HEALTH COMMUNICATION
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Research Brief

Pathways to Health Competence for
Sustainable Health Improvement:
Examples from South Africa and Egypt

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Supported by a five-year cooperative agreement from the
United States Agency for International Development (#GPH-A-00-02-00008-00)

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Contents

History and Description of Health Competence

"A health competent society is one in which individuals, communities, and institutions have the knowledge, attitudes, skills, and resources needed to improve and maintain health." - HCP and USAID

Over the course of the Health Communication Partnership (HCP, 2002-2007), CCP has developed the concept of "health competence" to describe an approach to sustainable, cross-sectoral health improvement. This brief uses data from two countries—Egypt and South Africa—to explore the relevance of health competence to health programming and the evidence that communication can increase health competence, which in turn leads to healthier practices across a range of family and reproductive health issues. HCP currently implements programs in both South Africa and Egypt, and supported the collection of the data used in the analyses reported here.

Background

In early 2002, USAID's Office of Population and Reproductive Health issued a Request for Applications for the Health Communication Partnership (HCP), which was intended to serve the health communication needs of the entire Bureau of Global Health in an efficient manner, cutting across health domains to "employ communication effectively to improve health, stabilize population, and advance a 'health competent society'."

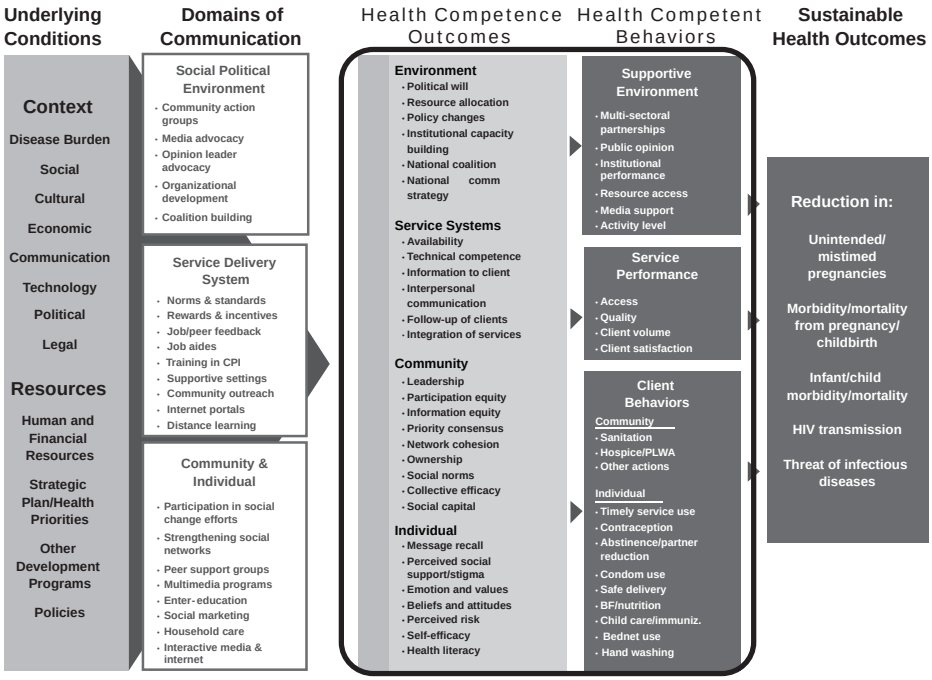
The original range and complexity of the HCP goals (reproductive health, maternal and child health, HIV/AIDS, and infectious disease) demanded an integrated approach for at least two reasons, (1) although objectives and target audiences differ across health domains, there may be some common determinants; and (2) integrated programs could address communication needs across domains and were thought to be economically and strategically more efficient. Underlying this approach was the desire to develop a conceptual framework that identifies causal pathways to health behavior outcomes via individual as well as social, environmental, political and other factors beyond the individual. Such a framework would link specific indicators to multiple outcomes, thus acknowledging the complexity of behavior change while taking advantage of the cross-cutting importance of communication. Unfortunately, existing ecological frameworks did not make explicit mention of communication, even though most social and behavior change could not take place without it.

Pathways Model

Based on an extensive literature review, CCP developed the Pathways to a Health Competent Society model (Figure 1) as the organizing framework for HCP. The model is based on the understanding that an individual who is highly health competent acts appropriately and consistently to improve or maintain health across multiple health areas that are personally relevant to him or her.

Health competence is not an either/or condition; rather it lies along a continuum from low to high. The more health competent a society and its members are, the more consistently positive health outcomes will be. *Pathways to a Health Competent Society* describes a process of social change influenced by communication in a variety of ways depending on program goals. The model is organized in five vertical columns, each containing predictive factors. While the model has an implicit left-to-right orientation, suggesting causal order and progression toward (pathways to) improved health, as is consistent with common stage models of behavior change, it should not be interpreted as endorsement of a strictly linear communication and change process.

Figure 1:
Pathways to a Health Competent Society



The pathways to health competence are grounded in underlying social, political, and economic conditions (the column on the far left). Growing out of and enabled (or constrained) by those conditions, communication of various types occurs. In any society, communication occurs within three principal domains: the social political environment, health service delivery systems, and among individuals within communities. Communication within these domains motivates and facilitates a variety of changes over time. Initial outcomes or enabling changes in the middle column of the model, what we consider competency facilitators, occur in each of the principal domains. In turn, these changes facilitate behavioral outcomes that make the environment more supportive of healthy practices, improve the performance of health services, and improve clients' preventive health practices. Changes in behavioral outcomes at the different levels reinforce each other, resulting in improved health status at the population level. Health competence is inferred from the number of appropriate desired behaviors that occur; the higher the health competence, the more consistently that appropriate health behaviors are observed because individuals (whether at the community, service delivery or policy level) are knowledgeable, motivated, and enabled to act, no matter what aspect of health is involved. To the extent that competencies are durable, more and better health outcomes can be sustained.

At the individual level, health competence works through a number of factors including health literacy and recall of messages; social support/stigma; emotional engagement; beliefs, attitudes, norms and values; the extent to which one perceives risk and self-efficacy. These interact with other factors including: access to resources; the level of community social capital and support; the quality of services; and the characteristics of the overall policy environment. This brief focuses on three specific domains: knowledge, access to resources, and efficacy. The "knowledge" domain summarizes one's basic health knowledge. "Access" describes the ability to get information and knowledge of community resources related to health. "Efficacy" is one's confidence to protect one's health, and one's family's health, as well as the confidence an individual shows in the community to address and support health-related issues. It should be noted, however, that the contribution of each domain to one's overall level of health competence depends on the cultural context, the individual, and the health behaviors in question – as does the health competence measure itself.

Importance of Health Competence to Programming and Policy in the Developing World

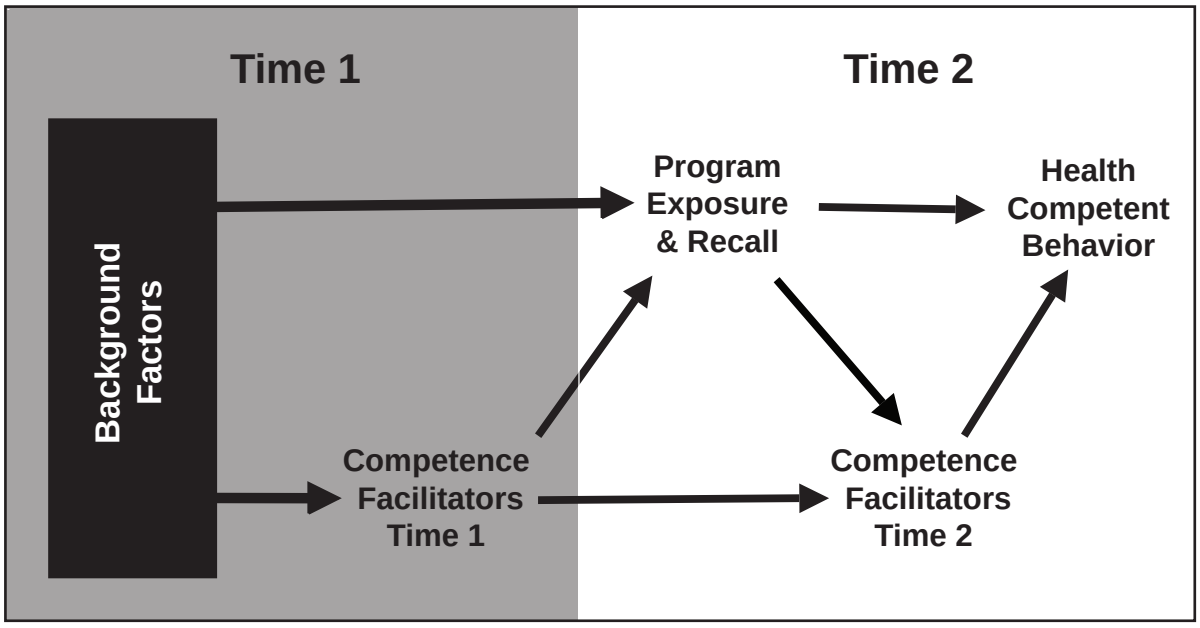
Pathways to a Health Competent Society shows how interventions occurring at different points in the life course or addressing different determinants could yield or contribute to improving health and well-being. It also provides a framework that supports group and community-based communication in the hope of fostering longer-term, normative shifts in behaviors. Such a framework is critical if capacity for local planning and implementation of health improvement efforts is to be increased and policy and community efforts are to be consistently incorporated in existing efforts seeking to reduce mortality and morbidity.

The ideal choice of intervention strategies would, therefore, not just implore people to change, but help them make appropriate health decisions by building healthy, participatory communities and effective health care delivery systems, supported by enlightened health policy. Additionally, health competence articulates a conceptual framework through which programming for one health domain affects outcomes that may be more closely associated with a different health domain. These effects may be called "secondary effects" or "unintended effects." For example, a program that focuses on safe delivery may have the beneficial and secondary effect of improving immunization rates among young children. Parents involved in the safe delivery program become more health competent through their contact with the program. Such contact enhances familiarity with health care services and could lead to the development of greater knowledge about and confidence in health care services, resulting in even greater use of the health care system. In addition, the health competence framework outlined above emphasizes the important role that all sectors of community (i.e. leadership, service deliverer, individuals, and the political system) play in maintaining and sustaining desired health outcomes. Understanding and accepting the connections between these sectors is important in efficient coordination of policy and program endeavors and would as a result lead to more efficient and coordinated program approaches. Therefore, building a competent society by targeting the domains indicated in the pathways implies that we are not only able to target the individuals within a community but the institutions comprising each community, thus creating long-lasting, sustainable change.

It is unlikely that any one program could—or would even try to—address all of the elements described in the model. Rather, Pathways suggests possible routes to achieving better health through the strategic use of communication. For example, in the Social Political Environment domain, communication advocacy directed toward the media or opinion leaders (e.g., legislators) can build support for health policy changes or increased budgets, or strengthen political will to address controversial or difficult issues. Within the Service Delivery domain, a great deal of communication occurs at service facilities, among providers and between clients and providers. Health service systems need to communicate norms and standards of practice, rewards and incentives, and training to personnel. Health workers themselves must communicate effectively with clients, sometimes in facility-based venues, sometimes through outreach. These kinds of communication extend the availability of quality services, improve the technical skills of personnel, and improve the effectiveness of information delivered to and interactions with clients. Similarly, at the Community and Individual levels, many types of communication play a role. Interpersonal communication among community members within social networks, peer groups, and community events related to health, as well as family interactions in the household, can be encouraged or facilitated. Many familiar individual level outcomes also result from health competence communication at that level: recall of relevant health information,

knowledge of health determinants and practices (health literacy), shifts in or reinforcement of health beliefs and attitudes, change in perceived risk or improved emotional coping with perceived threats to health, increased perceptions of social support for difficult health practices, reduced stigma attitudes, and increased self-efficacy. Improvements in these health competence facilitators increase the likelihood of positive health behaviors related to hygiene, reproductive health, safe pregnancy and delivery, child feeding and immunization, and prevention of infectious diseases. Figure 2 summarizes how the development of health competence through programming could influence health outcomes at the individual level. It is anticipated that program exposure would enhance and be enhanced by the competence facilitators. Enhanced competence facilitators would in turn lead to the adoption and maintenance of health competent behaviors.

Figure 2:
Path diagram indicating the potential effect of program exposure and competence facilitators on health competent behavior



Country Case Studies

The country case studies presented in this brief provide good examples of how the health competence approach can be used to improve and sustain health behaviors. While the two countries—South Africa and Egypt—have different program and policy environments, they provide common lessons about the role that health competence can play in influencing behavior. Comparing two different environments also helps determine the generalizability of the concept.

Egypt

The Communication for Healthy Living (CHL) program in Egypt views households as the producers of health. The program integrates health care services and focuses on systems, and encourages health behaviors appropriate to an individual's life stage. Innovative life stage-oriented CHL activities have included the "Newlyweds Initiative," which involved a group wedding celebration to focus on young married couples taking responsibility for their own health. CHL's national television and radio broadcasts feature newlywed couples and address topics like general health, population pressure, and gender equity. CHL works with over 1,000 outreach workers and health care providers through specialized training, seminars, and public events. Family Health Weeks in all six project governorates have proved a successful way to engage many audiences.

South Africa

South Africa has the world's largest number of HIV positive individuals and one of the world's worst TB epidemics. Combined, these two diseases have dropped the age of life expectancy in the country dramatically over the last five years. Against this backdrop, the primary role of the Center for Communication Programs (CCP) and its partners is to initiate and undertake over five years a high level prevention, treatment, care and support strategic communication intervention. Strategic communication combines the power and reach of the mass media with activities that allow face-to-face interaction such as community-based events and interpersonal communication and counseling. Other organizations also continue to provide media programs. These programs have generally targeted the following issues: condom use, abstinence, the importance of voluntary counseling and testing, support for orphans and other at-risk children, care and treatment, civil society, mother to child transmission, cultural norms about sex, and others.

Methodology

For South Africa, an AIDS survey which included items on HIV/AIDS, tuberculosis, general sexual behavior, exposure to HIV and other health communication programs as well as social norms and social capital was used. The survey was conducted in 2006. Participants were 6,998 men and women who were randomly selected for the study. The South African analyses included in this research brief focus only on a subset of 5,821 sexually experienced individuals whose age ranged from 16 to 65 years. More than 51% were female, 80.3% had at least an eighth grade education, 45.6% were either employed or attending school full time, and 53.7% reported being head of their household. A majority (64.8%) were single and 72.8% were black. Respondents were distributed proportional to population density across nine provinces to provide a broadly representative national sample.

From Egypt, we used data collected by the Menya Village Health Surveys, a multi-wave panel study conducted in 2004 and again in 2005. The study included a total sample of 2,240. The Egypt analyses are based on a sample of 2,082 ever married women with at least one child. These individuals ranged in age from 16 to 49 years, 91.9% were married at the time of the survey and 72.2% were literate.

The analyses were conducted in two steps. First we conducted bivariate analyses and then multivariate models were tested. All analyses were conducted using STATA Version 9. To examine the association between overall health competent behavior and competency facilitators, scales were constructed for each country. The competent behavior scales were computed by summing the number of appropriate self-reported behaviors across a range of health topics. "Appropriate" in this context means that respondents had both reason and opportunity to practice the behavior. For example, women with at least one child could be reasonably expected to have occasion to practice family planning, seek prenatal care, have a medically assisted delivery, and so on. For single women who had never given birth, only some of those behaviors are "appropriate" because the opportunity to practice them (pregnancy and delivery) was present. Different behaviors would be considered appropriate in the context of HIV/AIDS than in the context of maternal health, but for some women, both HIV/AIDS and maternal health behaviors might be appropriate. In general terms, the greater the number of appropriate behaviors that are reported, the greater the level of health competence.

For the present analysis, the following HIV/AIDS-related behavioral items were included in the South Africa competent behavioral scale:

- Ever going for an HIV test
- Use of a condom at last sex
- Having not more than one sexual partner in the past month.

In Egypt, where the program was focused on a much broader range of maternal, child, and family health issues, the behavioral scale included:

- Use of contraception after 1st child
- Antenatal care
- Postpartum & neonatal checkups
- Medically assisted birth
- Postnatal care for infants
- Early initiation of breastfeeding
- Optimum hand washing (before eating, after defecation)
- Having a smoke-free zone in house
- Ensuring safe injection

The competence facilitator scales in both countries focused on the three dimensions (knowledge of

relevant health issues, attitudes—including self-efficacy—related to the practice of healthy behaviors, and access to social capital and other resources). Items at both the individual and community level were included as a measure of the enabling factors as outlined in the Pathways model. A total competence facilitator score was obtained by dichotomizing each component item, then summing all the items in the scale. Individuals with a higher score on the competence facilitator scale have more of the positive knowledge, attitudes and support that enable them to act in a consistently appropriate way, that is to practice more health competent behaviors. In South Africa where the primary health issue of concern is HIV/AIDS, the competence facilitator scale consisted of Knowledge items (awareness of New Start centers, knowledge of a HIV testing site near their residence or place of work, knowledge of any telephone service that gives information about HIV, knowledge of a place providing free treatment for tuberculosis, knowledge of HIV transmission and other facts about HIV, knowledge of how to prevent and treat other sexually transmitted diseases, and knowledge of TB symptoms and treatment); Attitude items (self-efficacy to invite a partner to take the HIV test, self-efficacy to say no to sex if partner refuses to use a condom, self-efficacy to demand condom use, self-efficacy to say no to sex if abstinence is desired, self-efficacy that they and their partner can use a condom correctly, confidence that there are enough organizations helping with HIV/AIDS issues in the community, confidence that leaders in the community take HIV/AIDS seriously, perceived community support for people living with HIV, perceived community support for orphans; trust of people in the community, perceived community support for people with tuberculosis) and Resource or Social Capital items (discussion of HIV with sexual partner; discussion of HIV with a family member or friends; attending an HIV rally in the past 12 months; attending a meeting on HIV/AIDS in the community in the past 12 months; helping or volunteering at an HIV/AIDS organization in the past 12 months). Each of the above items was constructed as a binary variable so that when they are summed for a given respondent, they produce a scale value ranging from zero to 26. Assessment of the facilitating factor scale in the South Africa analysis showed high reliability with an alpha of 0.72.

The health facilitating scale in Egypt consisted of Knowledge items (knowledge of premarital exam or newlywed exam; knowledge of the danger signs of pregnancy; knowledge of the modes of HIV transmission; knowledge of the safe injection practices; knowledge of the dangers of second-hand smoke; and knowledge of safe blood handling to prevent blood-borne diseases, self-efficacy to resolve health problems; and collective efficacy to resolve health issues); Attitude items (sense of shared community responsibility for health, willingness to participate in community meetings, confidence in ability to get health information); and Resource or Social Capital items (participation in public discussion, comfortable talking with friends/neighbors about various health topics, knowledge of local groups that are working to improve community and family health, and knowledge of community meetings about health that happened in the past year). For some analyses in both countries, the competence facilitator scale was used as a categorical variable, which was constructed by dividing individual scale score values into terciles (low, medium, or high).

In addition to the above two scales, a number of control variables were constructed and used in the analysis. In both surveys, level of individual program exposure was measured. In South Africa, the program exposure variable consisted of an additive scale reflecting self-reported recall of up to 23 HIV/AIDS related interventions implemented by HCP and other organizations in South Africa. These activities included media programs presented on radio, television, and print, as well as various types of contact with facility-based and community outreach workers. The program exposure scale was split into terciles reflecting low, medium, or high levels of exposure to the available communication interventions. An overall media exposure variable also was constructed for the South Africa data. This variable indicated the number of broadcast and print media (not program-specific content) that an individual was exposed to on a weekly basis. A socio-economic scale was constructed using variables related to possession of household items. Individuals were divided into terciles along this scale leading to a categorization of the socio-economic status as low, medium or high. Other variables included marital status (married, single, or divorced/separated/widowed); employment (unemployed, employed, or fulltime student); head of household status (yes/no); and race (Black, Colored, Indian, or White).

In both countries, two types of analyses were conducted. The first type examined individual competent behaviors. In South Africa, these individual behaviors included ever testing for HIV, use of a condom at last sex and possession of not more than one sexual partner in the past month. In Egypt the individual behaviors examined having a medically assisted birth, initiating breastfeeding within 24 hours of birth, having a postpartum and neonatal check up, and optimum hand washing. The second type looked at overall health behavior as reflected by the health competent behavior scale.

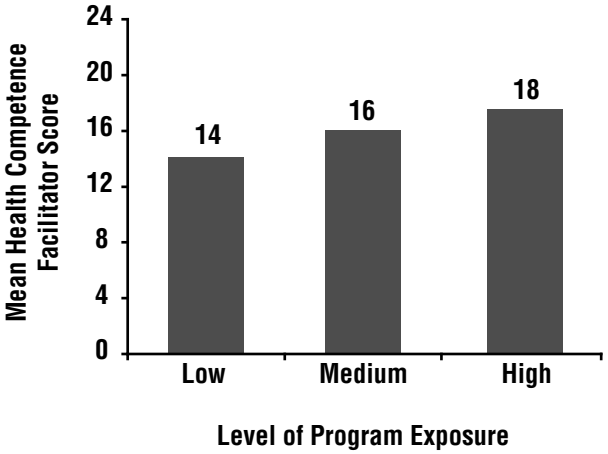
In both countries, two models were run to assess the association between health competent facilitators and the behavior scale. The first model includes all variables with the exception of competency facilitators and in the second model, the facilitator score is added. In South Africa, similar models are run for each of the behaviors. A test of normality for the competent behavior scale in the South African sample showed that the scale was not normally distributed. Examination of Poisson regression or other models that analyze count data is recommended when the assumption of normality is not met and a linear regression model cannot be used. Post-estimation tests showed that a Poisson model presented the best fit for the analyses of the associations related to behavior scale for the South Africa analyses. Poisson regression models the expected count (number) of events within a certain period of time. Because this type of modeling accounts for time, the counts often are referred to as a rate. Certain specifications in this model provide comparisons with reference groups. We applied these specifications to present incident rate ratios between groups of respondents. These ratios compare the number of competent behaviors in one category to the numbers in the reference category, holding all other variables constant. For a continuous variable (e.g. age), the rate ratio reflects the ratio of the number of competent behaviors associated with one unit change in the variable of interest, holding other variables constant. A rate lower than 1.00 for a continuous variable therefore would indicate that individuals belonging to that category have a lower count on the behavioral scale. Logistic regression was used for the models assessing the association between HIV testing, condom use, possession of not more than one sexual partner, and health competence.

Results

South Africa

A little more than 45% of individuals had ever been tested for HIV and 43.6% reported using a condom at last sex. Individuals ranged between 1 and 26 on competent facilitators, with more than 64% of the 5,821 persons scoring above 15. Exposure to health programming was relatively low. A majority of participants (82%) reported exposure to one half or fewer of the 23 communication interventions measured in the survey. As indicated in Figure 3, bivariate analysis between program exposure and competence facilitator scores showed that individuals with a higher level of program exposure had higher competence facilitator scores(p=0.000, F=39.89).

Figure 3:
Mean health competence facilitator score by level of program exposure; South Africa, 2006



Source: South Africa National AIDS Survey, 2006 **F=39.89, p=0.00**

In South Africa, the analysis examining the association between individual behavior outcomes and the competence facilitators showed that the facilitators were associated with HIV testing and condom use at last sex (Table 1). Individuals with a high competency facilitator score were 2.20 times more likely to report ever having an HIV test ($p<0.001$) than those with a low score, while those with a medium level were 1.52 times as likely ($p<0.001$). The association between health facilitators and competent behavior was slightly stronger for condom use. A high competent facilitator score multiplied the odds of using a condom at last sex by nearly three times ($p<0.001$). However, no association between not having more than one partner in the past month and competence facilitators was found in South Africa.

Increased exposure to programming also was associated with a higher likelihood for HIV testing and condom use. South Africans with a high exposure to prevention programming were 1.84 times as likely to report ever having an HIV test as compared to those with a low level. However, as indicated in Model 2, the influence of program exposure on HIV testing was reduced after adjusting for health competence facilitators. The effect of exposure on condom use was maintained even when health competence was entered in the model (Model 2). Exposure to the general media also was related to HIV testing and condom use. A higher number of media outlets exposed to on a weekly basis was associated with a higher likelihood for reporting an HIV test or condom use at last sex. These effects were maintained even after entering the competent facilitators in the model. Other findings show that students, younger respondents, those of low socio-economic status, men, and singles were less likely to have had an HIV test. Additionally, being a student, unmarried and being at a higher socio-economic level were all associated with increasing odds of using a condom at last sex.

Table 1:

Multivariate logistic regression of the relationship between the health competency facilitators and HIV testing, condom use at last sex and having one or fewer sexual partners in the past month (South Africa)

	Behavior					
	HIV Testing		Condom Use at Last sex		Possession of One or Fewer Sexual Partners in the Past Month	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Variable						
Age	0.98***	0.98***	0.95***	0.95***	1.03**	1.03
Sex						
Male	Ref		Ref	Ref	Ref	
Female	1.65***	1.70***	0.61***	0.62***	3.81***	3.82***
Race						
Black	Ref		Ref		Ref	
Colored	1.10	1.08	0.51***	0.48***	1.71	1.72
Indian	1.03	1.08	0.79	0.83	2.25	2.26
White	1.66***	1.67***	0.45***	0.44***	4.78**	4.80**
Marital Status						
Married	Ref		Ref		Ref	
Single	0.84*	0.85*	3.03***	3.17***	0.34***	0.34***
Divorced/Separated/ Widowed	0.84	0.90	3.61***	1.26*	0.39	0.39
Employment Status						
Un-Employed	Ref		Ref		Ref	Ref
Employed	1.50***	1.50***	1.07	1.06	0.91	0.91
Full-Student	0.42***	0.42***	1.23	1.26*	1.25	1.24
Head of Household						
No	Ref		Ref		Ref	
Yes	1.82***	1.83***	0.65***	0.62***	1.18	1.18
Socio-Economic Status						
Low	Ref		Ref	Ref	Ref	
Medium	1.01	0.97	1.25*	1.18*	0.76	0.76
High	1.34**	1.27**	1.52***	1.39**	0.85	0.84
Media Exposure	1.17***	1.13***	1.17***	1.11**	1.03	1.03
Program Exposure						
Low	Ref		Ref		Ref	
Medium	1.22**	1.11	1.45**	1.28**	1.03	1.03
High	1.84***	1.51***	1.45**	1.10	1.07	1.08
Health Competence						
Low	----	Ref	----			
Medium	----	1.52***	----	1.96***	----	0.93
High	----	2.20***	----	2.93***	----	1.01
Model statistics (degrees of freedom)	n=5,821	n=5,821	n=5,779	n=5,779	n=5,783	n=5,783
	LR X^2 (23) =699.9***	LR X^2 (22) =810.20***	LR X^2 (23) =1718.8***	LR X^2 (25) =1892.4***	LR X^2 (23) =248.6***	LR X^2 (25) =248.9***

Source: South Africa National AIDS Survey, 2006. Analysis also controlled for Province.
*p < 0.05, **p < 0.01, ***p < 0.001

Examining the association between the competent behavior scale (derived by combining the individual behaviors) and the competence facilitator score using Poisson regression, shows that the number of positive behaviors among individuals with a high competence facilitator score in South Africa was 1.26 times higher than that of those with a low health facilitator score (Table 2). A medium competent facilitator score increased the number of competent behaviors 1.17 times. Higher exposure to programming also was associated with a higher number of health competent behaviors (Model 1). However, this influence was completely eliminated when health competent facilitators were entered in the model (Model 2)

Table 2:
Multivariate regression of the health competent behavior scale on select control variables, program exposure and health competency facilitators (South Africa)

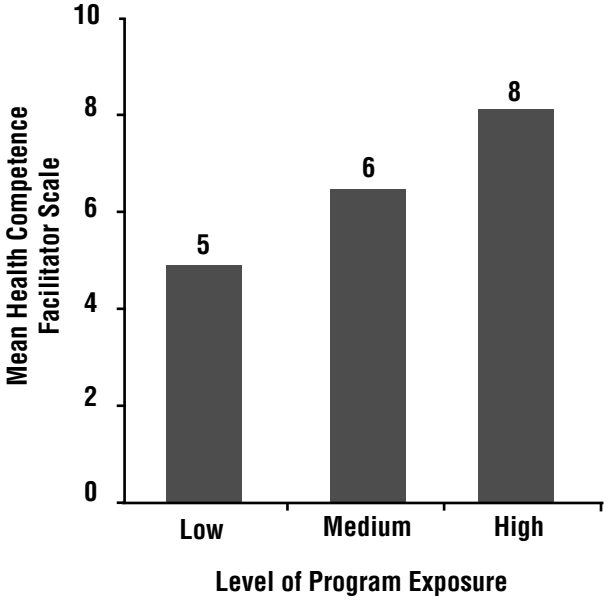
Variable	Incident Rate Ratio	
	Model 1	Model 2
Age	0.99***	0.99
Sex		
Male	Ref	
Female	1.04	1.04
Race		
Black	Ref	
Colored	0.96	0.95
Indian	0.98	1.00
White	1.01	1.01
Marital Status		
Married	Ref	
Single	1.08**	1.09**
Divorced/Separated/Widowed	1.08	1.10*
Employment Status		
Un-Employed	Ref	
Employed	1.06*	1.05*
Full-Student	0.94	0.94
Socio-Economic Status		
Low	Ref	Ref
Medium	1.03	1.01
High	1.08**	1.06
Media Exposure	1.04**	1.02*
Program Exposure		
Low	Ref	
Medium	1.07**	1.04
High	1.12***	1.05
Health Competence		
Low	----	
Medium	----	1.17***
High	----	1.26***
Model statistics (degrees of freedom)	n=5,821 LR X^2 (23) =220.52***	n=5,821 LR X^2 (25) =301.04***

Source: South Africa National AIDS Survey, 2006. Analysis also controlled for Province
*p < 0.05, **p < 0.01, ***p < 0.001

Egypt

In Egypt, health competence facilitators were positively associated with exposure to the CHL program. Those at the highest tercile of program exposure have a mean heath competency facilitators score of 8.1 (on a scale of 0 to 15). Those in the middle third of program exposure had a health competency facilitators score of 6.5, and those respondents with the least program exposure had a health competency facilitators score of 4.9 (see Figure 4).

Figure 4:
Mean Health Competence Facilitators score by Program Exposure Terciles



Source: Egypt MOH/CHL/Zanaty & Associates, MVHS 2004, 2005
p= 0.00

For the selected health outcomes of medically assisted birth, initiating breastfeeding within 24 hours of birth, having a postpartum and neonatal check-up, and practicing optimum hand washing, higher health competence is associated with better health behaviors, adjusting for respondents' age, literacy, marital status, household wealth, and exposure to the CHL program (see Table 3). Compared to respondents at the lowest tercile of health competence facilitators scores, those in the highest tercile were more likely to report having had a medically assisted birth (OR=1.70), to have initiated breastfeeding within 24 hours of the birth (OR=1.22), to have had a postpartum neonatal check-up (OR=1.43), and to wash their hands before eating and after defecation (OR=3.44).

The overall health behavior index for Egypt incorporates nine health behaviors (including the four selected health behaviors described in Table 3). Model 1 regresses the health behavior index upon independent variables including terciles of CHL program exposure. Those respondents reporting the highest tercile of program exposure, adjusting for age, literacy, marital status, and household wealth, have a 0.44 greater health behavior index than do those with the lowest tercile of program exposure, and the difference is statistically significant (see Table 4). Model 2 adds health competence to the model. Those at the highest tercile of health competence report 0.68 greater health behavior indices compared to those at the lowest tercile of health competence, and the difference is statistically significant. Those with high health competence facilitator scores practice more of the outcome behaviors than do women with lower scores of health competence facilitators scores, adjusting for age, literacy, marital status, household wealth, and CHL program exposure. Comparing the regression coefficients for program exposure in Model 1 and Model 2, it appears that health competence changes slightly the association between program exposure and health behavior index score.

Table 3:

Multivariate logistic regression of the relationship between the health competency facilitators and having a medically assisted birth, early breastfeeding, postpartum neonatal check up, and optimal hand washing (Egypt) (n=2,082)

Variables	Medically Assisted Birth	Initiate Breastfeeding w/in 24 hours	Postpartum & Neonatal Check-up	Optimum Hand Washing
Age	0.92***	0.91***	0.93***	0.99
Literacy	1.50***	1.21	1.50**	1.16
Marital status				
Married	Ref	Ref	Ref	Ref
Widowed	0.15***	0.17***	0.19**	1.10
Divorced	0.23**	0.11***	0.42	1.09
Separated	0.29*	0.17***	0.47	2.09
Household Wealth	0.95**	1.05**	0.97	0.96*
Program Exposure				
Low	Ref	Ref	Ref	Ref
Medium	1.16	0.96	1.15	1.04
High	0.83	1.04	1.42*	0.84
Health Competence				
Low	Ref	Ref	Ref	Ref
Medium	1.16	0.99	0.93	1.38**
High	1.70***	1.22	1.43**	3.44***
Model Statistics (degrees of freedom)	LR $X^2(10)$ = 376.42***	LR $X^2(10)$ = 416.25***	LR $X^2(10)$ = 236.85***	LR $X^2(10)$ = 146.49***

Source: MOH/CHL/Zanaty & Associates, MVHS 2004, 2005.
Analysis based on ever-married women who had had at least one child.
*p < 0.05, **p < 0.01, ***p < 0.001

Table 4:

Multivariate logistic regression of the health competent behavior scale on select control variables, program exposure and health competency facilitators (Egypt) (n=2,082)

Variable	Model 1	Model 2
Age	-0.08***	-0.08***
Literate (v. non-literate)	0.47***	0.39***
Marital Status		
Married	Ref	Ref
Widowed	-0.66***	-0.65***
Divorced	-1.21***	-1.22***
Separated	-1.00**	-1.04**
Household wealth	-0.06***	-0.04**
CHL Program Exposure		
Low	Ref	Ref
Medium	0.26**	0.20**
High	0.44***	0.23**
Health Competence Facilitator Score		
Low	n/a	Ref
Medium	n/a	0.09
High	n/a	0.68***
Model Statistics (degrees of freedom)	F (8, 2073) =71.72***	F(10, 2071) = 64.23***

Source: Egypt MOH/CHL/Zanaty & Associates, MVHS 2004, 2005.
Analysis based on ever-married women who had had at least one child.
*p < 0.05, **p < 0.01, ***p < 0.001

Health Competence in Programming and Research

Program Implications

The findings demonstrate the importance of health competence in the development, implementation and evaluation of health programs. Skills and attitudes developed as a result of one program could be beneficial for outcomes not directly related to the targeted behaviors. Using the health competence concept will influence populations targeted by health interventions. Health programming has traditionally targeted individuals within a group and has paid little or no attention to the group as an entity. Application of the health competence pathways necessities consideration of communities, in addition to the individuals within these communities. Additionally, given that the different domains in a community influence each other to produce a health competent society, Pathways advocates for better coordination within and across sectors in order to effectively achieve and maintain health outcomes. Examining the role that other sectors may play to enhance or undermine proposed programming is therefore critical at the program development stage. From a policy perspective, it is necessary to examine and consider the sectors that will produce maximum benefit. As an evaluation tool, the Pathways framework and health competence concept underscore the need for broader program evaluation approaches. Evaluation strategies typically focus on the primary targeted behaviors and are usually conducted immediately following completion of a program. However, because benefits could be observed beyond the initially targeted behaviors, considering other behaviors and domains that could be impacted by a program may be important when designing the evaluation plan. Additionally, having several evaluation time points could help reveal effects that may not have been manifested immediately following program completion.

Limitations and Areas for Future Research

While this preliminary study generally has shown strong associations between health competence facilitators and behavior, there is need for further research on the topic in the areas listed below. CCP will be conducting some of these analyses in the next few months:

- The current study relied on cross-sectional data. As a result, we were not able to determine causality or directionality. There is need to test the pathway on panel data. CCP plans to examine the extent to which program exposure predicts health competence and how health competence in turn influences behavioral outcomes in areas where panel data is available.
- The study used different measures of competence facilitators and health competent behavior in the two countries. As an example, while the health competency facilitator scale for South Africa comprised of 26 items, that in Egypt included 15 items. The behavioral scales also differed by country. The South African scale not only had very few items but was also limited to behaviors related to sex. This in part was due to the fact that the data used in the analysis in large part were designed for a different purpose. While differences in scale composition may present challenges in comparison of findings across countries, it also allows accommodation for different cultural and programming environments. Although we would encourage as much as possible, the use of similar items, the best approach may be inclusion of variables that are relevant from a programming perspective.

- The current analysis does not assign value or weights to the different domains and variables that comprise the health competence facilitator scales. We extensively discussed the criteria for assigning weights in preparing this analysis. Such an idea is not new. Some existing models seem to suggest levels of proximity to behavior of different facilitating factors. As an example, while most research recognizes the necessity of knowledge to behavioral change, knowledge alone has been shown to be an ineffective predictor for behavioral change. One could argue therefore that knowledge variables in the pathway should be given a lower value. While a logical way of weighting domains in each environment acknowledges the specific role that each variable and domain plays in influencing behavioral, the relevance of these factors is very much influenced by culture, personal experiences, and overall programming environments. As such, having similar weights across countries may not only be unrealistic but could also limit the flexibility and potential applicability of the model across cultures. CCP will continue to suggest ways of organizing the Pathways model to make it more relevant to programming.

Conclusion

This preliminary analysis has shown that health competency facilitators are associated with a wide spectrum of recommended health behaviors. In South Africa, this association was evident for both HIV testing and condom use. The data did not show an association between the facilitators and possession of one or fewer sexual partners in the past month. In Egypt the association between health competency facilitators and competent behaviors generally was observed only among individuals at a high (and not a medium) level of competence. The study also emphasized the importance of program exposure. Individuals at a higher exposure level were more likely to have a higher facilitator score. Additionally, program exposure was positively related to health competent behaviors, particularly in South Africa.

The concept of health competence comes from an ecological approach to health outcomes, via causal pathways at the individual, social, environmental, and political levels. Health competence offers a useful concept for program design, implementation, and evaluation across sectors of health behaviors, and emphasizes the sustainability of behavior change. Health competent individuals and health competent social groups act consistently and correctly to maintain and improve their health, across a range of health behaviors. Further research is needed to better refine the underlying dimensions that make up health competence, to refine measurement of health competence, and to test its use in other country and program settings.

The Health Communication Partnership is a global communication initiative based at the Center for Communication Programs at the Johns Hopkins Bloomberg School of Public Health, in partnership with the Academy for Educational Development, Save the Children, the International HIV/AIDS Alliance, and Tulane University's School of Public Health.