

Trust is the engine of change: A conceptual model for trust building in health systems

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Abstract

Background: Physicians, health care organizations, governments and communities are increasingly interested in how trust is built throughout the health system. Current science on building trust draws on diverse literature from business and consumer science to healthcare, and theory development has predominately focused on factor based models. We propose a process based theoretical model for trust building which may better reflect the complex and dynamic nature of trust itself. In doing so, we propose a new measurable dimension of the trust building process: reciprocity cycles. Cooperative reciprocal relationships are its building blocks, enabling stakeholders to “try out” their interactions with less risk, and to calibrate their level of effort, time and emotional investment. Reciprocity cycles includes three measurable elements: common goals, self-interests and gratitude/indebtedness.

Methods: We applied the model, developing outcomes and measures in close-to-community health partnerships in Kenya. A 3-day workshop designed to stimulate problem solving and collaborative teamwork using human centered design principles was offered in 2 community health units in diverse contexts (rural agrarian and peri-urban flower farm slum), each with about 30 community health volunteers (CHVs) serving a population of approximately 5,000. Each unit formed separate teams representing specific villages; we followed these 9 teams between 18 to 24 months.

Results: All 9 volunteer CHV teams delivered on self-directed public health outcomes across the spectrum of social determinants of health over the follow up period, with no funding, only using their own locally available resources. Projects were diverse, including immunization, composting toilets, hygiene, neonatal and reproductive health and public gardening. All 9 teams demonstrated trust building reciprocity cycles with articulation of common goal, self-interest, and gratitude/indebtedness.

Conclusion: A process model of trust building, defined by reciprocity cycles, can be stimulated with a short intervention (illustrated here in close-to-community health systems) resulting in trusting relationships that drive agency and co-production of positive outcomes for health systems. In addition, it offers a simpler, more useful framework for trust building and measurement than traditional models of trust in health systems research. Early findings illustrate reciprocity cycles are scalable and adaptable, with potential utility at multiple levels of health systems.

Background

Trust plays a central role in healthcare. The 2019 JAMA viewpoint series discusses trust from multiple perspectives within the health system. Trust is needed between (1) patient and physician (1), (2) between clinicians and their organizations (2), as well as (3) between clinicians and the governments who often finance health care (3). The series also explores how building trust in health systems can help eliminate health disparities (4). This recent series adds to a growing body of literature that examines how trusting relationships are essential at all levels of the health system, including influencing community health worker motivation and performance (5, 6).

The implication is that trust, as it functions in the health system, is something that can be both built up and destroyed over time. But there is little guidance on how to build trust into a health system when it is missing, or how to know if one is even making progress in the right direction. The ease with which one can tell when trust is missing does not help one know how to fill the gap. So even as experts affirm that trust is essential, we struggle to know how to build trust into our health systems. Given broad agreement that trust is essential for the health system functioning and acknowledging that there are critical gaps in our understanding, there is a need for further exploration of trust and how it is built up in health systems (2, 3, 7-11).

Cultivating trust in health systems is essential because health systems are largely relational (12-15). Scholars recognize trust lubricates health systems, making them more efficient *and effective* (10, 16, 17). Cultivating trust in health systems also contributes to one's access to care, utilization of, and adherence to evidenced based recommendations, thus improving outcomes (17). Trust is also necessary for collaborative decision making and essential for effective and sustainable partnerships (18, 19). At a global level, effective trust building in health systems requires accountability to citizens and incorporation of their voices in policies that affect them (1, 2, 15, 20).

This study seeks to address the gaps in our understanding of how trust works, by examining trust building in health systems, illustrating how this gap can be addressed using work done in close to the community health systems in Kenya. We propose a more dynamic framework, one that shifts our thinking to systems that address complex relationships and their interactions.

Objectives

The aim of this paper is to present a new process based theoretical model of trust building for health systems research. We present a process based model because we think it is better suited to the complex and dynamic nature of trust itself. In doing so we draw on frameworks much more common in non-healthcare domains.

The ideas leading to a process based model of trust building emerged from our field work in close to the community health systems in Kenya. We were implementing and testing an asset based community intervention we had developed called SALT, which stands for Strengthen, Appreciate, Learn, and Transform. This 3 day workshop was aimed at improving quality of local community health services. We were surprised by the positive results and sustained volunteer engagement. In asking ourselves "why" the intervention worked, we were driven to engage with the literature to understand what was contributing to its apparent success. This led us into wider thinking about the nature of trust and how it works in health systems. In presenting this process based model of trust building:

- We begin by building the literature basis for process models and their potential advantage for exploring trust in health systems, We draw insights from the literature of trust development in virtual

organizations.

- We describe how process-based models differ from factor or variance-based models.
- We review the literature to describe the advances factor based and experimental models have brought to our understanding of trust in health systems and demonstrate some of the limitations.
- We present our process model where we describe reciprocity cycles as the driver of trust building.
- We describe the components of reciprocity cycles: common goal, self interest, and gratitude/indebtedness; we review the substantive literature that supports our inclusion of these constructs reaching beyond the common health domains to include literature in business, organizational development, social marketing and management information systems and innovation.
- We describe work in progress in close to the community health systems in Kenya that provided the process data for theory formation and initial validation. While initial validation is described in the Kenyan context, we claim the advantages of a process model of trust building can be seen and measured at all levels of the health systems.

A process model advantages over epidemiological and biomedical frameworks, which focus on factor based or variance models of understanding. Process models are better able to address the internal dynamics of the human relationships in the health system (12, 13), making them at least an excellent complement to variance models if not the preferred model for examining human interactions like trust building. Process based models track the evolution of relationships between people, or the cognition and emotions of individuals, via strategy (12). Trust building in this framework is mediated by the interaction of events, activities and choices that change the trajectory of that process, which are in turn mediated by new events, activities and choices, and so on, as shown in Figure 1 (12, 21).

Process models, while not common in the health systems literature, have been implemented among management information systems researchers and organizational psychologists. They have been effective in bringing light to the behaviors of virtual organizations, which are temporary groups of geographically dispersed individuals or organizations that must work together (13). Like health care systems operating in dispersed and varied contexts, virtual organizations require trust for operations that lack vertical hierarchy; that is, trust can act as a substitute for vertical control (13). Researchers in this field have developed models for tracing the evolution of process-based constructs as they generate trust, such as by examining individuals' engagement in trusting relationships. These trusting relationships are based on rational calculation of self-interest and the individual's identification with the larger group or organization to enhance collective identity and commitment (22-24)

Insert Figure 1 about here

Figure 1: Differences between Variance and Process Models

(Source: adapted from Langley 1999 and Gwebu 2007)

In contrast, factor based models are essentially linear. Mathematically they are described by linear equations. Factor based models are designed as input-process-output approaches. The factors are identified as inputs that are causally linked to the outputs or dependent variable, where some definition of trust is the output. Factors are essentially variables that serve as precursors of trust. This highlights the both potential advantages and limitations of factor-based models i.e., that trust definitions tend to be highly context dependent. In a review that explores the question, “How trust can be investigated?” Goudge and Gilson describe the use of factor-based theoretical frameworks including qualitative, quantitative, and experimental methods for investigating trust and point out the difficulty in identifying definitions and measurement tools that are valid and relevant across geographical locations and cultural differences (25).

We look first to the health systems literature to further illustrate Goudge and Gilson’s point. Some of the earliest research on trust in health care systems began in the 1990s with the advent of managed care and organizational changes in the healthcare system as researchers sought to understand how trust in doctors and nurses impacted quality improvement efforts (26-28). Researchers utilized factor-based approaches which consisted largely of descriptive scales developed through combinations of self-report questionnaires and qualitative methods that utilized focus groups to assess trust in the health system. Examples of this includes measures like those used by Bova, et al (29, 30), who created six dimensions encompassing bundles of “collaborative trust,” important in health systems partnerships building. While they and others (7, 17, 31) describe important dimensions of trust, such as motivational factors linked to success of partnership building, researchers note significant shortcomings: studies are limited to the populations sampled (majority wealthy countries, except for a handful of studies), are context dependent, do not easily scale, and may not apply to other cultural settings (26, 32, 33). Moreover, some researchers defining qualitative measures disagree about the nature of trust itself. Schaaf (34) notes, trust could either be a mechanism for condition change or it may be intrinsically valuable in itself.

Ozawa and Sripad (17) review the literature to also examine factor-based, but quantitative measures of trust. They identify 45 trust measures, about half of which look at trust within dyads (doctor-patient or nurse-patient) and about a quarter of which look at trust in the health system. These quantitative measurement scales have substantial benefits in that they can quantify levels of trust and track changes over time, but the measures predominantly were tested in specific populations. The authors draw attention to the range of domains addressed in the measures and the dimensionality state: “Measures looking at interpersonal relationships (between patients and doctors/nurses, pharmacists or insurers) consistently did not capture system trust, while those focusing on insurers and health systems always capture this domain.” This, again, highlights the disagreements about the definition and nature of trust itself.

Several other approaches seek to move beyond quantitative and qualitative factor based models to capture trust in health systems. These include social network and social accountability approaches, some of which use game theory.

Social network models can be both descriptive and experimental in nature. These models reveal the structural properties of a specific system and how a system relates to itself and to the community. The method enables an analyst to systematically identify social ties among all pairs of actors within a network to reveal patterns of social structure, using computer analysis so large amounts of matrix data can be analyzed quickly (35-37). In the context of health care partnerships, Hilton (38) uses social network analysis to understand how a public health multi-stakeholder project built up networks over time, revealing changing positions of leaders and health care actors to build identity and connection as well as to bridge positions among those who had not previously worked together. However, social network analysis does not reveal much about the motivations for trust within these networks, or how to create, sustain or grow trust. Because they rely on analysis of the locally-embedded structure, they are also context dependent. Moreover, social network analysis, in requiring collecting and analyzing large amounts of computer-coded data for action, is also difficult for community-based organizations to employ on the ground (39).

Another strand of literature promotes social accountability as the means for building trust among actors of a health system and the broader community. Social accountability refers to a community's ability to hold funders, service providers and governments accountable for providing services that satisfy basic rights (40). Users of health care systems hold institutions accountable through more transparency in decision making, promoting both community "voice" and "teeth," with citizen monitoring and oversight of public and private sector performance, public information and complaint systems, and citizen driven resource allocation tools like participatory budgeting, social audits and co-governance structures (40-42). However, social accountability research – which relies on mixed methods approaches – assumes trust building is a largely a knowledge-based approach to power, but in reality, knowledge-based tools and processes are difficult and burdensome for communities to maintain. Social accountability models combine a mix of tactical approaches (involving analysis of local problems and information) and strategic approaches (including collective action based on the situation), and in so doing, prescribe trust building as largely context-dependent and therefore not scalable. Authentic and reliable information can also be especially difficult to access in LMI contexts. Moreover, the time and energy required of community members who are not compensated for the maintenance of social accountability platforms make this approach costly and unrealistic in the long term, especially for projects extending beyond grant-funded timelines.

The literature reviewed illustrates the diversity present in definitions of trust and reflects the multi-dimensional nature of the trust construct. Some authors have attempted to reconcile the diverse views and assert that trust has been too narrowly defined, especially in empirical work (Lewicki and Bunker 1996; (22, 23). This work to reconcile the divergent views only reinforces the point. The literature on trust building lacks a clear examination of theoretically-informed processes that build trust. In addition, the

current literature lacks a simple method for practitioners in limited resource countries to conceptually map and measure trust building.

Trust is not a skill or a competency, making it harder to define and measure. That is in part because trust, at its core, is a relational process. Trust lies “in between”: in-between people and people, in-between people and organizations, and in-between people and events (14). It is because of the dynamic nature of trust itself, that we look to process models to provide necessary structure for a theory of trust building in health systems.

Theory development from process data is well described in the organizational, management, and management information systems literature (13, 43-45) though it is infrequently applied to understanding health systems. We build on work in understanding trust building in virtual organizations using process models and apply it to trust building in health systems.

In proposing a theory of trust building in health systems, we ask a different type of question, a process question: *How does trust building occur? How does trust emerge, develop, grow or terminate over time?*

In using this framework, we agree with Gilson who states, “...*trust is in some way always an input to and a product of a relationship,*” and we agree “*that the meaning and nature of trust may change over time.*”(46).

Process Reciprocity - The Means to Building Trust

We define the concept of reciprocity as central to the process of trust building in close to community health system partnerships. Reciprocity is a more narrow and bounded concept than trust (47). This concept is explored in the economics, marketing and organizational development literatures and is defined as the propensity to repay a favor one has received among two or more cooperative partners (48). In contrast, trust within a health system context is the belief, or optimistic acceptance, that another is acting in one’s best interests as they accept a vulnerable situation (25, 27, 49).

We argue cooperative, reciprocal relationships are first required as building blocks of trust. Reciprocity enables stakeholders to “try out” their relationships with less risk and to calibrate their level of effort and emotional investment before continuing further in relationship. In a health systems context, reciprocity enables all parties to recognize and identify the mutual need of the others and determine if the relationship is required for fulfilling their self-interests.

The distinction between reciprocity and trust furthers understanding of how network power is built up in complex systems (47, 50). Reciprocity entails a series of stakeholder interdependent actions because partners mutually need each other to get to solutions and accomplish health system goals. While stakeholders may not initially trust each other’s intentions, they engage in reciprocal transactions that over time build up networks of authenticity and legitimacy that generate trust. This is well documented in the prisoner’s dilemma game where players collaborate voluntarily to maximize their outcomes even when they may not yet trust other players’ motives, but where they can expect to maintain a stake in the

outcomes and assurance the game will continue (50). The expectation of ongoing, iterative transactions keeps partners at the table, with the knowledge that despite a high degree of diversity and interdependence, and sometimes circumstances beyond the parties' control, stakeholders have an opportunity to continue to create new conditions and solutions (47, 50). The more repeat interactions, the more partners fill the bucket of goodwill to draw upon in times of stress. Identifying reciprocity in relationships provides a rationale and platform for less powerful actors, including women in low resource contexts, to engage with the health system, enabling identification and emergence of "favors" and mutual benefits (48).

A Theory of Change for Trust Building as a Process Model: Identifying Reciprocity Cycles in Relationships

Trust building and reciprocity cycles need to be understood conceptually within the context of how health systems work (2, 51). Our process model builds upon the work of three non-health care researchers in management information systems and organizational development to show how three building blocks interrelate to jump-start and sustain reciprocal relationships that over time develop into ones that engender trust. It is the foundation of our theory of change.

As shown in Figure 2, the building blocks we outline for understanding process-based trust in community based health systems follow Langley's general process model of the interaction of events, activities and choices. Every process model has interrelated events and activities that shape choices, in moving from one state to another. In Figure 2, we show how these are influenced by the mediating effect of trust via reciprocal relationships. Reciprocal relationships are influenced by three interrelated elements: achievement of common goals that the group defines and acts upon in ways that that disrupt hierarchical systems, fulfillment of self interests, and expression of gratitude/indebtedness.

These three elements are articulated, conceptually, although in slightly different terms, by management information science researchers doing research on virtual organizations. Gwebu, et. al, use process models to show how show individuals are driven to collaborate based upon rational calculations (which we frame as self interest) and their identification with a group's socially-derived moral duty, commitment and collective identity (which we frame as common goals) (13). This is further refined by management information scientists Feng and Ye (52), who argue that gratitude and indebtedness are also essential to driving trust. They point to equity theorists, who have shown principles of reciprocal indebtedness are critical to continuing relationships. Reciprocal indebtedness and gratitude drive inputs in a relationship because individuals modulate their commitment and contributions based on their desire to reciprocate and reduce perceived inequity (53, 54). Gratitude can be articulated expanding the arc of the relationship. We argue that the interaction among these three, in a reciprocity cycle, produces agency in participants and changes the initial process state.

Insert figure 2 about here

Figure 2: SALT Theory of Change for Process Outcomes over time

In Figure 2, we further define these three elements of reciprocity as it relates to operations in close to the community health systems. Pursuit of common goals refer to community-based efforts to disrupt traditional health systems hierarchy or traditional stasis from a donor dependent mindset. Three inter-related building blocks influence the common goal: devolving and sharing power enables less influential actors within a system to leverage their influence with those higher up the power ladder, sharing responsibility enables less influential actors to define and solve their own problems through their own projects, and passing down authority gives less influential actors the ability to act. In so doing, community-based stakeholders promote more equitable and healthy communities. Sharing power, authority and responsibility among stakeholders gives them legitimacy to lead, whatever their position in the network. The pursuit of these common goals have long influenced organizational and management leadership scholars such as Kotter who frame leadership as an organizational change process respecting the mutual needs of stakeholders who are served as co-equals in systems change (55).

Fulfillment of self interest keeps stakeholders at the table. Self interests include intrinsic (such as self worth and belonging) and extrinsic (such as reputation and tangible rewards) benefits, both important to articulate and then meet for continued reciprocal transactions (56). Self-interest becomes more transparent when it is articulated through activities that engage and make clear one's own and others' priorities. Within a health systems context, these include articulation of the motivational positions and aspirations of end users and all partners within a system, especially CHWs and the community.

As partners pursue self-interests and fulfill common goals, the "glue" that binds them toward future goal attainment is gratitude and indebtedness. Expression of gratitude and indebtedness is an essential element of our theory of change, as it initiates and helps preserve what Feng and Ye in the management information systems literature describe as essential for creating "virtuous feedback loops" of sustainability toward attainment of mutual goals (52).

Both indebtedness and gratitude play a role. Researchers in relationship marketing observe that gratitude plays an early role in relationship development and is transformational in relationship development as a future mediator of trust, especially when expressed, so the gratitude cycle can continue to deepen, generating reciprocity (57). As self-interests are fulfilled, both indebtedness and gratitude prompt stakeholders to continue working together on community problems and projects, which continues to fulfill their self-interests, and so on. We argue both are important, as gratitude can be expressed as one is thankful and indebtedness the sense of obligation for fulfillment of basic needs, including self-awareness, skills and knowledge, which motivate stakeholders to contribute to the group from which they fulfill self-interests.

As stakeholders sustain their engagement, they engage in a chain of reciprocal interaction, continuing to work toward mutual goals (common goals and self-interests). In so doing, they calibrate and temper their

risk in terms of time and energy. This process allows for incremental steps toward trust, with a change in process state as shown in figure 1, from before, to after the intervention. Incremental steps allow the individual to build on success or to preserve energy for more productive transactions. It provides a space to pivot on investments, allowing stakeholders to invest in the desired parts of the community or health system that promote self-interests while preserving one's sense of fairness regarding inputs in a relationship. That is, cooperative reciprocity over time contributes to increased trust. Yet, if group goals are violated – that is, promises among stakeholders are broken, or the ability to fulfill self-interests derailed – actors move down the chain of trust, from a higher to lower process state. Trust also can easily be eroded in environments where structural and/or environmental factors impact outcomes for the group. Factors beyond the partnership's control can include a change of health system priorities as a result of new elections and political restructuring, industrial action with health care worker strikes that shut down public services, and internal community conflict.

Cooperative reciprocity builds trust through iterative reciprocity cycles. Iterative reciprocity cycles provide a calibrated investment platform enabling less powerful actors the opportunity to engage with the system and define what they both provide and receive. Conditions for fulfillment of reciprocity cycles, from a theory of change perspective, are described in Table 1.

Insert Table 1 about here

Table 1: Conditions for Fulfillment of Reciprocity

Theory of Change Applied to Outcomes and Measures in a Kenyan Health Partnership

We have applied the theory of change model outlined in Figure 2 and Table 1 to evolving community health partnerships in both rural and peri-urban Kenya. The goal of the partnerships is to develop community health units so they take independent ownership of health issues, address local priorities, grow problem solving skills and create their own solutions.

We show, in Figure 3, an application of the general model of trust building as applied to our theory of change in the Kenyan community health systems context. This shows how trust, as a process, is being built or broken, as the community health partnerships move through changes over time, resulting in new or different process states. We describe work in progress in close to the community health systems in Kenya that provides initial theoretical validation.

Insert figure 3 about here

Figure 3: Reciprocity Towards Trusting Relationships

Methods

Description of the Health System at Level 1 in Kenya

The close to the community health system in Kenya is made up of both health facility employees (local facility nurses and public health officers who function as community health extension workers in addition to other duties) and local community members (unpaid community health volunteers (CHVs), who are recognized local leaders). The CHVs selected are identified through a consensus-based community process well-established in Kenya's community strategy (58). Local elders, a facility nurse and the region's community health extension worker (paid staff), came together and participated in *barasa*, which in Swahili means "long sitting." This group consensus process, which involves discussion, produced nominations of those who were believed to be the best representatives for the community. Selection criteria include permanent local resident status, the respect of the community, and may include the ability to read and write. Traditionally, these actors (the community, the government employed facility staff, and health managers) have not engaged as equal partners. Rather, where community health units (CHUs) exist, these volunteers were seen as the bottom rung of the hierarchy (58).

Description of the intervention

We developed a 3-day workshop curriculum, "SALT" (59), designed to stimulate problem solving and teamwork using human centered design principles in community health units. This enabled local stakeholders to determine independent health action plans and implement, measure and be accountable to them in their communities, using only locally available resources. The SALT model utilized Kenya's community health strategy, but differed in that the goal was to build partnerships that disrupted the traditional hierarchical structure providing the community with a stronger voice for their choices.

Setting

Two cohorts were selected from varied contexts to represent important areas within the Kenyan context, a rural agrarian cohort, that did not have a functioning community health unit (CHU), and a CHU that was functioning and located in a peri-urban slum with high in output migration related to employment in commercial flower farms.

Ethics approval

The Kijabe Hospital Ethics Review Committee approved implementation of the SALT workshop and longitudinal follow up under research protocol. All participants gave fully informed verbal consent, appropriate to the Ethics Review Committee oversight standards and consistent with community norms and expectations. All participation was voluntary, consistent with Kenya's Community Health Strategic goals, and this included full knowledge and consent from the local chief and administration.

Results

The first SALT partnership operated in a rural agrarian area, with 27 CHWs representing a population of about 5,000. Participants were divided into 4 groups, based on the communities they were representing. Each group achieved results for projects they conceived, with no external funding for implementation. Projects were diverse, including immunization, composting toilets, hygiene, neonatal and reproductive health, and public gardening.

During the roll out of the first partnership, the core public health team defined and refined measures for the theory of change process shown in Figure 3. Process change is demonstrated by participants' self-directed activities, choices and events over the course of 18 months, a time frame where they believed they could create change in community health systems.

Insert figure 4 about here

Figure 4: SALT Workshop Events, Activities and Choices in Development of State Change for Process Outcomes

This self-directed process meant that activities, choices and events, including measurement, were co-designed and co-produced with the implementing CHVs and the local community. Over a period of several months, using in-person team and Skype meetings, we drew upon field work and experience working in rural agrarian Kenyan communities to create and refine measures reflecting desired changes in the short term (change in attitudes, perceptions, thinking) mid-term (change in behavior) and long term (change in community conditions). The measures for changes in state are shown in Table 2, and they map onto the reciprocity elements for trust building: common goal, self-interest, and gratitude/indebtedness.

Table 2: Measures for Reciprocity Cycles Building Trust

We have published findings demonstrating the change in state of the four groups. Group A created 11 kitchen gardens, engaging 174 households and 2 churches. Group B visited all households with pregnant and postnatal women in their geographic region (N=35) and continued home visits while adding education/demonstration kitchen gardens (cross learning from colleagues). Group C consistently increased targets, resulting in composting toilets (N=4) and handwash facilities (N=120). Group D mobilized intensive community resources toward immunization defaulters (N=6) (60).

We have taken lessons learned from the first partnership cohort and continue to examine the ways these outcome measures are expressed in describing reciprocity cycle elements. We found the same reciprocity cycle elements demonstrated in the second cohort of the SALT workshop in a radically different context.

The second cohort was with 30 CHVs in a peri-urban slum area next to commercial flower farm, serving a population of about 5,000. This cohort organized into five groups. Group A educated 75 landlords who constructed soak pits (N=6) to improve sewage disposal and hygiene. This group later had to change course – they realized they had built soak pits on land slated for new local road construction. Instead, they launched a hygiene education project with 50 households, culminating in constructing hand wash facilities (N=10), and they also advocated successfully for local placement of a new Ministry of Health clinic housed in a container. Group B carried out bedbug eradication (32 households; approx. 320 people). The group then chose to expand their reach regionally including walking up to 20 km to reach additional Maasai communities. A group member took the messages to a bus company and took education to a distant county (Nyanza), educating individual households. Group C conducted hygiene education in informal businesses (N=5 barbers; 2 child care centers) with expansion through recurrent community reconnaissance for new informal businesses. Group D conducted poverty prevention work through education on family planning (N=3 churches; N=2 women groups). Later, they expanded their reach to include schools (N=2 schools). Messages delivered expanded to meet contextual needs and included driving job creation through IGAs and promoting a locally developed asset-based job search mindset that is positive, youth friendly and context relevant; it reached 150 people and 2 women’s groups of 70 members. Group E conducted psychosocial education on sexual gender-based violence, speaking to 30 households.

We visited groups making up the first two cohorts of CHVs at 12 months and asked them to reflect on their experience with SALT. The groups were prompted with semi-structured questions, asking about their participation as individuals, as a group, and the experience of their communities. In their own voice they articulated the reciprocity cycle elements.

Insert Table 3 about here

Table 3: Local Voice for Reciprocal Trust Elements

An additional three SALT workshop cohorts are in process and are being observed longitudinally.

Discussion

We have demonstrated important advances in understanding trust building in health systems as well as identifying gaps. We present a process model for trust building, one that is better suited to complex systems. In doing so we address issues of power in inequality. A strength of our process model is its ability to assess change over time in power dynamics, through measurement across recurring reciprocity cycles. This presents an opportunity for those actors who are in vulnerable or lower power positions to increase their influence through participation in activities, choices and events that grow their relational leverage within the system. Participants within it can move from being passive recipients of services to being ones who set goals and implement their own choices.

The external manifestations of trust are the impact results seen in changes in state (see Figure 3) and span a range of social determinants of health (17, 34, 61, 62). The strength of the trust relationship (partnership) is the driving force. In the first two SALT cohorts, additional follow up at the 18 -24 month timeframe demonstrated all 9 teams were still continuing to drive local change, even beyond the anticipated project end date of 18 months conceived at the beginning of the SALT process. Motivated by the evidence of their impact, these groups continue to drive community change without external funding or input. Through ongoing focus group documentation, participants articulated presence of the three elements of reciprocity cycles – attainment of community goals, fulfillment of self interest and expression of gratitude and indebtedness – and they have acknowledged the building of trust itself.

This study has some limitations. This work was done by embedded researchers. Internal evaluators are subject to bias. Participant observation, in-depth interviews and repeat contacts with the groups gave the authors intimate knowledge of the social forces they were studying. The CHVs themselves, through their activities and their own interpretations of what was taking place also serve as a check to bias. However, the heterogeneity of locations can mitigate the potential for bias. This work was done in diverse locations to see if the model worked in different areas, a rural agrarian area and a peri-urban slum. Additional SALT workshop cohorts (3 CHUs serving populations of about 15,000) are in process and are being observed longitudinally. This set of 5 cohorts represents 22 nested groups of communities along a continuum of economic status and location: from extreme poverty and minimal literacy, to literate self-employed in rural and peri-urban slum contexts. Our data demonstrate reciprocity cycles can be adaptable and predictive of sustained engagement toward mutual goals.

Conclusion

The partnership strength and ongoing motivation to engage in positive health system change demonstrates trust building. It does so through recurring reciprocity cycles that actualize trust in achievement of common goals through shared power, responsibility and authority, achievement of self interests and expression of gratitude and indebtedness. The three elements of the reciprocity cycle are measurable proxy external indicators of trust building. In the absence of monetary incentives, pursuit of the common goal requires redistribution of power in a way that incorporates individuals' self-interest and more equally distributes responsibility and authority.

Additional testing is required to further validate reciprocity cycles as a measure of trust building. Tracking reciprocal community-to health-systems interactions and how they are developed and sustained over time offers a simpler, more useful framework to local communities, health workers and managers than traditional ways of measuring trust in health systems research.

Abbreviations

CHV community health volunteers; CHU community health units; SALT Strengthen-Appreciate-Learn-Transform a 3-day workshop curriculum

Declarations

Ethics: The Kijabe Hospital Ethics Review Committee approved implementation of the SALT workshop and longitudinal follow up under research protocol. All participants gave fully informed verbal consent, appropriate to the Ethics Review Committee oversight standards and consistent with community norms and expectations. All participation was voluntary, consistent with Kenya's Community Health Strategic goals. Participation included invitation and acknowledgement of the local chief's and the area Ministry of Health.

Consent for publication: The authors consent to the BioMed Central publication criteria under the terms of the Creative Commons Attribution.

Availability of data and materials: Data are available from the authors who maintain specific databases for purposes of developing tools for measurement in complex community systems. Data are confidential and those requesting data would need to meet ethics committee criteria for researchers to have access to confidential data. There is no individual level data reported. Supplemental Material is uploaded.

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Authors Contribution: Both MA and AD contributed equally to this work. MA and AD contributed to the design, measurement development, analysis, and writing the manuscript. Both approved the final version of the manuscript. Both authors had full access to all data and had equal responsibility for the decision to submit this manuscript for publication.

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Tables



Table 2: Measures for Reciprocity Cycles Building Trust

Evaluation frame	State 2 – Groups become aware they can make change (change in attitudes, perceptions, thinking)	State 3 – Groups solve community problems (change in behavior)	State 4 - Community health resources are well utilized (change in conditions)
Common Goal Measures	<p>Before they implement an action plan, at initial training:</p> <ul style="list-style-type: none"> • Projects defined • Roles assigned • Groups stay with group action plan • A-ha statements about planning and collaboration 	<p>Action plan tracking:</p> <ul style="list-style-type: none"> • Change in action plans • Team cohesiveness and # coming • Innovation/creativity in project implementation • Refinement of initial project cycle • Groups share action plans with each other – peer to peer learning 	<ul style="list-style-type: none"> • Action plan completion – what happened through the project? What did the project accomplish? • What did local stakeholders do to make change, and how has authority, responsibility and power shifted? • How many action plan cycles did it take to get to community utilization of health care resources?
Self Interest Measures	<ul style="list-style-type: none"> • Taking out diary and making a meeting date • A-ha self awareness statements • Ability to list assets and articulate local resources 	<ul style="list-style-type: none"> • Self assessment of skills gained • # using facilitation for community resolution • Types of skills applied in the community 	<ul style="list-style-type: none"> • Statements and stories about new opportunities • New networks documented
Gratitude/Indebtedness Measures	Expression of thanks for training, CHW work, new understanding.		Gratitude stories of how community members and CHWs have been helped

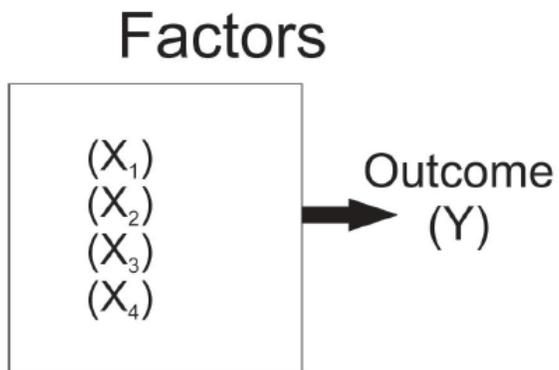
Table 3: Local Voice for Reciprocal Trust Elements

Group	Choices for Reciprocal Trust Building		
	<p>Common Goal - <i>Joint power, responsibility, authority; consensus on decision making</i></p>	<p>Self Interest - <i>Awareness they are a resource for change; knowledge they can make change</i></p>	<p>Indebtedness/Gratitude - <i>Willingness to show gratitude/indebted to others for help</i></p>
Group A	<p>Common goals fulfilled through fulfilling action plans.</p> <p><i>"I learnt am the salt of the community and I should help the community solve the problem, together ... we have been able to solve several community problems and (create) linkage with the administration.</i></p>	<p>Self interest met. <i>"SALT has been of great help... (I am not) idle... I have been able look for any simple and doable thing that will help me keep going."</i></p> <p><i>"SALT helped me to have new knowledge (and) motivated me to explore more ideas to survive...even with limited resources I can use them for my family up-keep and to create self-employment through any activities I come across."</i></p>	<p>Gratitude expressed. <i>"SALT has helped us (Public Health officers) lighten our work... Today the CHVs has taken over that work, it is now clear that we don't need to be there."</i></p> <p><i>"As a team we have complimented each other, been able to train together, recognize each other as a resource and enrich each other with knowledge. It is through working together that many changes have occurred."</i></p>
Group B	<p>Common goals fulfilled through fulfilling action plans.</p> <p><i>"SALT has been of benefit to our community and individuals."</i></p> <p><i>"SALT has made (CHVs) recognize they can go the extra mile to seek resources."</i></p>	<p>Self interest met. <i>"Before I was in SALT I was in a box. I would not go to meetings if there was no money, but I realized that it's not only money that counts. I now realize that I can start many income generating activities."</i></p> <p><i>"I have learnt conflict resolution, (with) my colleagues and community."</i></p>	<p>Indebtedness expressed. <i>"We are recognized by World Vision now as a group, helping people under a program called Problem Management Plus."</i></p>
Group C	<p>Common goals fulfilled through fulfilling action plans.</p> <p><i>"When we are together we remind each other of the things we have achieved now and we are able to grow together."</i></p>	<p>Self-interest identified. With soak pits, <i>"the roads are clean," people no longer pour dirty water in their yards so children playing do not get sick,"the smell is gone" and "we have reduced diseases like cholera and diarrhea."</i></p> <p><i>"We brought other stakeholders on board and now one of us represents our area in parliament."</i></p>	<p>Gratitude expressed. <i>"They used to call our community dirty, but now everyone wants to live in Kamere."</i></p> <p><i>"Your training and follow up has helped us to be awake."</i></p>

Figures

Variance Model

- Descriptive scales
- Factor based questionnaires
- Experimental models



Process Model

- Evolution of relationships
- State change as mediated by events, activities and choices

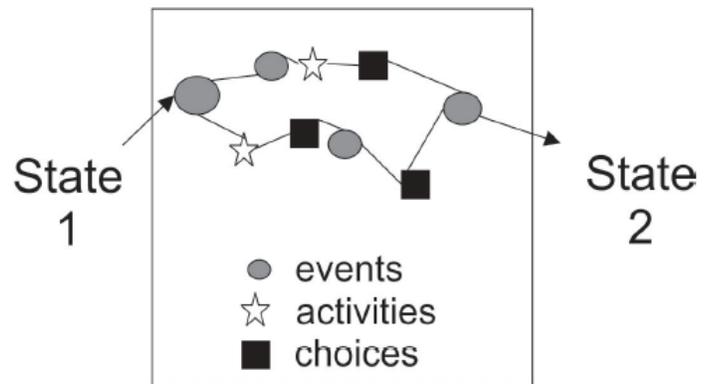


Figure 1

Differences between Variance and Process Models

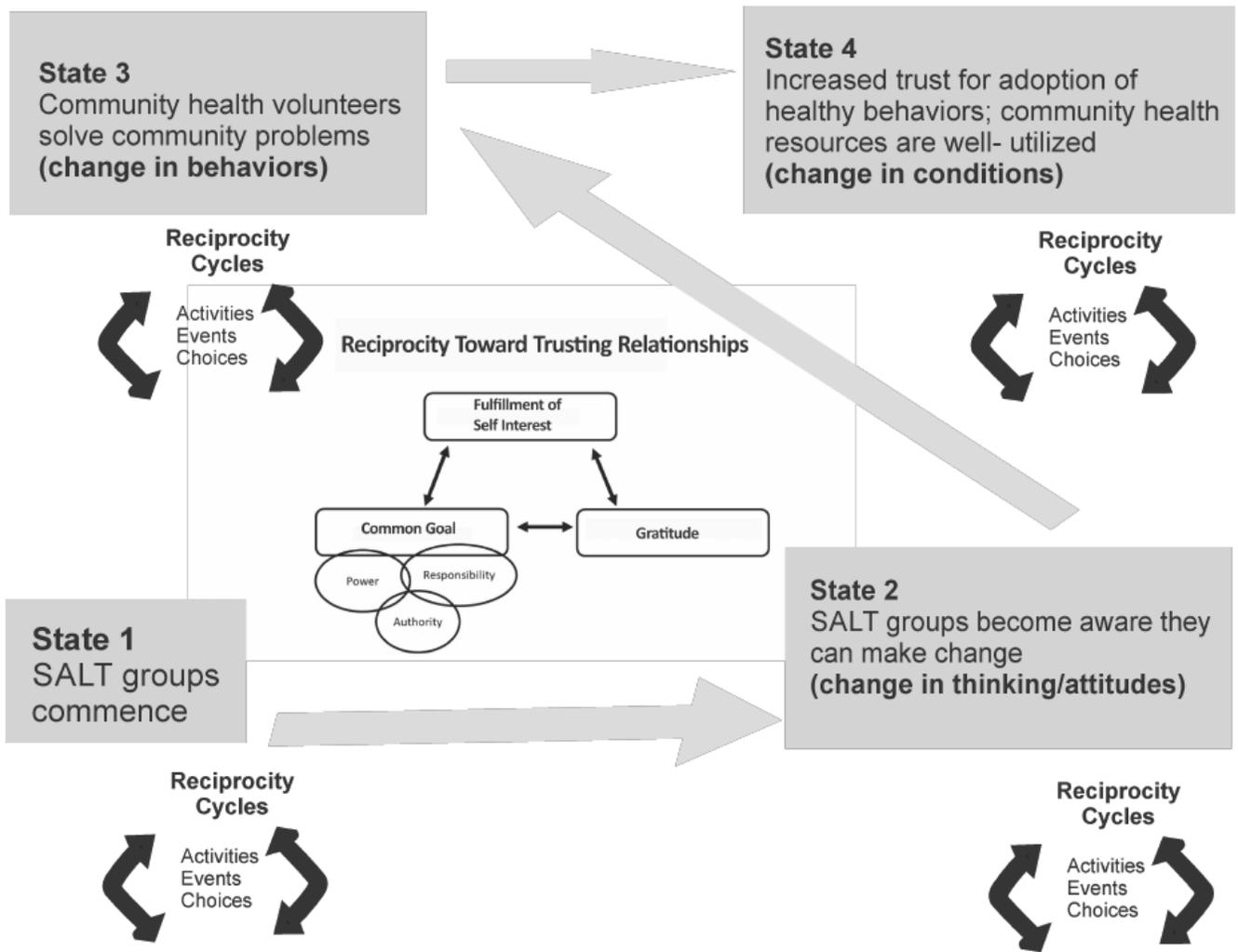


Figure 2

SALT Theory of Change for Process Outcomes over time

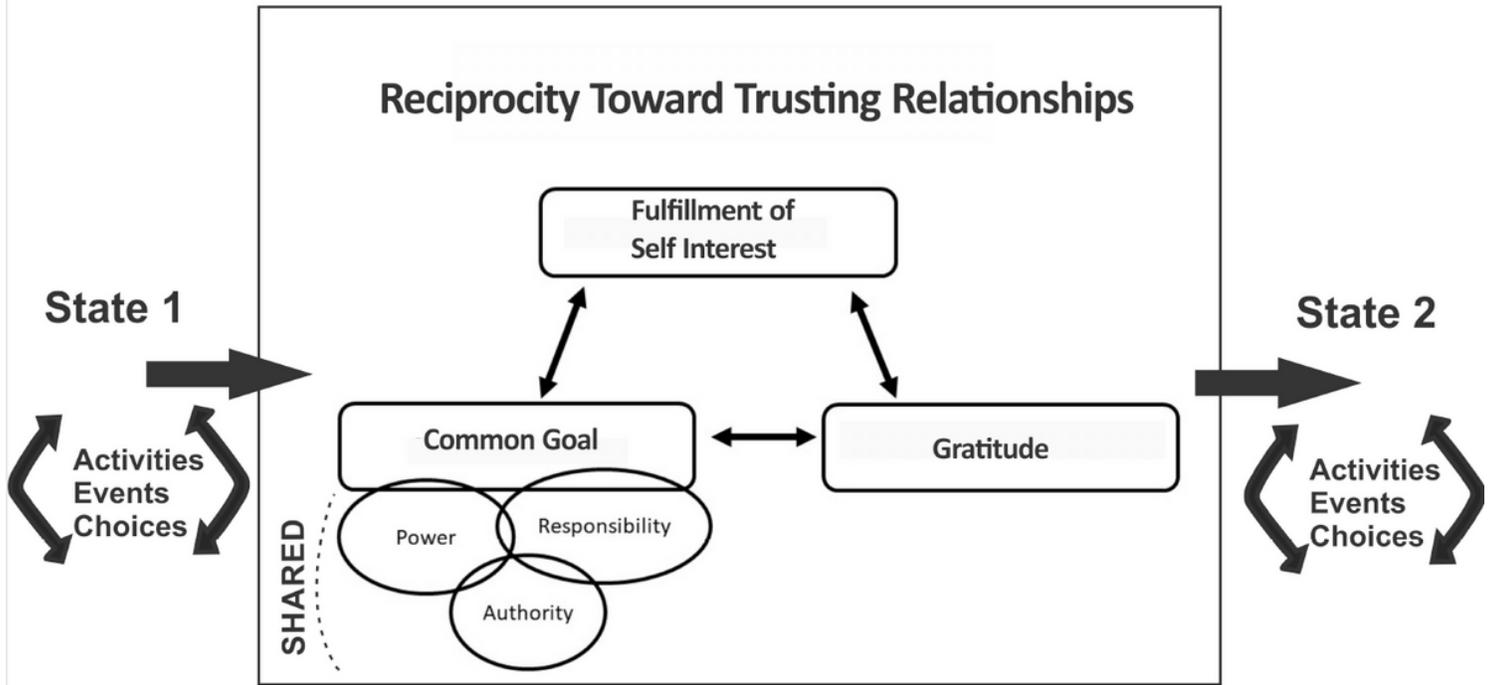


Figure 3

Reciprocity Towards Trusting Relationships

	Events	Activities	Choices	
State 3 Community health volunteers solve community problems Months 3-9	<ul style="list-style-type: none"> - Groups meet together to implement action plans - Groups work in the community 	<ul style="list-style-type: none"> - Action plan completion - New cycles of action plans developed, commence 	Groups: <ul style="list-style-type: none"> - Devolve power, responsibility, authority - Promote increased trust for adoption of healthy community behaviors Individuals: <ul style="list-style-type: none"> - CHVs engage in new opportunities to sustain health progress - Express gratitude to partners and community 	State 4 Increased trust for adoption of healthy behaviors; community health resources are well- utilized Months 9-18
State 2 SALT groups become aware they can make change Months 1-3	<ul style="list-style-type: none"> - Groups meet together to implement action plans - Groups work in the community 	<ul style="list-style-type: none"> - Groups change or refine action plans - Peers share action plans 	Groups: <ul style="list-style-type: none"> - Devolve power, responsibility, authority - Become engaged in community solutions Individuals: <ul style="list-style-type: none"> - Apply knowledge and skills on goal setting, community action, hands on planning - Show gratitude - acknowledge others publicly for help, new understanding 	State 3 Community health volunteers solve community problems Months 3-6
State 1 SALT groups commence Days 1-3	<ul style="list-style-type: none"> - Groups meet together to implement action plans - Groups work in the community 	<ul style="list-style-type: none"> - SALT training - Asset mapping - Groups develop initial action plans 	Groups: <ul style="list-style-type: none"> - Assign power, responsibility, authority - Develop consensus for LT planning Individuals: <ul style="list-style-type: none"> - Become aware they are a resource for change - Gain knowledge they can make change with what they have - Become willing to show gratitude acknowledge others publicly for help 	State 2 SALT groups become aware they can make change Months 1-3

Figure 4

