

# Chapter XL

## Community Collective Efficacy

**John M. Carroll**

*The Pennsylvania State University, USA*

**Mary Beth Rosson**

*The Pennsylvania State University, USA*

**Umer Farooq**

*The Pennsylvania State University, USA*

**Jamika D. Burge**

*The Pennsylvania State University, USA*

### ABSTRACT

*Socio-technical systems are social systems that incorporate technological infrastructures. At the group level of analysis, the most important question in understanding socio-technical systems is how their technological infrastructures modulate collective capacities for performance and experience. This research addresses collective capacities with respect to various sorts of communities—interest communities, professional communities, and residential communities. One question the authors have pursued is how technological infrastructures can enhance beliefs about collective capacities, as operationalized in Bandura’s social-cognitive construct “collective efficacy”. In this chapter, the authors first review Bandura’s conception of collective efficacy as a social extension of his cognitive construct “perceived self-efficacy”. They then discuss the development of our own community collective efficacy scale, and its use in understanding a range of community-oriented attitudes, beliefs and behaviors in the context of the Blacksburg Electronic Village community network. The next three sections describe applications and extensions of community collective efficacy to three on-going community informatics projects. In each of these cases, the authors explain how the community collective efficacy construct is being applied and extended.*

## COLLECTIVE EFFICACY

Bandura's (1997) definitive book on perceived self-efficacy makes a comprehensive case that people can accurately gauge their own capacities to cope with challenges, and to achieve given levels of performance. People can do this across a wide range of circumstances. Judgments of perceived self-efficacy (PSE) are generally quite specific—"I can lift 150 pounds." They are empirically reliable, predictive of many other important behavioral and subjective variables (such as actual performance), and they are distinct from many other types of self-judgments. For example, PSE is not the same as self-esteem; the latter is a generalized appraisal of self-worth, not a specific belief about a specific capacity. PSE is also not a recollection; if I actually *did* lift 150 pounds, and I recall that, then my judgment is based on memory not on perceived self-efficacy.

PSE is operationalized through Likert survey items that present a brief challenge scenario, and ask for a judgment on a scale of confidence that the challenge can be met. Schematically, an efficacy item has the form "I can do X even if Y". Examples would include the following two examples; the first illustrates perceived dietary self-efficacy; the second parental or family responsibility self-efficacy.

*I can control my carbohydrates even while vacationing at Beervana.*

*Despite a light snow shower, I can be on time for my parent-teacher conference.*

We conceptualize self-efficacy as depending on what might be called a "capacity analysis"—a notion intended to be understood on analogy to "task analysis". Where a task analysis enumerates the action components comprising a task, a capacity analysis enumerates the different capacities comprising successful participation in a domain. Thus, perceived dietary self-efficacy probably involves resisting junk food, excessive salt, gluttony, and sugary deserts as well as beer. The parent-teacher conference item could be part of a scale of perceived

parental efficacy in the context of other items involving bedtimes, parameters for sleepovers, making time to read together, and so forth, or it could be part of a family responsibility self-efficacy scale in the context of items involving paying bills on time, developing a college fund, planning for vacations, calling various in-laws, and so forth.

Bandura and his students focused on perceived self-efficacy, but extended the concept to collective efficacy—that is, to beliefs about collective capacities. Much of the early work on perceived collective efficacy involved the beliefs of teachers about the capacities of their classes or of their schools, for example, beliefs that the school could perform above the 50th percentile on standard mathematics tests.

Starting in 2000, we developed and investigated another specialization of collective efficacy that we called "community collective efficacy" (Carroll & Reese, 2003). Our first study focused on the physical community of Blacksburg, Virginia. We were interested in how beliefs about community collective efficacy might affect use of the Blacksburg Electronic Village, a very prominent second-generation community network (Carroll, 2005). Subsequently, we have investigated community collective efficacy in other communities (State College, Pennsylvania), and in other types of communities (a learning community, a scientific research community).

## COMMUNITY COLLECTIVE EFFICACY IN THE BLACKSBURG ELECTRONIC VILLAGE

As part of an extensive study of community-oriented technology, we developed a community collective efficacy (CCE) scale. Our original scale had 13 items, and our current scale has 17. The scale reflects a capacity analysis of challenges more or less any community would have address: (1) assist economically disadvantaged, (2) increase tourism, (3) improve roads, (4) improve quality of life, (5) improve quality of education, (6) preserve parklands, (7) handle mistakes and setbacks, (8) improve quality

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