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**Integrating Community Based Empowerment and Transdisciplinary Research  
Lessons Learned from Chicano Studies in Preventing Childhood Obesity**

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### Abstract

NSFS is a multi-intervention study aimed at preventing childhood obesity among Mexican-origin children in rural California. Using a transdisciplinary approach and CBPR methodology, NSFS includes collaboration of diversely trained professionals working in collaboration with community partners. The systematic development of the intervention through the integration of a transdisciplinary research team and use of a CBPR partnership, provide the basis for understanding the opportunities for funding and modifications needed to be successful with these research approaches.

*Keywords:* CBPR, transdisciplinary, community engagement, Chicano studies, childhood obesity

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### **Introduction**

Decades ago, Chicano Studies Departments emerged as a direct result of both community need and a vision to create a sustainable solution for greater academic representation of Chicanos on college campuses. During the 1960s and onward, Chicano activist students shifted away from the traditional hierarchical discourse that created academic disciplines to a more egalitarian and social justice narrative so that Chicano Studies programs became, and were defined by, their link to community empowerment ideals. Community accountability and responsiveness became the mantra for many of these programs, and due to the complexity of the social issues and the dearth of Chicano scholars in any one field, transdisciplinary Chicano Studies programs became the norm. Thus, both by design and by necessity these departments became academic incubators for many of the earliest community based transdisciplinary research. Chicana/o scholars created a unique academic cultural climate where, as a direct result of Chicano Studies scholars' disciplinary isolation from mainstream departments, the need to hire across disciplines because of the limited critical mass of Chicano faculty in any one academic discipline, and a departmental hiring strategy of disciplinary diversity fostered a cross fertilization of ideas, which allowed for the incubation of a broader systems approach to tackling social problems affecting the Chicano community. Thus, by necessity and design, Chicana/o Studies researchers can easily fall under the rubric of pioneers of Community Based Participatory Research methods, (CBPR).

### **CBPR and Transdisciplinary Research**

Today, the growth and interest in Community Based Participatory Research methods, CBPR, includes many of the methodological approaches that were instrumental to the success of

Chicano Studies programs decades ago. This methodology includes acknowledging the impact of power differentials in knowledge creation, elevating the perspectives and knowledge of community members as subjects (social capital), not objects, during the research enterprise, and jointly creating and interpreting analyses of social problems so that sustainable solutions are possible (Boudieu, 1986). The net impact is to not to privilege the research enterprise over the community needs, and to recognize the community assets that will strengthen short and long term outcomes. However, the CBPR approach also requires a shift away from disciplinary to transdisciplinary research methods as well, requiring a more communal, reflexive, and adaptive methodology to breakdown narrowly defined theoretical and empirical methods.

Similar to the CBPR approach, contemporary transdisciplinary research is motivated by enhancing community engagement, however, its academic roots are linked to earlier psychological action research methods with the goal of translating research into sustainable public policy at the community level (Stokols 2006).

Some researchers make a further classification of the concept of cross-disciplinary research according to the level of collaboration and use of methods and theories. A *multidisciplinary* approach implies the independent or sequentially aligned work of researchers who address a common problem from their own disciplinary specific perspective. *Interdisciplinary* approaches involve researchers working jointly to address a common problem, but from each respective disciplinary perspective. Finally, a *transdisciplinary* approach implies the integration of researchers who work jointly using a shared conceptual framework that draws together discipline-specific theories, concepts, and approaches to address a common problem (Rosenfield, 1992).

Transdisciplinary collaboration presents an array of potential benefits, such as more powerful models, use of diverse methodologies, broader-based public policy tools, mutual benefits of cross-disciplinary training to investigators and greater opportunities to engage communities with relevant research. Nevertheless, it is clear that these types of collaborations are labor intensive and conflict prone, administratively complex, and creates analytical tradeoffs as well as requires greater respect of cultural difference across groups (Hall et al, 2008; Stolkos, 2004). Different factors can facilitate or constrain research project collaboration when engaging in cross-disciplinary/transdisciplinary research, which include intrapersonal, interpersonal, organizational, physical environmental, societal and political, and technological factors (Stokols, 2006;Kessel, 2008; Klein, 2012).

Important examples of transdisciplinary research frameworks include systems thinking methods used in business, public health and the sciences. System thinking requires multidisciplinary approaches that are not only more robust intellectually, but also, are viewed as more nimble and responsive to identifying problems and creating effective solutions. According to Leischow et. al., there are shared system thinking perspectives that help define this approach including the following: “(1) increased attention to how new knowledge is gained, managed, exchanged, interpreted, integrated and disseminated; (2) emphasis on a network centric approach that encourages relationship-building among and between individuals and organizations across traditional disciplines and fields in order to achieve relevant goals and objectives; (3)the development of models and projections using a variety of analytical approaches....in order to improve strategic decision making; and (4) systems organizing in order to foster improvements in organization structures and functions.” (Leischow, Best, Trochim, Clark, Gallagher, Marcus, Matthews, 2008, S196). Thus, given these organizational requirements of system thinking it

becomes obvious that isolated disciplinary approaches are not useful for building systems models. Moreover, these scholars also suggest that system research teams have the capacity to create working environments where relationships across groups are strengthened and the communication of ideas and objectives are clearly defined so that teams share knowledge and build clear intellectual pathways to address problems or create solutions.

Transdisciplinary approaches like system frameworks may create the academic parameter for research, but they also, help frame action research methods that define the CBPR framework. The interaction of structural (disciplinary) and behavioral (cultural) factors brings different perspectives to address community issues of concern and a greater awareness of how to partner effectively with communities of interest. Thus, transdisciplinary approaches are necessary requirement to apply a range of CBPR frameworks within traditionally underserved communities like the growing Chicano/Latino community.

The growth of transdisciplinary CBPR research is further fueled by increased funding for this type of work by federal agencies like the National Institutes of Health (NIH) and United States Department of Agriculture (USDA) . Much of this shift in funding is linked to not only creating a better understanding of the issues and more effective interventions to alleviate complex behavioral and social problems, but also, due to increased pressure on federal agencies, to show impact and sustainability of outcomes. To this end, this paper will present a case study focusing on a university- community partnership to combat childhood obesity in the California's Mexican origin community rooted in both a transdisciplinary and CBPR framework. Analytically, the proposed project is easily captured in Stokols' (2008) organizational, geographic, and analytical framework represented in Figure 1.- Organizational, Geographic, and Analytical Scope of Transdisciplinary Action Research.

The three quadrants of the Stokols' model in Figure 1 are an excellent template for understanding the development of the childhood obesity project as it captures both the complexity of the relationships (social networks) as well as the transdisciplinary framework needed for complex community based projects. First, the intersectoral component of our research required collaboration between local municipal entities, school districts and the university, both of which were critical for addressing how to adapt and translate our research to meaningful concepts for the target communities, as well as to ensure future sustainability of the social relationships and proposed interventions. Second, both the interorganizational and intraorganizational dimensions of the research project were addressed by housing the project within an independent campus research center, the Center for Transnational Health, which provided an intellectual home for researchers and students from diverse disciplinary and cultural backgrounds to work collaboratively and with the implicit agreement that transdisciplinary partnerships were to be utilized throughout the grant writing process. The geographic scope of this project was limited to communities in West Fresno County in California's Central Valley by design due to *a priori* evidence that indicated that communities in this area had the lowest Human Development Index (HDI) in the United States in 2010-11, and that they housed community enclaves with over 80 percent predominantly Mexican origin communities in the rural area (Burd-Sharps & Lewis, 2012). In addition, the research team capitalized on existing community relationships (networks) with key local constituency groups by using university students who previously lived in these target communities. These students played an important insider role in the initial exploration of the proposed community-university partnership and participated in the original proposal development and implementation. Finally, for the analytical framework, the research teams agreed upon including cross-disciplinary theoretical and

empirical models, used in education, psychology, nutrition, medicine, public health and economics, and were framed within a community empowerment framework (CBPR).

Although the project itself did not have a national scope in design, the research team felt that the implications of the outcomes from this research could have national policy impacts based on the future analyses of the data collected, as well as the assessment of community engagement and sustainability

### **Building the Research Project**

As indicated earlier, the project home was built within a transdisciplinary research center, The Center for Transnational Health within the Department of Chicana/o Studies at the University of California, Davis. The PI of the project was a full professor in Chicana/o Studies who worked collaboratively with colleagues in the departments of Nutrition, Agricultural Economics, Internal Medicine and Pediatrics, as well as two other faculty in Chicana/o Studies i.e., an assistant professor in Chicano Art and a professor in Psychology, to prepare the proposal. The intra-university partnerships thus spanned the Division of Humanities & Cultural Studies, the School of Medicine and the College of Agriculture and Environmental Sciences. The research team committed itself to a transdisciplinary framework and the use of CBPR strategies to engage and involve the target communities. The selected communities were the result of using community-matching approaches broadly used in the social sciences and in public health. The research team selected largely Mexican-origin rural enclave towns for a proposed project where community relations could be easily established due to prior social networks. Strong social networks are critical in building trust and maintaining communication so that a CBPR framework can be used in designing and implementing a transdisciplinary research project. Once a potential funding agency was identified, i.e., USDA, the nature and scope of the project

was further refined by the USDA-NIFA request for proposals that focused on targeting prevention of childhood obesity within the ages of 3 to 8 years of age. The organizational constraints of Federal funding agencies create an interesting paradox for those interested in pursuing CBPR strategies in their research in that the greater the funding for these types of projects the less likely the researchers can maintain fidelity with the true tenets of CBPR. Nevertheless, the opportunities to use elements of CBPR and transdisciplinary frameworks are possible once there are funds to implement programs with adequate resources, space, time and integration of local staff within the targeted communities.

Figure 2. Community Engagement Model provides a diagram of the specific tradeoffs that transdisciplinary researchers committed to CBPR methods will face in developing a competitive research proposal. As highlighted in the diagram, given the need for greater accountability for fund-use, as well as a preference for evidence-based approaches and established scientific approaches, the likelihood of large levels of funding support diminishes when there is a more fluid approach between the community participants and the university researchers. Indeed, there is very little CBPR research, beyond theoretical approaches, that show the complexity of research design suggested by Stokols, and where equal levels of community engagement can be found in all three dimensions, which is illustrated in Figure 2.

In Figure 2, it is assumed that those researchers that require limited resources to implement their project can develop a CBPR framework that allows for community input and involvement at all levels. This includes not only defining the research question, but also, working in defining the roles of engagement and participation in each stage of the project. It is also assumed that institutional constraints, such as meeting Institutional Review Board (IRB) protocols and requiring that community members who directly participate in data collection or

analysis, for example, would also not be required to fulfill these types of institutional requirements. Thus, a Level 1 project most likely would have a minimum of intersectoral partnerships and would be at the most local level to minimize barriers to this type of more equitable and fluid processes. It also would most likely be limited in bringing a number of transdisciplinary researchers as the organizational capacity of this type of project would be constrained due to severe resource constraints and support. Level 2 designs would provide greater capacity to integrate more transdisciplinary researchers given the opportunity to create more organizational support for collaboration with greater funding opportunities. Level 2 programs also provide greater opportunities for equal participation of community participants to engage in the research design, implementation and research products with researchers. However, there is a clear tradeoff with Level 2 programs in that allowing community participants equal participation in decision-making in these three areas creates risk factors associated to institutional compliance such as IRB. In addition, these types of initiatives have fewer funding opportunities as *a priori* evidence-based metrics, evaluation tools, and specific outcomes that may be preferred by funders cannot be guaranteed in the implementation and evaluation stage of the research. Level 2 programs will most likely be successful in obtaining funding where process, not specific outcome measures, is the key deliverable to the funding agency.

The next two design levels, Level 3 and Level 4, have the greatest capacity of institutionally supporting transdisciplinary research teams and receiving the greatest levels of funding. Level 3 and Level 4 designs reflect modified CBPR designs. These programs balance funding requirements with CBPR processes that engage the community prior to the submission of a proposal AND explain to community members the requirements of the funder. The constraints in design and implementation are presented to community members and their

feedback on the viability of moving forward with the proposal and the grant is understood.

Modifications of design and evaluation instruments to meet community cultural and language issues are possible, and pilot testing of instruments and feedback are easy strategies to further incorporate and include community participants. However, the final research project is designed and implemented by the designated transdisciplinary team members with a clear memorandum of understanding established with key representatives of roles and expectations during the duration of the project. Research products or deliverables for the funding agency are shared with community members and request for specific information relevant to community members is supported through this process. Level 3 and 4 funded projects have greater opportunities for significant funding based on the willingness of community members and the research team to trade off greater community participation in design, implementation, evaluation, and research in order to meet the requirements of a funding agency that will bring the needed resources to complete the project. Organizationally, Level 3 and 4 projects will have greater opportunities for intersectoral collaborations and broader opportunities for transdisciplinary collaboration. These projects also have greater capacity to go beyond local issues and can have national impact due to the capacity to bring in broader disciplinary perspectives. External funding potential with Level 3 and Level 4 projects is quite high due to a clear expectation that these proposals meet the highest scientific standards for peer review. However, an important difference between Level 3 and Level 4 funding is that in Level 3 funding there is greater opportunity for community members to impact elements of design and evaluation during the implementation stage of the project. This is not possible in Level 4 projects due to restrictions in funder constraints.

Research initiatives or Request for Proposals (RFPs) developed through Federal Agencies such as the National Institutes of Health and the United States Department of Agriculture often fall

within Level 4 funding protocols. Although the CBPR protocol may be constrained, the use of Advisory Boards or Councils at the local level can provide important community feedback to enhance implementation, usefulness and dissemination of research projects, and are key to sustainability of the relationships and outcomes in the target communities.

The NSFS project provides an excellent case study of a well-funded project with a limited CBPR approach within a transdisciplinary framework. Community involvement and close collaboration with key partners and their members were critical components in the pre-proposal stage of the project and the establishment of a strong transdisciplinary team of researchers was also critical. However, in the final design and implementation a limited CBPR approach was used due to the funding requirements placed by USDA. Thus, in many respects this proposal could be placed at different stages of development in a Level 3 and Level 4 CBPR design framework.

### **The Preproposal Stage of NSFS**

An important observation for this particular project is that the home center for the transdisciplinary proposal was within a center housed in the Department of Chicano Studies. This is particularly notable because Chicano Studies programs, as indicated earlier, are by definition transdisciplinary intellectual spaces, focused on activist or advocacy scholarship and their scholars have strong community social networks that facilitate their community-based scholarly work. Thus, using Stokols' framework, three critical areas for intersection existed in the Department of Chicano Studies that facilitated the development of this transdisciplinary project. There existed cross-disciplinary/departmental ties (intra-organizational), there were local, community and regional ties, and the analytical ties crossed three analytical domains of

expertise- psychological, social/ environmental and community policy. In addition, the research space within Chicana/o Studies, the Center for Transnational Health, attracted and became an important intellectual space for campus faculty beyond Chicana/o Studies who were interested in community based and transdisciplinary research.

Although the capacity to do CBPR and transdisciplinary research may be rooted in the organizational culture of Chicano Studies Departments, the fiscal and organizational constraints within a traditional department framework is limited. Moreover, in order to tackle more complex issues in community settings, significant funding is needed. Thus, as was the case of the NSFS project the approach framed various externally observed community problems of concerns within a nested CBPR framework. That is the research team used observed data on health, income and educational disparities within the national, regional and local lens and targeted the communities of interest within a rank ordered approach of relative inequality locally, regionally and nationally. Second, the team purposefully selected Mexican origin communities that exhibited these specific attributes. Finally, the research team relied on individuals within the research team with established social networks in the targeted communities proposed for the research project. This final step was perhaps the most critical component of allowing the team to begin the CBPR component of the proposal as it set in motion the necessary communication with key actors in the target communities. That is community leaders such as school board members, school superintendents, city managers, mayors, religious leaders teachers and retail store owners were involved so that the process of community engagement of a potential intersectoral (university- local town/school) project could emerge. This process of vetting through city council meetings, town halls and school board meetings PRIOR to submission of the proposal was critical to cementing a university –community partnership that allowed for the vetting of a

potential design and implementation strategy. This process of discussion without any funding constraints allowed for developing the capacity to build trust about our research intention with community members and to be completely transparent with them about the limitations external funders may place in direct community input in design, implementation, evaluation, and final development of the proposed project.

During this proposal stage of the project, the team also worked in identifying funding calls both from the National Institutes of Health (NIH) and the United States Department of Agriculture (USDA) that intersected both the interest of the research team and the community members. Both calls focused on health disparities disproportionately affecting children from underserved and/or under represented groups and both provided support for the use of CBPR frameworks in the study design. The team also agreed to use a transdisciplinary framework that included social cognitive theory, utility theory, the health belief model and epidemiological models to assist in sample design. We completed focus groups in order to better grasp the concerns and perceptions of community members with regard to the research questions and proposed interventions as well as completed community environmental scans. This information was used as important preliminary data in the research proposals. Two proposals were submitted to major research funding agencies and only one was funded. The first proposal submitted was an RO-1 NIH proposal that engaged the communities for a shorter time period, i.e., three years duration, and which included a proposed budget of over a million dollars. The second proposal was submitted to U.S.D.A. for a longer time period, i.e., 5 years duration and requested 4.8 million dollars. The first proposal was not funded, and the subsequent proposal was funded. In both instances we shared the proposal drafts to the communities, received feedback prior to submission, and received enthusiastic support for submission from both communities as

illustrated by not only the requisite memorandums of understanding from different community sector leaders as required by the funding agencies, but also, by the willingness of community members to provide the research team opportunities to have conversations and presentations throughout the community about our hopes and aspirations for collaborations through this research partnership. This openness of communication and support allowed us to weather the first rejected proposal, which we reported out to the community and build for our second more successful and more richly funded proposal.

### ***Niños Sanos, Familia Sana* (NSFS): The Successful Proposal**

Located in California's Central Valley in the rural agricultural towns of Firebaugh and San Joaquin, *Niños Sanos, Familia Sana* (NSFS) is a multifaceted intervention study funded by USDA National Institute of Food and Agriculture. A central goal of this collaborative project was to aimed reduce the rate of childhood obesity among Mexican-origin children between of 3-8 years of age in rural California. The original proposal was developed using a transdisciplinary approach and CBPR methodology. The NSFS project included the collaboration of diversely trained research professionals working in collaboration with community partners in the development, testing, and implementation of interventions for the final research project.

The rationale for submitting the proposal was based on the observed health disparities that disproportionately affected Latino children, particularly Mexican origin children, within a broader national epidemic of rapidly increasing U.S. childhood overweight and obesity rates during the last three decades. This trend was especially high among Latino families.

It was also clear from the literature we reviewed that obesity risk among Mexican-origin children was related to multiple factors, which would require a transdisciplinary framework for addressing the problems and developing the interventions. For example, income, education,

environmental, social and cultural factors affected access to healthy and affordable food, and proper and safe spaces for physical activity, all contributed to both poorer health and higher obesity rates.

In order to test the proposed interventions to reduce the rate of growth of childhood obesity among Mexican-origin children between the ages of three and eight one of the communities was selected as an intervention community and the other was selected as the comparison community. Both were matched communities based on both environmental and sociodemographic metrics. The selected interventions selected were proposed to improve the economic capacity of low-income, Mexican-origin families, enhance the nutritional skills of families, support the capacity of schools to more effectively provide Physical Education (PE) opportunities for children in preschool and K-3 settings, and provide community arts programs that allowed for nutrition and positive behavioral health messaging. The community targeted for the intervention was Firebaugh. A matched comparison community, San Joaquin, would not receive the multifaceted childhood obesity prevention intervention, but would receive community based interventions that would focus on education, mental health and other non-nutrition related interventions based on community focus groups. Both communities were aware of their distinct intervention status and the decision of who was the intervention community and comparison community was based on an agreed upon card draw selection by community leaders.

In addition, to the research objectives of the study another requirement for the USDA NIFA project was to include an inter-organizational component, which was to incorporate University of California Cooperative Extension (UCCE) within the parameters of the grant in order to extend the regional capacity and national impact of the grant. Nationally cooperative extensions field agents and faculty work closely with university land grant institutions, farmers,

workers and communities in promoting nutrition education and other programs. This funding requirement allowed us to leverage the UCCE science based nutritional information and work with these staff to adjust their curriculum for cultural propriety and appropriateness for our communities. However, given this requirement, this limited our capacity to create more organic community based nutritional interventions resulting in a placement of our intervention design within a Level 4 CBPR rubric.

A unique requirement for funding was indirectly related to the research proposal and of less immediate interest to the community participants. The final component was to strengthen and increase the number of culturally sensitive UC Davis undergraduate, graduate and professional degree students in the areas of nutrition, agricultural economics, medicine, and education. However, this created a unique opportunity for the team to create a new course entitled “*Community Based Nutrition and Health Research; Lessons Learned from California’s Communities*” that is taught in the Department of Nutrition but co-taught by faculty in Chicano Studies, Nutrition, and the School of Medicine. It also provides an opportunity to bring in more graduate students to work on greater array of new transdisciplinary research community based projects, support the existing team of researchers in the current project, and expand the social networks for community members and emerging scholars over time.

A final important proposal requirement for the USDA project was to create a logic model that summarized not only the goals of the project, but also, the specific activities, metrics and outcomes that would be expected as a result of the proposal in light of the broader challenges and opportunities that may constrain optimal success. Figure 3 is the final logic model used for this proposal.

Logic models are commonly used to provide a clear and concise framework of the situation underlying an observed problem or issue impacting a community. It also identifies the inputs a research team and community bring to bear on addressing these issues/problems and specific activities or interventions used to create a change in behavior or outcome. In all cases there are measurable inputs linked to specific activities and measurable outputs that result in the proposed outcomes, which will impact the proposed behavioral and/or community change. Clearly, there are underlying assumptions that guide the development of any logic model and external factors that may threaten or strengthen proposed intervention (Wholey, Hatry & Newcomer, 2010).

The NSFS logic model illustrates clearly the intent of the research and intervention project to impact the behavioral change discussed with the community members prior to the pre-proposal stage. The community identified collective concern of the impact of childhood obesity on the health of their families and the lack of adequate support for the local community, schools and families to support the needed behavioral change and environmental support. However, as indicated in this program and as indicated in the logic model the driver of many of the research and intervention components are largely derived by the requirements of the funding agency and evidence based research strategies and approaches. The areas that highlight opportunities for CBPR input are under the Activities sections of the Chart where the Community Advisory Council is included to provide guidance to the research team. Thus, within this framework the element that can clearly link to CBBR is this element. All other elements are largely our defined outside this framework. Nevertheless, even with this limitation the extent that CBPR methods can be introduced into this project is quite significant. For example in several of the proposed activities input from community and participant members can be used to nuance and create more

meaningful interventions for community members. Thus, CBPR methods can be used to modify evidence based interventions and create pockets of opportunity to engage participants and community members. Similarly, within the proposed outputs, there are unique features defined by community input and participation. In this logic model, the Taller Arte del Nuevo Amanecer (TANA) murals and posters illustrate this type of output by using community art projects to create organic social messaging to reinforce program messaging. For example, community art methods such as muralism engage the community by involving them in the actual construction of the concept of how information about this project is expressed and in the actual art project. In particular, muralism as an art form is well established in the Chicano community and is known as an important platform for Chicano Art so this also is rooted in the popular traditions of Chicano Studies and Chicano community activism (Jackson, 2009). Thus, there are clear opportunities to engage in community activism within a defined logic framework with tools like community art, but the elements of design of the intervention may be constrained due to the design requirements of the external funding agency.

### **Concluding Observations**

CBPR as a method to engage community in research design and projects is clearly part of the scholarly tradition within Chicano Studies. It also provides a powerful tool in designing projects that have greater capacity of engaging community members and supporting the intrinsic knowledge of community members that is critical for triggering self-actualization and community action for behavioral and environmental change. Similarly, transdisciplinary research methods allows for better understanding by a research team of the complexity of an issue and/or problem so that they can be better informed in creating a sustainable solution. In both CBPR and transdisciplinary methods there is a need to understand the geographical space, organizational

issues, and areas of interest so that effective engagement across and within groups can occur. Collaboration is key to designing these projects and within these processes of design natural tensions, conflicts and power dynamics will arise and must be mediated within the research team and across constituency groups.

Some key points to consider when employing a CBPR and transdisciplinary perspective when designing a research perspective are the following: (1) most funders will require evidence based approaches or tools in some stage of the research design; (2) community input is most useful in the pre-proposal or pilot stage of a proposal; and (3) modified CBPR projects with community advisory components can be valuable in modifying inputs, interpreting/creating outputs, and creating sustainability for proposed outcomes. In the final analysis, using a transdisciplinary design team may be a first step to creating a more open environment about the possibilities of use of CBPR strategies. Competing disciplinary perspectives force individual researchers to shift into using paradigm designs where they are no longer the experts. This shift in power dynamics and dependency on collective knowledge creation then creates the opportunity for CBPR methods to insert themselves within the research design. Thus, a necessary condition to embrace CBPR methods is to understand how power relations can influence the research design and that creating more equal spaces for inputs and outputs at all levels will allow greater impact and sustainability of a given project.

The need for greater sustainability of research projects and accountability to all constituencies has propelled the increased use of the CBPR strategies and transdisciplinary approaches by research teams. Thus private foundations and government agencies that fund research often look at these research tools as important design elements for community based projects, particularly for underserved communities. However, despite the growing importance of

these tools in research design, they will be constrained in implementation by funding and institutional requirements that limit true collaboration of community members in all aspects of implementation and program outputs. Yet, even with these constraints there is no doubt that there is a positive impact from this approach of enhancing community engagement, awareness and increasing the continuity of interest in the project outcomes, which increases the value of these tools for external funders.

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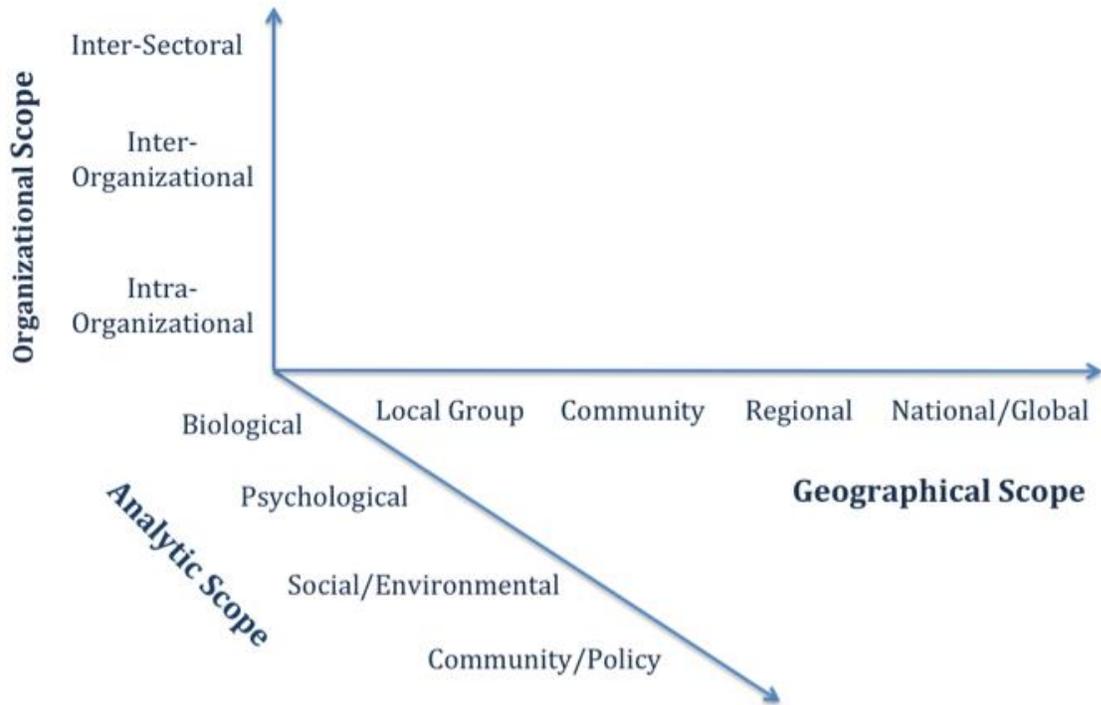
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Figure 1. Organizational, Geographic, and Analytical Scope of Transdisciplinary Action Research



Source: Stokols, D. (2006) *"Toward a Science of Transdisciplinary Research"*, p.66

Figure 2. Community Engagement Model

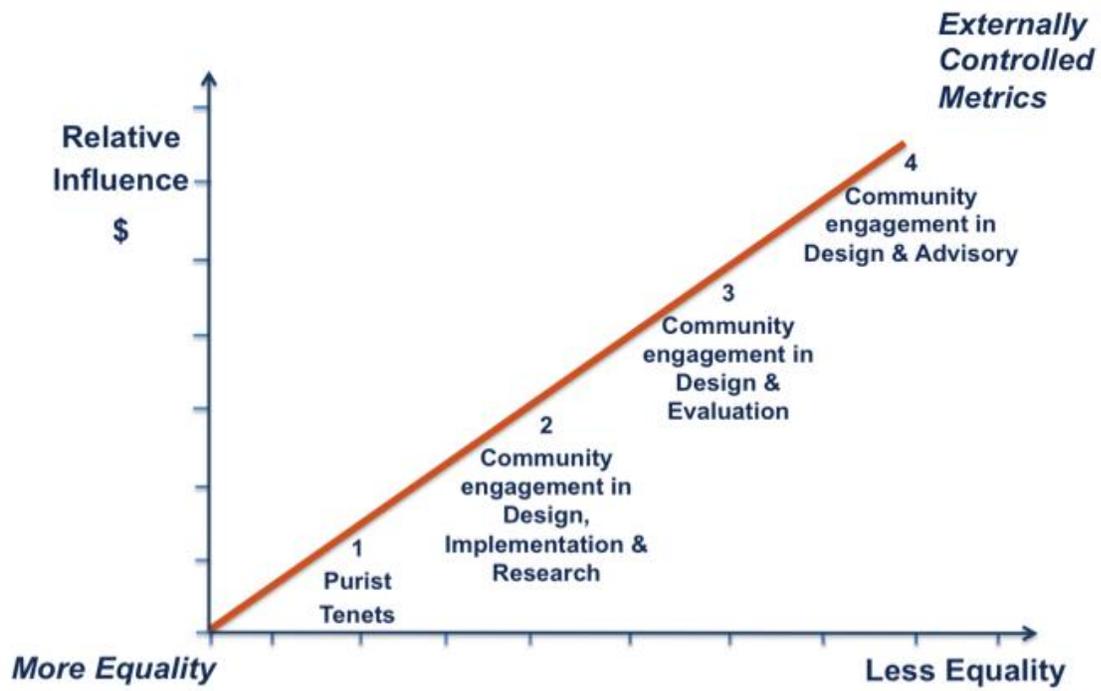
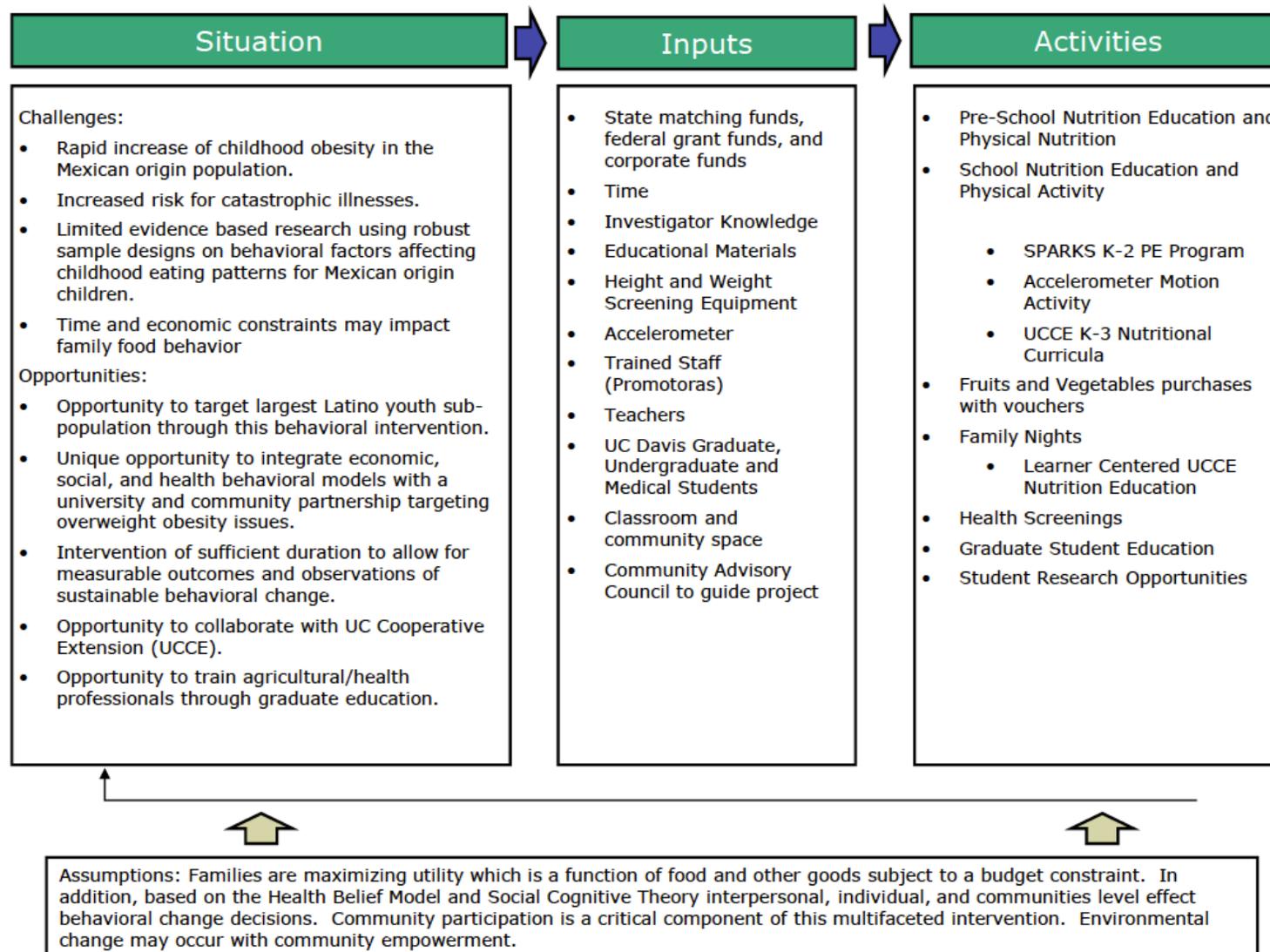


Figure 3. Logic Model Niños Sanos, Familia Sana

## Niños Sanos, Familia Sana: Logic Model (1/2)



## Niños Sanos, Familia Sana: Logic Model (2/2)

