specifically, we learned that there were some practices the program advocated that were difficult for families with modest incomes to implement. While parents understood the importance of daily tooth brushing, for example, for some the cost of purchasing toothpaste and a brush was prohibitive. Implementers then changed the learning orientation to provide lower cost ways of practicing some of the basics (such as using alternatives to cleaning teeth with paste and a brush).

In sum, a key element that our health research highlights is the importance of including assessments of behavioral change, something that has become all the more important given an increasing demand from funding agencies and others to document behavioral change as a result of the interventions they support. The introduction of household observations into research protocols is one option for documenting such achievement.

New and Old Technologies

In addition to the issues that emerge from the study of particular curricular areas, another primary consideration in conducting impact research is the technology used to carry content and the various research elements different technologies introduce. Many of the evaluations of Sesame Workshop's international projects have focused on television (and to a lesser degree, our community outreach projects). But with the emergence of new digital platforms Sesame Workshop has begun experimenting with other ways to deliver our content. The advent of new technologies necessitates new research methods for examining them.

Within the United States, a body of research on Sesame Workshop's work in new domains is emerging. One example comes from an evaluation of the use of cell phones to deliver *Sesame Street* literacy content (Horowitz et al. 2006; in this case, conveyed through audio messages and short videos featuring *Sesame Street* characters) to parents and children. The study assessed the level of acceptance of cellular phones as an educational content medium, impact on parent's initiation of literacy activities in the context of everyday activities with their children, and parent's perceptions of their children's liter-

acy learning. Because the study examined an innovative use of a relatively new technology, the researchers had to be equally pioneering in devising a research method that would provide insight into what they were trying to learn. By incorporating intrinsic characteristics of the technology architecture into the research design, the researchers were able to capture valuable information about usage patterns. For example, the team devised a way to record to the video server how frequently and at what times on which days of the week parents/children streamed the intervention videos on their phones. In this manner, the researchers were able to capture valuable information about usage that supplemented what they learned from pre/post surveys and post-intervention group interviews. They concluded that cell phones have potential as an educational vehicle, and that parents and children enjoyed engaging with the medium as a learning tool. They also identified some of the usage challenges, such as slow loading time of the videos and parental concerns over the potential for their children to damage the cell phone, all information that has practical application in improving the delivery of mobile learning phone content in the future.

Internationally, the demand for research examining the impact of our content using new technologies will increase as we expand the types of platforms we use to deliver our programs. The most comprehensive evaluation to date of our non-television international work is currently underway (Fisch et al. forthcoming). It is a fourcountry (China, Egypt, Mexico, and the U.S.) study of our new online initiative, *Panwapa* (www.panwapa.com) which examines usage and learning from the program. (The initiative has been designed to promote global citizenship and help children throughout the world learn about each other.) Like the cell phone study, the research has been designed to match the medium it is investigating and has required the introduction of new techniques for collecting observational data and for capturing the ways children interface with the online experience.

Interestingly, as we broaden the new technologies we use, we are also increasingly expanding the delivery of our materials through lower technologies to more readily reach children in greatest need. And this use of lower technologies has also prompted the need to develop research methodologies to study their impact. Because many of our projects are focused on vulnerable and disenfranchised children, technologies such as televisions and computers are precluded because children live in areas that lack regular access to electricity and/or can't support the purchase of expensive equipment. Our strategy has been, therefore, to deliver content in multiple ways. Some of our material is delivered through the use of very low technology such as, for example, bioscopes, which are viewing devices we are using in India that revive a dying

craft. (Bio-scopes are a type of hand-powered slide-show viewer that allows children to watch a moving slide reel of freeze frames from the television show through portholes in a lighted box and listen to accompanying music or narrative.) In many cases the lower technologies reach fewer people at a given time, but when delivered through community organizations, can be a more effective way to distribute our material to individuals living in certain situations. In India, for example, mobile community screenings of *Galli Galli Sim Sim* (as the series is called) reach two out of three preschoolers in targeted slum areas (GFK Mode 2007).

The use of radio in South Africa (which offers an effective way to access communities less well-served by television) provides another example of our use of an older technology and one that requires the development of new research methodologies to effectively study it. When we started a decade ago to produce radio content for our *Takalani Sesame* project, our research experience had been primarily with television. We therefore worked to develop new approaches for observing children's interactions with radio and their learning from it (Desmond et al. 2000). Observation techniques such as eyes-on-screen (Flagg 1990) that we had so readily used for television were, quite obviously, inappropriate for radio. Furthermore, when questioning children, we had to introduce different types of prompts than we used to study reactions to television content as we couldn't depend on such devices as "screen-grabs" (that is, still images taken from video material) to direct children's attention to a given segment.

In sum, the advent of new technologies and the novel application of old ones require appropriate research techniques to examine them. While we can build on what has been done in the past, research techniques need to change as technologies advance.

Into the Future

The evolution of summative research methodologies on Sesame Workshop's international work points to the need to continue to develop research designs and measures that are specifically tailored to the complexities of the content being displayed in the media as well as to the type of media being used to deliver that content. Contemporary children's media such as that produced by Sesame Workshop strive to help meet the current needs of children living in today's world. The evaluation of programs designed to promote messages of particular import such as complex health issues including HIV/AIDS and malaria, challenging issues such as mutual respect and understanding in regions of conflict, and basics skills (such as literacy and math), when presented to children living in parts of the world where data collection is difficult,

introduces special intricacies that need to be accommodated by researchers and that often require innovative solutions to manage. Furthermore, the introduction of new technologies (as well as the revival of some older ones) also necessitates the development of research tools directly tailored to the study of their impact.

The advancement of these research technologies can be managed best through the continual communication among researchers in the field both through informal exchanges and more formalized ones (such as conferences and peer-reviewed articles). Remarkably, perhaps as a testament of the nascence of the field, it is only within the last few years that a peer-reviewed international journal specifically devoted to *children's media*—*The Journal of Children and Media*, published by Taylor and Francis out of the U.K.—has emerged. Such vehicles help improve formalized communication about progress in the field. Sesame Workshop is committed to the documentation and sharing of this type of information. The recent founding of the Joan Ganz Cooney Center, an independent division of the company, which focuses exclusively on research in the field of children's media, is a strong step in formalizing that commitment (<http://www.joanganzcooneycenter.org/about/our-mission.html>).

If children's media are to maximize their educational potential as powerful and compelling learning vehicles, research will play a key role. At the most basic level, the sheer expense of media production necessitates a responsible use of funds, especially when funds are provided through philanthropic means. Increasingly, public and private funders rightfully request evidence of the impact of a given media project. Well-executed studies that provide concrete data about basic elements, such as children's learning from exposure, the reach of a given project, and its appeal, are essential.

Additionally, research is necessary because evaluations of the successes and failures of production efforts offer "lessons learned" that serve to strengthen future endeavors and help advance future work by enabling producers to build off the experience of others.

Yet, despite its critical need, and although researchers have been studying the impact of television and other media since its origin, many aspects of the endeavor—from the measures we use to the ways we analyze the data we collect—are in very incipient stages. At Sesame Workshop, we continue to regard evaluation of the impact of our productions as a critical aspect of what we do. We aim, at the onset of a given project, to develop comprehensive monitoring and evaluation plans that build a shared concept of the educational aims among all who are working on it. Funding permitting, we include formal evaluation into our project plans to enhance our work. While we, as

others, struggle to obtain the monies needed to pursue the research—and the realities of the expenses associated with research sometimes translates into a restricted ability to include comprehensive study of all our projects—we are committed to seeking the funding required in order to commission studies of our projects when possible so that we can improve what we do to best serve the children of a new millennium.*

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* The author wishes to thank Minal Bopaiah for her detailed reading of the manuscript and excellent editorial suggestions.

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