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Development of a Participatory Health Communication Intervention: An Ecological Approach to Reducing Rural Information Inequality and Health Disparities

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Abstract

A strong and diverse communication infrastructure is essential for communication to improve health. When that infrastructure is weak, health information fails to reach appropriate audiences; this is a component of information inequality that contributes to health disparities. Approaches to addressing information inequality have either focused on individual-level barriers or exclusively on changing the information environment. Largely missing from information inequality interventions is a multilevel, ecological approach consistent with the ways in which information inequality affects health. This study addresses that gap by describing a participatory intervention in a rural, majority-Latino community. Previous work identified a weak information infrastructure as a major barrier to health: Residents struggled to find timely, relevant information, while stakeholders faced challenges knowing how to reach diverse audiences with critical health-related information. We employed participatory health communication asset mapping to identify health communication resources – safe, trusted spaces, and places – that served three distinct communication functions: informational (i.e., where health information can be provided), conversational (i.e., where residents feel comfortable discussing health issues), and connection (i.e., where a relationship exists). Through a six-step process, community leaders and residents identified communication resources and collaborated to create a communication resource map. We discuss how this study advances the theoretical understanding of integration of culture-centered and ecological approaches for communication to reduce health disparities.

Introduction

Rural health disparities are compounded by communication inequality – differential access to health information and differences among social groups to retrieve, search, understand, and utilize health information (Viswanath, 2006). Lack of access to information in rural areas has been suggested as one mechanism for health disparities (Krieger et al., 2013; Nagler, Bigman, Ramanadhan, Ramamurthi, & Viswanath, 2016; Ramírez, Estrada, & Ruiz, 2017). Consistent with information inequality studies that focus on rural information

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environments, studies with rural residents find that many perceive poor access to health information as a barrier to health (Carnahan, Zimmermann, & Peacock, 2016; Plascak, Molina, Wu-Georges, Idris, & Thompson, 2016; Valdez, Ramírez, Estrada, Grassi, & Nathan, 2016). The failure to engage rural populations in clinical trials or for health interventions can also be considered a result of communication inequality and another mechanism through which communication inequality contributes to rural health disparities. For example, clinical trial recruitment in rural areas requires substantial investment with diverse communication resources (Wells et al., 2012). Similarly, campaigns to reach residents of rural communities struggle to achieve sufficient exposures to campaign messages (Balamurugan, Rivera, Sutphin, & Campbell, 2007; Heredia, Lee, & Reininger, 2017), owing to generally weak rural communication infrastructures.

Communication interventions to address health disparities have focused primarily at a single level, usually at the individual level. Individual-level interventions to address communication inequalities have shown positive but limited effects. For example, a study to reduce access-related dimensions of the digital divide found that a combination of free computers, training, technical, and social support increased computer and Internet usage among urban low-income groups (Kontos, Bennett, & Viswanath, 2007).

However, individual-level approaches to communication inequalities only address disparities in health information needs and access and do not consider the environment in which individual-level communication inequalities occur. In contrast, structural approaches have aimed to change the information environment itself. For example, the Ozioma news service developed locally and culturally tailored news releases for distribution by Black newspapers (Cohen et al., 2010). The project was successful in increasing the amount of cancer-related coverage, but quality of coverage did not substantially improve, as assessed by journalistic factors (i.e., length of story, placement, and sources) and health promotion criteria (i.e., number of facts and description of behavioral risk factors; Caburnay et al., 2012). Content analyses of newspaper articles from a similar intervention found that localized news releases were more likely to be published in rural newspapers (Young, Willis, Stemmle, & Rodgers, 2015). These examples provide guidance for intervening in the information environment; however, by focusing exclusively on the structural level, they ignore individual- and group-level differences in audiences' access and responses to communication. What is missing in the current literature is an ecological approach to address communication inequalities simultaneously at the individual and structural levels (Maibach, Abroms, & Marosits, 2007; Moran et al., 2016).

Communication infrastructure theory (CIT) offers a useful way of conceptualizing a multilevel intervention approach to address health disparities (Wilkin, 2013). The theory proposes understanding the public information environment as an ecological system wherein creators and consumers of communication at multiple levels, including individuals, social networks, community organizations, and media, are nested within a community where communication is shaped by geography, the built environment, and organizational and political structures and systems. The framework includes two components. The first, dubbed "the storytelling system," comprises creators and consumers of communication – residents, local media, and community organizations. A CIT approach asks: *Who are the people or*

organizations within a community that shape information (in CIT parlance, "tell stories about the neighborhood")? Who relies on them, and how does that information spread across individuals and groups (Ball-Rokeach, Kim, & Matei, 2001a; Wilkin, Moran, Ball-Rokeach, Gonzalez, & Kim, 2010)? While the theory focuses on the storytelling system, comprising storytellers at macro-, meso-, and microlevels, most CIT-based research has focused on the storytelling network, which consists specifically of the individual- and community-level storytellers such as local media. The second component is the surrounding environment – the resources that impede or facilitate the communication between the creators and consumers (the "communication action context"; Ball-Rokeach, Kim, & Matei, 2001b; Wilkin et al., 2010). This comprises the physical boundaries of neighborhoods, less-tangible factors such as perceived safety and fear, and other economic and technological features including time and resources to engage in communication and residents' ability to access information via mediated or physical transportation connections (Ball-Rokeach et al., 2001a). Here, a CIT approach considers: *What makes spaces trustworthy (or not), and for whom? What neighborhood features encourage or discourage communication with other residents and neighborhood communication resources (i.e., storytellers)?* For example, on one hand, a park can provide a space where people can come together and interact with other residents, facilitating connections between community storytellers. On the other hand, a park that is unkempt or perceived as unsafe would discourage people from coming together or attending events, constraining its connective function with other neighborhood storytellers. The process of explicitly labeling components of a community's communication infrastructure helps to identify strong connections that can be leveraged for health promotion and weak connections that can be fortified to strengthen community ties (Ball-Rokeach, 2001; Matei, Ball-Rokeach, Wilson, Gibbs, & Hoyt, 2001; Wilkin et al., 2010).

We argue that as an ecological approach, CIT may be more appropriate to guide the development of interventions to reduce information inequality than theories that focus exclusively at the individual or structural level. This project aimed to test the efficacy of CIT as a rural health intervention.

Interventions Guided by CIT

Health promotion strategies guided by CIT have been used to effect change at a community level by bringing residents and organizations together using a three-step approach (Wilkin & Ball-Rokeach, 2006a). First, researchers examine the existing communication infrastructure (specifically, the *storytelling network*) to identify weak or missing connections, since the ways that residents, locally relevant ethnic media, and community organizations connect can influence health outcomes. The second stage involves strengthening connections between creators of information (*storytelling actors*). The final stage involves prompting stories on the topic of the intervention (i.e., health or specific health issues). For example, in one study in Los Angeles, new Latino immigrants relied on both interpersonal communication and Latino-oriented media for staying informed; however, content analyses of Latino-oriented media found minimal health coverage (Wilkin & Ball-Rokeach, 2006b). Similarly, a separate study found that Latino-oriented media failed to connect audiences with health information sources (Wilkin, Gonzalez, & Tannebaum, 2015). Thus, consistent with conceptualization of the second stage of CIT-based intervention, recommendations for improving the reach

of health interventions, especially among “hard-to-reach” new immigrants, center on connecting key individuals and trusted organizations with Latino-oriented media to increase and improve coverage of health issues.

CIT has been used to identify strategies for communicating about specific issues and to develop interventions for civic engagement. For example, in an Atlanta-based project, CIT was used to identify physical spaces that residents identified as safe and trustworthy locations for health fairs and channels to disseminate information about an intervention to reduce 911 reliance for nonemergency calls (Wilkin, Stringer, O’Quin, Montgomery, & Hunt, 2011). Similarly, a project to improve women’s health in New York found that place-based factors, together with residents’ perceptions of those factors, limited women’s access to health care and their care-seeking behaviors (Matsaganis & Golden, 2015). The ongoing project, *Metamorphosis: Transforming the Ties that Bind*, is an in-depth examination of the changes urban communities undergo in an era of new communication technology and diverse populations (Ball-Rokeach, 2001). One concrete outcome of the Metamorphosis project was the creation of MetaConnects, an online platform that compiled resources that support community-based practitioner communication needs and gaps and has strengthened academic–community partnerships to facilitate social change in Los Angeles (Broad et al., 2013). In a different community within greater Los Angeles, the platform was used to build a local participatory news website that has strengthened online and offline connections among residents, community organizations, and legacy media (Chen, 2018, personal communication).

Previous CIT-based interventions have focused on the networks of residents, media, and community organizations that create and share information. While this approach is an improvement over studies that have included a single dimension of that network (i.e., newspapers only), it remains incomplete, failing to account for the broader communication infrastructure. Notably, this focus on identifying the connections makes possible the inadvertent exclusion of vulnerable residents who are unconnected to existing networks. Thus, consistent with prior calls for an ecological approach to communication intervention (Moran et al., 2016; Wilkin, 2013; Wilkin et al., 2010), interventions grounded in CIT must move toward consideration of the complete communication ecology, including the community-based structures and resources that promote or hinder communication among residents. The application of CIT in diverse communities led to the development of a participatory intervention and methodological tool using asset mapping.

Communication Asset Mapping

Communication asset mapping is a theory-based fieldwork methodology that leverages residents’ knowledge of their communities to identify communication resources within a specific geography (Villanueva, Broad, Gonzalez, Ball-Rokeach, & Murphy, 2016; Wilkin, 2013). Communication asset mapping has been conducted in two different urban communities, using distinct approaches to community engagement that yielded somewhat different views of the communication ecologies. In South Los Angeles, university researchers identified the neighborhood’s communication assets and the resulting 54 communication resources predominantly affiliated with diverse churches (Villanueva et

al., 2016). In contrast, in Boyle Heights, *promotoras* conducted the asset mapping; resources were predominantly family-oriented businesses (Villanueva et al., 2016). However, neither study examined how residents themselves might utilize communication asset mapping processes to map the communication ecology of their communities. Understanding communication ecologies from different community perspectives – resident, health practitioner, academic researcher, and organization – is important since diverse perspectives identify distinct communication resources that can best be leveraged to conduct sustainable health promotion, and inclusion of residents' voices is crucial in a culture-centered approach (Dutta, Anaele, & Jones, 2013).

Furthermore, most of the literature using an ecological perspective for communication has been situated in the context of an urban environment, yet such interventions have potentially greater impact in rural communities where health disparities are compounded by greater communication inequalities (Ramírez et al., 2017). The rest of this article aims to address these concerns. We draw on the ecological framework of CIT to apply a participatory health communication intervention in a rural community. The primary aim was the development of a communication asset map – a guide to communication resources that can be used by individuals and organizations: Individuals can identify where they can get health information, and organizations can better understand appropriate places for the dissemination of health information. The study was guided by the following research questions:

1. How can CIT be applied to create a multilevel intervention to address communication inequalities in a rural community?
2. What characteristics of communication asset mapping need to be adapted for a rural community?
3. What challenges does the participatory nature of the communication asset mapping intervention pose?

Study Context

Merced County is in the heart of California's Central Valley. About 60% of residents identify as Hispanic or Latino, a majority (53%) of all residents live in poverty, and educational attainment is low: One in three (32%) adults aged older than 24 do not have high school diploma (United States Census Bureau, 2016a). The county ranks 54th out of 57 counties statewide in health factors – measured as the culmination of health behaviors, clinical care, physical environment, and social and economic factors – and 49th in health outcomes (University of Wisconsin Population Health Institute, 2017). In recognition of the high burden of preventable chronic disease, the county received funding from the Centers for Disease Control and Prevention (CDC) to lead a coalition aimed at building a culture of health. The project had four focus areas: (a) reducing exposure to secondhand smoke, (b) increasing access to physical activity spaces, (c) increasing access to healthy food, and (d) improving community-clinical linkages. The coalition comprised 42 distinct community organizations representing the governmental, nonprofit, and education sectors, with membership open to all who wanted to participate.

An important component of the approach was the development of appropriate communication strategies and messages to inform, educate, and empower residents to change individual behavior and increase civic engagement. Through formative mixed-methods evaluation conducted by the university-based communication team, residents and key stakeholders in the community described the weak communication infrastructure as a barrier to health (blinded). Consistent with previous studies (Ball-Rokeach, 2001; Broad et al., 2013; Matsaganis & Golden, 2015; Wilkin, 2013; Wilkin & Ball-Rokeach, 2006b; Wilkin et al., 2011), residents noted the difficulty in locating existing services or programs, since no infrastructure for communicating about these resources existed in their communities. A separate study examining the health information available in local newspapers (blinded) corroborates residents' perceptions of a weak health communication infrastructure. The existing communication inequalities, combined with the health disparities and related socioeconomic challenges, made the intervention community an ideal site for a multilevel communication intervention conducted by the university-based communication team in partnership with two community-based organizations that provide diverse resources and opportunities for improving resident lives.

Methods: Rural Participatory Health Communication Asset Mapping

Drawing upon the framework of CIT, the university-based research team adapted the community asset mapping process to a priority community within the county. Three quarters of the nearly 11,000 residents identify as Hispanic or Latino and are disproportionately poor (United States Census Bureau, 2016b). Our goal was to use a participatory, culturally centered (Dutta et al., 2013), and asset-based approach (Valdez et al., 2016) to map the communication infrastructure and empower residents and community organizations to use existing trusted resources for health promotion. The six steps are depicted in Figure 1.

Phase 1: Partner Engagement

Following a culture-centered, participatory approach, we engaged residents through local organizations that were already known and trusted in the community. LifeLine Community Development Corporation uses an asset-focused approach to community empowerment; The Winton Educational Foundation provides education, economic development support, and social and health referral services to low-income individuals, mostly from the bilingual Latino population. Both organizations served as interstitial actors to engage residents (Matsaganis, Golden, & Scott, 2014).

Phase 2: Resident Engagement

The first step of the engagement process was an all-day workshop with residents (N = 13; all English speaking; Table 1) recruited by LifeLine. Participants received US$50 in appreciation for their time; breakfast and lunch were provided. The workshop was video recorded. A university-based project staff member led the 80-minute training, covering the history and purpose of asset mapping and the day's goals and procedures. Residents then were assigned to one of the three sections within the community and walked to physically identify and photograph potential communication resources, with one research assistant serving as a scribe for each group. The three areas were preselected because together they

account for most of the public spaces in the community, and the areas of highest density for services, retail, and other potential communication. Outside of the three study areas, the remaining community is residential.

The data collection instrument was adapted from prior projects (Ball-Rokeach, 2001; Villanueva et al., 2016) and included a list of predetermined communication categories (public or common space, retail establishment, religious art or church, school, health, media, etc.), space to record the resource's location, and the type of need fulfilled. We defined three primary communication needs consistent with a uses and gratifications approach (Katz, Blumler, & Gurevitch, 1973): *conversational*, where residents naturally gather to talk about diverse topics; *informational*, where information could be displayed, broadcasted, gathered, or searched; and *connection*, the institutions, events, and places that might help residents to connect to and engage with the community. Conversational resources allow for interpersonal transmission of information (Wilkin, Katz, Ball-Rokeach, & Hether, 2015). Information resources are critical for understanding where to disseminate information that will reach diverse groups (Wilkin et al., 2011). Finally, connection resources are important for improving social capital and collective efficacy (Matsaganis & Wilkin, 2015). These definitions were not meant to be mutually exclusive; in practice, resources reinforce multiple functions (Walter, Robbins, Murphy, & Ball-Rokeach, 2017), but they were meant to help with identification of resources that can fill distinct needs. The scribe completed the data collection instrument, allowing residents to focus on identifying and describing the resources.

Following the walking activity, the groups reconvened to discuss the resources identified. Residents initially identified a total of 21 unique resources; following discussion, each voted for his/her three most important resources. The resource list was narrowed for two reasons: First, because the map would be maintained in perpetuity by a community partner, we wanted to ensure that it would be easily adaptable. Additionally, we aimed to promote partnership-building through the interactions that the partner would make with the managers of the included resources. That is, we conceptualized the map as a living resource to engage local establishments as partners in improving the community. The final activity was a process evaluation (one-on-one, audio recorded interview) to understand the effectiveness of the participatory format.

A second workshop included only Spanish monolingual residents ($N = 9$; Table 1). The project objectives and the prior workshop's process were explained to participants. Then, they assigned a letter grade to the communication resources identified in the first workshop. Of the 13 resources identified by the first group, 6 received grades of "A" or "B" by the second group; the remaining 7 earned "D" or "F." Three retailers failed because the Spanish monolingual group did not patronize the establishments; participants reported feeling uncomfortable and unwelcome and reported that the services were cheaper elsewhere. Religious affiliation of this group also played a role for why some houses of worship identified by the first group received a poor grade: This group was Roman Catholic, while the first group identified primarily as Baptist and fundamentalist Christian. Following the group discussion, residents were asked to consider additional communication resources;

this yielded six new resources that had not been previously identified by the first group. Process evaluation again included individual interviews.

In summary, the major areas of disagreements between the two groups reflected different demographic, cultural, and religious perspectives of the diverse groups that coexist within the intervention community. Our goal was to accurately reflect the diversity of resources that these communities rely on, but – for practical purposes, to most effectively reach them with health information – maximize the overlap of the communication ecologies constructed by the multiple constituent communities.

Phase 3: Data Analysis

To finalize communication resources, we characterized each of the 19 resources identified by either the English-speaking and Spanish-speaking groups along two dimensions: (a) the communication need they addressed in the community (communication, information, or connection), and (b) the format of the information that could be provided through that resource (e.g., online access, flyers or other printed handouts, and conversational). The objective of the investigator-driven analysis was to reduce the 19 resources to a number that accurately represented both the English-speaking and Spanish-speaking populations, while allowing for a limited number that would enable the formation of meaningful partnerships with community organizations. Our goal was to have a single map, executed in two languages.

To be included in the map, the resources agreed to serve as a map distribution point and be open to working with community organizations to distribute health communications consistent with the appropriate communication need and format(s). The community partner obtained agreement from each resource.

The final 12 communication resources included public spaces, retailers, a school, community organizations, and public service providers that were most strongly endorsed by *both* groups or were identified as critical for one of the groups (Figure 2).

Phase 4: Concept Development

A graphic designer produced two different versions of the concept map representing the identified resources; participants from the first two workshops were invited to share their opinions on the graphic design – color scheme, fonts, and imagery – and the content at a third workshop ($N = 8$; half represented Workshop 1; half Workshop 2). The workshop was conducted in English with simultaneous Spanish translation. Residents preferred a bright and lively color scheme but were concerned about the readability and decided upon a color scheme that reflected traits they described as calming, soothing, and healthy.

The front of the map includes the title and images of each resource (Figure 2). Residents selected the title: *Winton Resource Guide*. A picture of the local mural, created and painted by the community through an earlier community engagement project, was added to the back, along with a concise description of each resource (Figure 2).

Phase 5: Map Production

The designer incorporated feedback from the third workshop to create the final product, which was printed on thick, glossy paper.

Phase 6: Implementation

The final step of the process was implementation. We convened the partners in the CDC-funded project and members of a health equity partnership, described the process, showed the resulting map, and provided examples of how they could utilize it to identify the appropriate communication resources to reach diverse audiences with specific types of health-related information. The convening was followed by one-on-one training sessions with selected organizations, which received toolkits for using the resource guide.

Results: Evaluating the Participatory Health Communication Asset Mapping Process

A total of 22 residents contributed to the participatory health communication asset mapping process. Considering the relatively large time commitment involved, this total exceeded our original aim of 10–15 participants. We were satisfied with this number because we achieved saturation in responses (Creswell & Clark, 2011).

Of the 22 residents, 18 involved in the asset mapping process also completed a process evaluation immediately following the workshops. Through a semi-structured interview, residents evaluated the participatory process and described their interest in participation. Of the 18 evaluation participants, 13 spoke English and 5 spoke Spanish. Most (13) were female, 6 had some college education or degree, and mean age was 51.

Overall, participants found the mapping process helpful in identifying communication resources (100%). The primary reason for participating was to improve their community (29%); equal numbers were motivated by the desire to interact with their neighbors and to contribute their opinions to the community (26%). Finally, one-fifth (19%) were interested in learning about asset mapping in general. All participants agreed that the final selected communication resources were *appropriate* and could be considered *useful* (100%), and they also agreed that the list was *complete* (94%).

Discussion

This study advances understanding of how a multilevel communication intervention can address communication inequality and contribute to reducing health disparities. Although prior calls for an ecological approach to health communication exist (Maibach et al., 2007; Moran et al., 2016), most interventions have been limited to either individual *or* structural levels. Our study, premised on formative findings revealing that residents and potential health communicators perceived a weak communication infrastructure as a contributing factor to health disparities, used a culture-centered participatory approach (Dutta et al., 2013) to intervene at the individual and structural levels. This approach thus extends CIT-based interventions in three ways: first, by developing a process for mapping the

communication infrastructure in a rural community; second, by applying a culture-centered approach; and third, by expanding understanding of how linguistic preference shapes the communication ecologies of ethnic minority populations. We discuss the three contributions below.

Although methodologically similar to previous communication asset mapping processes in Los Angeles (Villanueva et al., 2016), several components of the approach needed to be adapted for the rural context. First, the geography had to be restricted due to the nature of rural areas: The less-dense rural community had a much more limited potential communication landscape than urban Los Angeles' densely populated community that teems with retail, services, and other potential communication assets. Nevertheless, our study demonstrates a process for leveraging the less-dense communication ecologies (compared with urban settings) – that is, where there are fewer competing messages – for communication intervention.

Our study advances the application of a culture-centered communication approach for rural health promotion: Reliance on the participatory nature of the asset mapping process presented challenges, but also opportunities that nonparticipatory processes rarely present. We relied on community organizations as partners to assist with recruitment of residents that had minimal experience working with researchers; as such, we needed to provide an extra level of training that was not needed in the Boyle Heights study after which our own study was modeled, where they partnered with trained *promotoras* who were familiar with what research is and how to share information in their communities, or in the South Los Angeles study that sidestepped community participation using university researchers. Reliance on community organizations to connect with residents meant that the ability to produce a truly useful communication resource map heavily depended on the success of the recruitment by the organizations' leaders. We held an unplanned second workshop for the Spanish monolingual Winton residents who account for the majority of Winton Latinos, since the first workshop included primarily English monolingual residents.

Supplementing the first workshop proved critical, since we identified substantial differences between English-speaking and Spanish-speaking residents: The post office was crucial for residents from the English-speaking community, who described it as a safe, welcoming environment where they go to pick up their mail (important enough in a locality without home mail delivery) and also to catch up on local goings-on and news. Spanish-speaking residents, however, reported experiences of discrimination and general distrust; they were adamant that the post office was not a trusted and useful resource. Similarly, certain businesses identified by English speakers received poor grades by Spanish speakers, who avoided those places. Notably, this was a language distinction and not an ethnicity distinction (Ramirez, 2013), in that English-speaking Latinos in the first group did not report any different perspectives in the use and trust of these resources compared with non-Latinos. It is possible that Spanish-speaking preference served to mark Spanish speakers as targets for immigration-based discrimination, whereas English language ability allowed those Latinos to transcend such experiences.

This study, in a majority-Latino but linguistically diverse community, advances understanding of the critical way in which ethnicity and language jointly shape the communication ecologies of ethnic minority subgroups. Our findings are consistent with prior research in Los Angeles, which similarly found different communication ecologies for various ethnic and linguistic subgroups (Wilkin, Ball-Rokeach, Matsaganis, & Cheong, 2007). For example, the preference for culturally and linguistically matched information sources was found among Latinos who lived in predominantly Spanish-speaking neighborhoods, whereas those living in more diverse neighborhoods did not prefer matched information sources. Our study demonstrates that English- and Spanish-dominant Latinos may rely on different communication resources, as they construct different ecologies from the same existing communication resources; this has practical and theoretical import. Practically, our final map aimed to identify shared resources in their communication infrastructures to best leverage these for health promotion. Theoretically, these findings provide further evidence for how the interplay of the two components of the communication infrastructure – the storytelling network and the communication action context – interact to create a community's "field of health action" (Matsaganis & Golden, 2015), the comprising physical spaces and structures, along with the meanings attached to these spaces and structures by residents. While Matsaganis and Golden (2015) emphasized the size of the physical environment as a determinant of the "field of health action," this study emphasizes the roles of culture and language in that field.

Results should be viewed in light of several limitations. First, the final resource list was not comprehensive. The theoretical rationale is described earlier; an additional reason was that some locally owned businesses and organizations did not agree to participate. Another limitation was the limited participation by some residents: Because we wanted diverse representation of community residents, we did not preselect for individuals who had been previously involved in leadership positions. Many had little public speaking experience and were afraid to speak up; thus, the more vocal dominated the conversation. We tried to mitigate the effects of unequal participation through active moderation and by seating student assistants next to less participative residents, to encourage one-on-one engagement and to record thoughts that were expressed quietly.

The strength of this study was its participatory nature: The intervention was driven by resident perspectives, and the resulting map represents the communication resources that are trusted and valued by groups that are traditionally considered "hard-to-reach." We helped vulnerable populations develop a tool that organizations can use to disseminate critical health information, while residents will know that the places that they already visit will be where they can turn to find information about health. The strategic use of using respected residents instead of formal leaders is consistent with a culture-centered approach to communication intervention (Dutta, Hingson, Anaele, Sen, & Jones, 2016). The workshops served to build residents' capacity to serve as opinion leaders within their community (Valente & Davis, 1999).

Whether the map will serve as intended falls outside the scope of this article. Since the implementation of the map requires both active stakeholder and resident buy-in, further research is needed to examine its sustainability and efficacy.

Conclusions

This study advances the limited existing body of research that aims to use communication strategies to reduce health disparities using an ecological, culture-centered approach (Dutta et al., 2013; Moran et al., 2016). The ecological approach adapted from CIT considers the individual situated within a social context that is nested within a community, which is, in turn, subsumed by the greater societal structure. Results from this study underscore the importance of understanding how preferences for health information sources might differ across ethnic and linguistic minority groups, even within a geographic community (Brodie, Kjellson, Ho, & Parker, 1999; Lee, Ramirez, Lewis, Gray, & Hornik, 2012). The participatory health communication asset mapping process we articulated can be used to identify local communication resources that can be used to disseminate health information and help residents understand where to seek health information. Moreover, the participatory process was useful beyond the intended purpose of health promotion: It served to build capacity for residents to serve as opinion leaders and change actors in their community as analyzed from the process evaluation where primary motivating factors for residents' participation involved feeling empowered to contribute their opinion to and improve their community. This study's process serves multiple functions that contribute to the "culture-centered" approach to communication that demands authentic community engagement (Dutta et al., 2013). The study provides a promising approach for the integration of a culture-centered approach to understanding health and communication needs with an ecological approach to communication intervention in rural areas.

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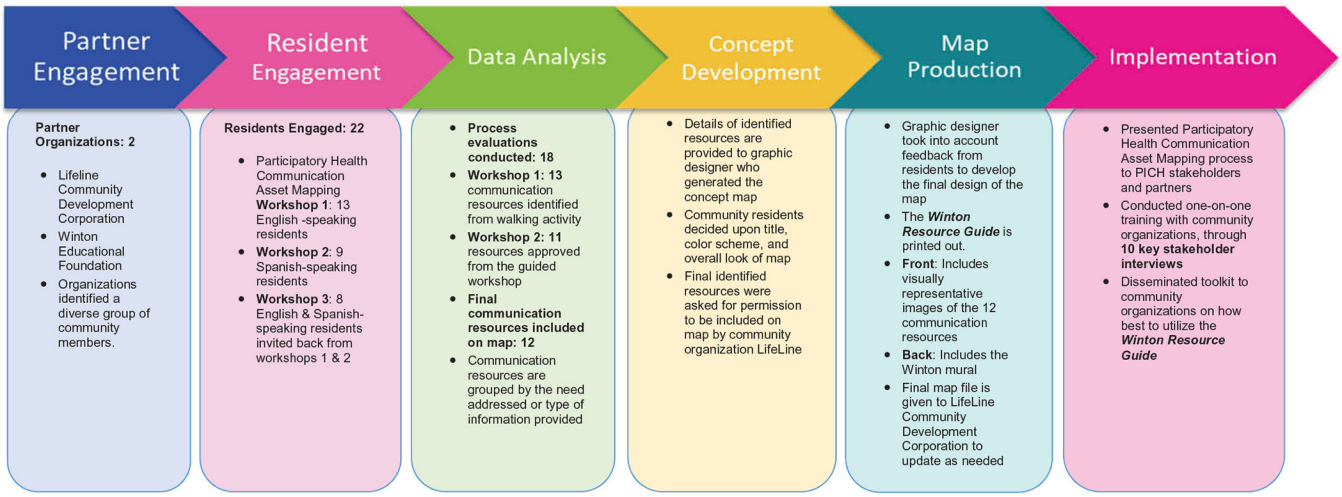

Fig. 1.
Participatory health communication asset mapping process.

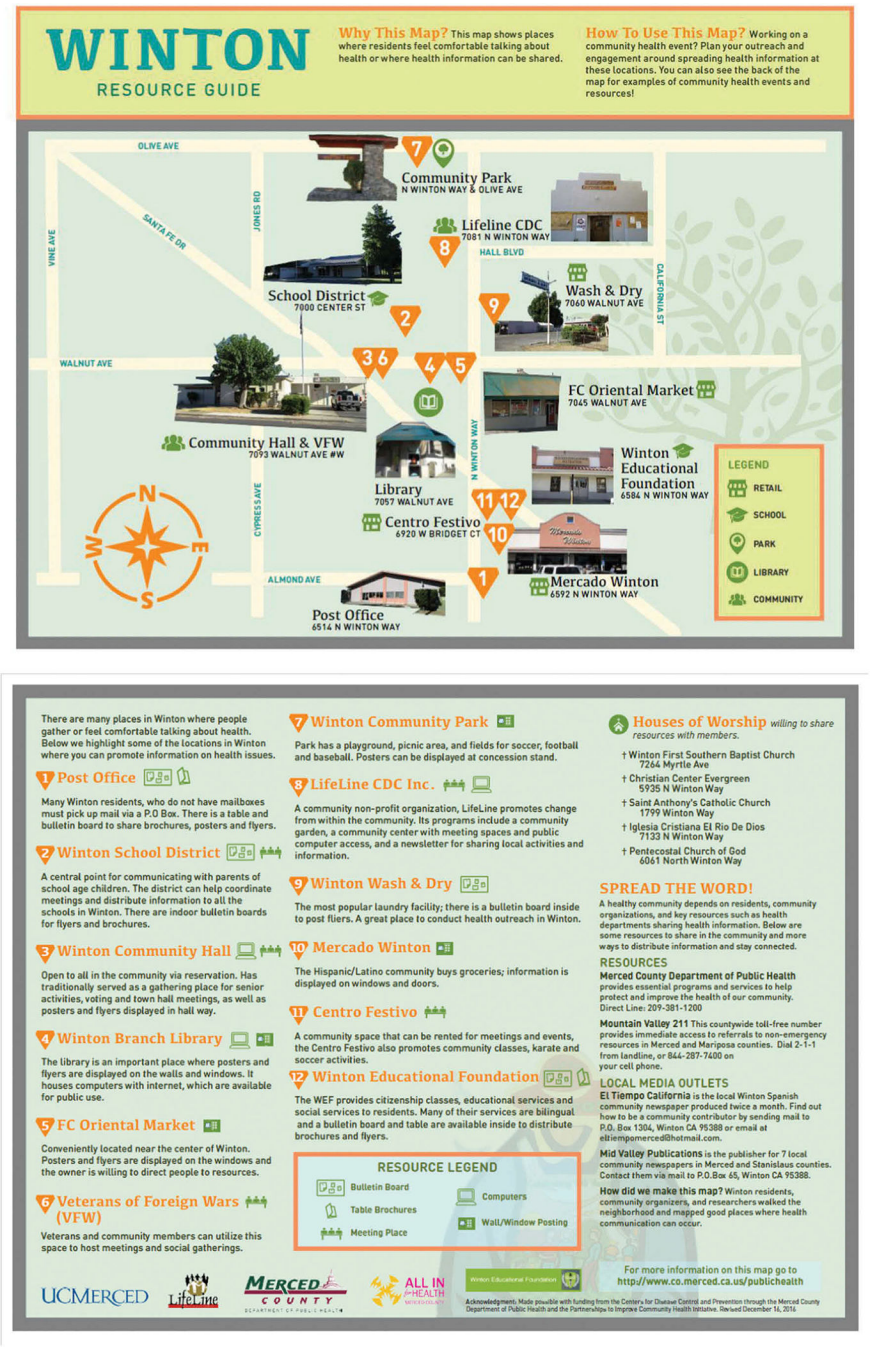

Fig. 2.
Final resource guide, as mapped by residents.

Table 1.

Resident gender, ethnicity, and language by project phase.

	Resident engagement		Concept development	
	Workshop 1 – English (LifeLine)	**Workshop 2 – Spanish (LifeLine)**	**Workshop 3 – (WEF)[a]**	**Process evaluation[c]**
Mean age (years)	51	50		51
Highest level of education				
Less than high school	1	2		3
High school diploma	8	0		8
Some college or technical	2	1		3
College	1	2		3
Employment status				
Employed	7	3		11
Not employed	6	1		7
Sex				
Female	9	6	3	13
Male	4	3	5	5
Race/ethnicity				
Caucasian	4	–	4	6
Latino	8	9	4	11
Other	1			1
Language				
English	13	–	4	13
Spanish	–	9	4	5
Total	13	9	8	18

Note. N = 22 community residents; 4 participants left before the completion of the process evaluation survey. WEF = Winton Educational Foundation.

[a]Residents from Workshops 1 and 2 were invited back for the Concept Development Workshop.

[b]These overlap with the English and Spanish workshops.