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ORIGINAL PAPER

An Emerging Action Science of Social Settings

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Abstract Seymour B. Sarason's innovative ideas have influenced much of my work. These same ideas—in particular, his concepts of social settings, behavioral and programmatic regularities, and the universe of alternatives—also serve as the foundation for an action science of social settings. Questions regarding theory, measurement, intervention, and research design and data analysis are central to the development of this action science, and there have been recent innovations in each of these areas. However, future challenges remain for the field. We must continue to move forward to advance an action science of social settings and make a real difference in people's lives.

Keywords Social settings · Social regularities · Intervention · Measurement · Action science

Seymour Sarason: A Brief Tribute

Receiving the Sarason Award was bittersweet for me. I am both humbled and honored by an award bearing Seymour Sarason's name, but extremely saddened by Seymour's death in January 2010. Seymour's keen intellect and wisdom influenced generations of policymakers, practitioners, and scholars in education, psychology, and many other fields. "See More with Seymour," Julian Rappaport's (1980) title for his review of *The Challenge of the Resource Exchange Network,* poignantly captures this. Indeed, Seymour's insights have been revolutionary!

For those of us who had the great fortune of interacting with him face-to-face, even if those meetings were few or far between, Seymour Sarason had a profound impact. He had an uncanny ability to know exactly where you were in your life and career, and what you needed, be it support or intellectual goading, to enhance your well-being, develop your intellect, or stimulate your actions for social betterment. While his shoes as an intellect and mensch can never be filled, we would all do well to aspire to follow his example.

A Roadmap for an Emerging Action Science of Social Settings

In this article, I present four sets of questions central to an action science of social settings: theory, measurement, intervention, and research design and data analysis. Next, I take the reader through a brief journey of the development and formation of my scholarly interests in an action science of social settings. In that process, I underscore the brilliance of Seymour Sarason's concepts in seeding my own ideas and providing the infrastructure for this emerging scholarly pursuit. I explore what we have learned to date and explain the directions in which we need to proceed to advance an action science of social settings. The philosophical and conceptual underpinnings that Sarason's work has provided in conjunction with the research and interventions of other scholars strongly suggest the potential of an action science of social settings to make a real difference in people's lives.

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Four sets of interrelated questions are central to an action science of social settings.

1. *Theory questions*: What is a social setting? How does a social setting operate? How do social settings differ from other units of observation, both smaller and larger in scope and complexity?
2. *Measurement questions*: How can we measure the complexity of social setting features and processes, especially with regard to their temporal nature as well as the multiple participants within them and their dynamic interaction? Are classic instruments and methods of measurement up to the challenge? If not, how do they need to differ?
3. *Intervention questions*: Can social settings be intentionally created or altered? Have critical strategies needed to alter social settings been identified? Can changes in social settings lead to improvements in the well-being of the settings' inhabitants? Can we develop a theory of action for social settings? Can policy-level interventions effectively change social settings?
4. *Research design and data analysis questions*: How do design issues differ when social settings, in contrast to individuals, are the unit of assignment and the focus of intervention? How can we analyze these dynamic and complex units of observation?

Formative Experiences

The antecedents in my lifelong fascination with contextual and setting-level phenomena can be traced to my earliest years growing up in South Philly. I recall struggling to comprehend how my family, who to me and those in our extended family were very nurturing, viewed some of their neighbors, all of whom were Jewish, as less worthy than others and expressed considerable venom towards some of these "different" kinds of Jews. As I grew older and my world expanded, the "less worthy" groups, according to my extended family and their friends, included other religious, racial, and ethnic groups. What and where did these beliefs and norms come from? What sustained them? How could these norms become more fair-minded, democratic, and helpful? In essence, how could they be changed? Similarly, my Aunt Fanny lived on and off with me and my parents during my childhood and was my closest adult friend. Yet in the context of my household and the extended family, she was viewed, and sometimes behaved, pathologically. How and why? Could this situation be improved?

By others' accounts, I was viewed, and sometimes behaved, differently in the presence of family, friends (including athletic vs. non-athletic peers), classmates, and the parents of my friends. This was not my self-conception. How could this be? How did the composition, practices, dynamic processes, and cultural norms of each of these settings as well as the larger societal context affect my behavior and/or its perception?

Not surprisingly, these fascinations and questions led me to pursue a career in clinical psychology, and psychotherapy in particular. In graduate school, I quickly gravitated to the interpersonal theory of Harry Stack Sullivan (1938), which focused on the interactions between people, not individuals in a vacuum. My earliest research focused on the processes that ensued when different kinds of therapists and clients interacted (e.g., Seidman 1971). This research was then used to match therapists and patients in an effort to optimize the likelihood of positive outcomes (Berzins et al. 1970).

My early work led me to explore family therapy approaches. Families, even with a therapist in the room, are more naturalistic settings than the therapist-client dyad. With the therapist contributing far less variance to the situation, one can better observe and understand the dynamic processes and outcomes. Family system therapists (e.g., Watzlawick et al. 1967) had a wide repertoire of theories and techniques, some of which addressed the composition of those in the therapeutic setting. These theories underscored the role of family dynamics as a mechanism to change outcomes of both the "identified patient" and the family.

Families represent a social setting in which youth experience much of their daily lives. Especially with poor families and children, I realized that it is imperative to look beyond the boundaries of the family to the interconnections with other settings (e.g., classrooms, peer groups, parental workplaces) and systems (e.g., social services, housing policies) to fully understand family and adolescent experiences. An in-depth understanding of the operation of these settings and systems is an essential prelude to implementing improvement strategies (Bronfenbrenner 1979).

My initial experiences with family systems provoked my transformation from clinical psychologist to community psychologist. This transformation was also jumpstarted by my lifelong friendship with Julian Rappaport, first on the high school football field, later as a co-director of intramural athletics at Penn State University, and even later as a colleague at the University of Illinois at Urbana-Champaign. While at Illinois, I was introduced to the writings of Seymour Sarason and my identity as a community psychologist was complete. Two of his books—*The Creation of Settings and the Future Societies* (Sarason 1972) and *The Culture of the School and the Problem of Change* (Sarason 1971/1982)—had a profound impact on

my thinking and many of the concepts they contain have resurfaced throughout my career. More to the point, they represent the foci of this article.

In *The Culture of the School and the Problem of Change* (1971/1982), Sarason's goal was to understand the classic French proverb "Plus ça change, plus c'est la même chose." To accomplish this Sarason invoked a "being" from outer space—incapable of understanding written or oral language—observing all the happenings of a school. Sarason zoomed in with an incisive and compelling description of "programmatic and behavioral regularities" of the classrooms and school as well as the concept of the "universe of alternatives."

A classic programmatic regularity observed by the being is the 5–2 pattern: the school building is abuzz with people 5 days a week and vacant the other 2. Another is standard mathematics instruction—every day from first grade through high school graduation the child receives drill and instruction in the use and understanding of numbers. A common behavioral regularity in classrooms is illustrated by the preponderance of teacher, in contrast to student, asking questions. The behavioral regularities have been conditioned by the programmatic regularities. According to Sarason (1971/1982, p. 64), the existence of programmatic and behavioral regularities should force us "to ask two questions: What is the rationale for the regularity? And what is the universe of alternatives that could be considered?" What follows from the first question is the questioning of whether this regularity is best for children's growth and development, and from the second is whether other regularities can more effectively enhance growth and development? Often the existing regularities "have little or nothing to do with the intended objectives" (p. 64).

The Creation of Settings and the Future Societies (Sarason 1972), published 1 year after *The Culture of the School and the Problem of Change*, made the critical nature of settings come alive for me. At the heart of Sarason's definition of settings is the phrase, "relationships over a sustained period of time to achieve certain goals" (p. 1). A relationship between two people, such as a marriage, is the smallest setting. At the larger end of the spectrum, his definition included revolution. In a footnote, Sarason indicated that he saw words like program, organization, and institution as interchangeable with setting, which was not circumscribed to a physical location.

In these and other volumes, Sarason made clear the influence of John Dewey on his own thinking. Dewey argued that theory and practice are completely interdependent or, alternatively, knowledge and action are inextricably intertwined. He also advanced the concept of transactionalism as well as the ideas that in classrooms, the child is guided by the teacher through opportunities to "do" or carry-out tasks, and for them to "own" the task, and participatory democracy in a community context is critical to giving voice to its participants. Seymour's work directed me to Dewey's scholarship and I, too, became a Dewey junkie.

Many of Seymour's writings were congruent with the family system theorists, particularly those from the Palo Alto Communication group. For example, Watzlawick et al. (1974) explanation of first- and second-order change were very similar to Seymour's ideas, although they came from a therapeutic setting. First-order change referred to the regularity that maintained the status quo of the family. Second-order change implied exploring the universe of alternative regularities in an effort to employ different strategies and tactics of intervention to alter the status quo.

As a novice community psychologist, my work was also influenced by George Fairweather (1972), who asserted that to create social change it was imperative to alter the regularities of role relationships, such as those between human service provider and client or student and teacher. Fairweather (1972) advocated achieving these goals through rigorous research or what he referred to as "experimental social innovation." Joining the ideas of Sarason and Fairweather might seem unusual, but many of Seymour's students have done just that.

This prior body of thought and action unfolded in my early work as a community psychologist in collaboration with Julian Rappaport and is best exemplified in our work on the "Educational Pyramid" (Seidman and Rappaport 1974). Here, we simultaneously conducted four experimental social innovations. One program took place in high poverty schools with first- and second-grade children who had been identified as at risk for academic and/or behavioral problems, while the others were conducted with juveniles in legal jeopardy, revolving door adult mental patients, and elderly patients in a nursing home. Across all four projects, the change agents—college student mentors—were trained and supervised to pursue similar objectives and employ similar assessment methods and strategies and tactics of change. Although the change agents were assigned to individual clients in each of the projects, their goal was to assess the nature and quality of client's interactions with the natural environment. For example, in the school project the focus of assessment was the relationship between a target child and classmates and teachers. For the juveniles in legal jeopardy assessment focused not only on these in-school transactions, but also included family, out-of-school-peers, work, and justice system interactions.

In each project, the aim was to alter the pattern of transactions, regularities, or practices that seemed to be associated with negative outcomes or to amplify those regularities that were associated with more productive outcomes. We believed that the best way to change the

target individuals was to alter the pattern of transactions or routines they were engaged in with others in their daily lives. This required a serious effort at exploring the universe of possible alternatives. That is, one had to step outside the box (or observe from Sarason's hovering space craft) to see what was going on and try to creatively alter it. In retrospect, many of these solutions were quite simple; for example, teaching a 6-year old social isolate how to do magic tricks which made her the node in the network of classmates.

Through this work, we grasped the importance of regularities in practice, though we had not yet labeled them as such. The "universe of alternatives" concept was there. Though coming out of our individually oriented clinical psychology training, we were still looking outward from the target individual. We didn't fully understand the need to "hover above" and look objectively at the entire setting. We were far removed from measuring the social regularities of the setting.

Several years later, again with Julian Rappaport and many excellent young students (now colleagues), I became intrigued by an organization called GROW. This grassroots organization's purpose was to create unique settings for people with mental health problems (e.g., Rappaport et al. 1985). We became collaborators and participant-observers, expanding beyond our earlier proclivities for experimental social innovation. We tried an array of novel measurement approaches to capture the phenomena of interest. GROW created micro-settings, or weekly group meetings. The leaders were keenly aware of the key strategies required to make these settings effective for their clients. They were concerned with the group's composition, in terms of the balance of clients on their "way up" and "way down," as well as professionals, activities, and practices. GROW integrated these weekly group meetings into a system of related activities and settings, facilitating and supporting the growth of its members.

Taken together, this set of ideas played a critical role in directing my subsequent research, specifically the Adolescent Pathways Project, on which I collaborated with Larry Aber, LaRue Allen, and Christina Mitchell when I moved to New York[1] (Seidman 1991). One of my primary interests in this project focused on the role of risky transitions from elementary to middle grade schools for low-income urban youth (Seidman et al. 1994). This risky transition represents a disruption in the regularities that youth experience in elementary school, where they interact with one primary teacher and the same set of classmates all day. In a middle grades school, youth experience a changing cast of teachers and classmates each period, often in a much larger and intimidating environment in which they are the youngest students. These risky situations and transitions (Price 1980), and accompanying regularities, can serve as a powerful focus for preventive interventions (Seidman et al. 2004).

Steps Toward an Action Science of Social Settings

For many years, I struggled to articulate concepts to explain the phenomena I encountered in my work. I knew that studying settings—rather than individuals—made sense. Doing so contextualizes the individual into a social setting nested within, and affected by, other settings and systems (Bronfenbrenner 1979). This contextualization reduces the likelihood of analyses, interventions, and policies that "blame the victim" (Ryan 1971). It also minimizes the possibility of iatrogenic effects of individual interventions, when the act of being treated can create more (unintended) problems than it solves. Focusing on the setting or system as the locus of change opens up a wealth of different interventions from the universe of alternatives.

Developing concrete concepts for setting- and system-level research focused on creating positive change was the goal of my Fulbright-Hays Senior Research Scholar Award in 1977–1978. While I was not successful in accomplishing these goals, I did develop an epistemological foundation that has helped guide my subsequent thinking (Seidman 1978). Shortly thereafter, Julian Rappaport and I declined individual invitations to speak in the public lecture series "Community and Social Change" at the University of Michigan. Instead, we proposed a dialogue, "The Search for Alternative Social Change Conceptions, Methods, and Interventions" (Rappaport and Seidman 1979). We began, in rudimentary form, an exploration of setting- and system-level conceptualizations and their implications for measurement and intervention.

Eight years later, I returned to the work of developing social setting concepts and frameworks to guide my research and intervention work. In my Presidential Address to the Society of Community Research and Action in 1987, I echoed Sarason's explanation of the concept of behavioral regularities. I described social regularities as the "pattern of social relations, connections, or linkage(s) between people" (Seidman 1988). Replacing "behavioral" with "social" was fundamental because I was no longer discussing the behavior of an individual. Instead, I was examining the relations that occur between people or larger units of social organization. I asserted that you cannot capture social regularities with a single, static measure (Seidman 1990). The

[1] Once again, Seymour's not so invisible hand was working its magic. I called Seymour to ask him what he knew about an advertised position at Bank Street College. At the end of the conversation, he suggested I send him my CV and that he would send it to them with a cover letter. Within 24 hours of their receipt of his letter, they called me and asked me to come for a visit as soon as possible.

salient meaning of a social regularity—in terms of influence and potency—is carried in patterns across time, as in a movie as opposed to a snapshot. Also, I believe social regularities include programmatic regularities. To change a setting, the social regularity or status quo must be changed; this represents the critical target of change in social interventions.

I then called for community psychology to fully embrace an identity as an "action science." Argyris et al. (1985)—all of whom have backgrounds in the field of organizational behavior—set out the central objective for an action science based on the earlier insights of Kurt Lewin (1951). They proposed that an action science generates and tests propositions concerning both the variables embedded in the status quo and those involved in changing it. Not surprisingly, an action science of social settings needs to generate and test hypotheses to understand how a social setting works, how a particular status quo functions, and how the strategies involved in changing the social regularities and setting operate. Too often, social settings are thought of as static entities.

Understanding, Measuring, and Improving Social Settings

Theory

In 2004, I took a leave of absence from New York University to head the program department at the William T. Grant Foundation. There, Robert Granger (a former colleague at Bank Street College) and I worked to further develop a research mission. The stated goal of this research was to increase our understanding of the contexts and daily experiences of youth in order to change them for the better.

Through discussions with Bob Granger and support from colleagues Thomas Weisner, Brian Wilcox, and Rebecca Maynard at the Foundation, Vivian Tseng and I described a framework for understanding and improving the functioning of social settings (Seidman and Tseng 2011; Tseng and Seidman 2007). We started with the basics: What is a social setting and how does it operate? How do social settings differ from other units of observation, both smaller and larger, in scope and complexity? Several groups of scholars have offered frameworks to define and describe what goes on inside the black box of social settings (Cohen et al. 2003; Glisson 2002; Pianta 2006). In crafting our framework, we drew heavily upon the concepts of Sarason as well as those from dynamic systems theory (Buckley 1968; Kelly et al. 2000; Maruyama 1963; von Bertalanffy 1957), transactional and regulatory models (Altman and Rogoff 1987; Sameroff and Chandler 1975), small groups such as organizational settings (Rappaport 1977; Watzlawick et al. 1974), as well as the literature on activity settings based on Vygotsky's ideas (Gallimore et al. 1993; O'Donnell et al. 1993).

While each of these frameworks is different, they all delve into the meaning and operation of social settings. We conceptualize social settings as systems that consist of three major aspects: social processes (i.e., patterns of transactions between two or more groups of people, including norms and practices); resources (i.e., human, economic, physical, and temporal resources); and the composition, organization, or allocation of those resources (i.e., how resources are arranged and allocated) (Seidman and Tseng 2011; Tseng and Seidman 2007). The latter two aspects are both structural features of settings. We postulate that these all three setting elements are in dynamic transaction with one other.

Social Regularities

Each of the three setting features is essential. However, I begin by focusing on social processes, specifically social regularities. These social processes are the central ways through which people experience settings, and as such they are a major focus of our framework. There are numerous ongoing social processes in any setting, but the most salient are those patterned social processes that across time determine setting- and individual-level outcomes. I refer to these processes as the social regularities in the manner previously discussed; they represent the equilibrium or status quo. These social regularities are the key to improving both setting- and individual-level outcomes.

Conceptually, social regularities are manifested through norms, interactional patterns, routines and practices, and social networks, each of which can mutually influence the others. For example, setting scripts or norms influence practices and vice versa. Norms reflect transactions between youth's beliefs and behaviors and those of others in the setting. They tap setting culture in terms of setting-level behavioral scripts, acceptability of aggressive behavior, or expectations of success. Norms and expectations are reinforced over time and by other interconnected settings and larger social-ecological forces (Weinstein 2002). These constructs provide a potential window into understanding social regularities and thus, are possible targets for intervention.

Not surprisingly, Sarason (1971/1982) underscored the importance of what he saw as the critical regularities—behavioral and programmatic regularities, which I subsequently reframed and relabeled as social regularities (Seidman 1988). This follows developmental scholars who argue that proximal processes (i.e., interactions between people and their immediate environments) are the primary mechanisms influencing human development

(Bronfenbrenner 1979) and education scholars who assert that to trigger significant change beyond setting resources we must alter social regularities, such as instruction and role relationships (Fullan 2001; Cohen et al. 2003; Pianta 2006). Fairweather (1972) stated that role relationships must be prioritized if social change is to be achieved.

Structural Features: Resources and Their Organization

Resources and their organization are two salient sets of structural features that condition or influence social processes. However, these structural features alone are not sufficient to create change in social regularities (Tseng and Seidman 2007).

Resources can take many forms—human, social, physical, economic, and temporal. (In other disciplines, such resources are often referred to as "capital.") For example, in educational settings, human resources refer to students, teachers, and other personnel who inhabit the setting and their characteristics—education, training, skills, cultural values, and beliefs. Social resources refer to people outside the setting that members of the setting can draw on, such as social networks. Physical resources are the availability and quality of curricular materials, technology, space, facilities, and buildings. However, the best curricula or nicest space is only important to the degree that it can be used effectively. Economic resources refer to financial expenses such as per pupil expenditure or staff salaries. Temporal resources are the amount of available time, such as the length of school days.

The composition or organization of resources refers to the ways in which people, space, and time are arranged and money is allocated in a setting. The organization or composition of resources may be more relevant to conditioning setting members' daily social processes than the resources. Social organization refers to how people are grouped in a setting (e.g., single-sex versus co-ed schools, tracked versus mixed-ability classrooms). Organization of time refers to how time is scheduled (e.g., block arrangements), while organizations of physical resources is the arrangement of resources in a classroom (such as desks in rows versus in a circle).

The initial focus of setting-level change and the strategies of intervention employed differ for practitioners and policy-makers (Seidman and Tseng 2011). Practitioner-oriented interventionists are often drawn toward directly changing social regularities (e.g., changing relationships between teachers and students, teacher practices, classroom and school norms) or doing so indirectly by altering the organization of resources in order to effect change in these social regularities. However, policy-makers, public administrators, lawyers, and economists view resources (e.g., per pupil spending) and their arrangement or organization (i.e., financial incentive structures) as more tangible and modifiable targets of change. The expectation is that these regulatory strategies will precipitate changes in the social regularities as well.

Measurement: The Assessment (and Analysis) of Social Regularities

Given that we have a reasonable conceptual framework for understanding social settings and social regularities, the first element demanded by an action science of social settings is the development of reliable and valid measurement tools. Fortunately, toward the close of the twenty-first century there were a series of developments about levels of analysis that set the stage for recent innovations in the measurement of social processes.

Scholars from organizational sciences, community psychology, sociology, and other disciplines have described the lack of fit between data collected from individuals and extra-individual units or levels of analysis (Raudenbush and Sampson 1999; Rousseau 1985; Shinn 1990). More specifically, psychological assessment methods (psychometrics) do not always match the demands of ecological conceptualizations and questions that are embedded in a multiple levels of analysis framework. Raudenbush and Sampson (1999), in particular, called for the development of ecological assessment or an "ecometrics" that goes beyond psychometrics to match the multi-level conceptualization. As a complex multi-level unit of observation, social settings are dependent on the development of both ecometrics and corresponding data analytic methods.

Without rich conceptualizations and measures of social regularities, we risk losing valuable opportunities to understand what needs to happen in settings in order to achieve impacts on individuals. Recall that it is these daily experiences or regularities in a setting that have the most impact on inhabitants' well being. So, how can we assess these social regularities?

To date, the William T. Grant Foundation has funded, at least in part, three promising methods for the measurement of social regularities—behavioral observations of interactions and practices, self-reports of setting norms, and social networks. Each method holds considerable promise. Yet, new analytic challenges have surfaced in the development of each. What follows is a description of the evolution of each of these methods, the analytic challenges they have presented, and the progress made.

Observations of Interactions and Practices

One promising example in ecometrics is an instrument that assesses classroom social regularities. The Classroom Assessment Scoring System (CLASS)—which was created

by Hamre, Pianta and colleagues—measures the quality of teacher-student interactions in the classroom, rather than the behavior of the teacher or student alone (Hamre and Pianta 2010; Pianta and Hamre 2009). Much of the conceptual underpinnings of the CLASS were drawn from the literature on family processes. Behavioral observations are focused on rating teacher-student interactions in 10 dimensions with well-defined behavioral anchors that constitute three higher-order latent constructs: emotional support, instructional support, and classroom organization. Emotional support consists of ratings of positive climate, negative climate, teacher sensitivity, and regard for student perspectives. Instructional support includes ratings on concept development, quality of feedback, and language modeling. Classroom organization covers ratings of behavior management, productivity, and instructional learning formats. Over time, the emerging patterns of these three constructs constitute the key social regularities of classrooms.

This CLASS three construct model has been replicated across 4,341 preschool to sixth-grade classrooms in rural, suburban, and urban environments, including both public and private schools with diverse student bodies. (Hamre et al. 2011). Statistically, a single factor model of classroom quality also matched the data well, but the hypothesized three factor model demonstrated a superior fit.

A version of this observational instrument, known as the CLASS-S, has been extended to secondary schools (Pianta et al. 2008). In a study of 643 students nested in 37 secondary school classrooms, Allen et al. (2011a) found that the CLASS-S predicted relative gains in student standardized achievement after accounting for test performance of the previous year.

The William T. Grant Foundation is funding several studies using the CLASS or CLASS-S to measure classroom social processes. In workshops with our grantees, it became clear that reliability calculations need to be based on more complex models than those of standard techniques, such as alpha and kappa formulas. Different raters were making observations at different times. These and other factors represented potential sources of error. We began to question how many raters were needed, how frequently they needed to be employed, and at what intervals of a lesson, day, or week. Furthermore, we wanted to understand how this information could be used to design cost-effective decision studies. These complex issues led Stephen Raudenbush, Howard Bloom, and their colleagues to use generalizability-theory methods (Cronbach et al. 1972) to assess the reliability of measures of setting level processes.

Raudenbush et al. (2010) developed a six-step paradigm that enables investigators to plan their assessments to maximize reliability and minimize resource costs. They demonstrate how a generalizability or G-study can inform planning decisions regarding assessment in a decision or D-study. Ultimately, this helps clarify the requirements to detect an effect in a randomized cluster trial. In each particular case, both theoretical and observational models (including main effects and interactions) must be specified. In most cases, these will not be aligned with the "identifying assumptions" and will need to be articulated. The data need to be analyzed under each of these assumptions before conducting sensitivity analyses. In the final D-study phase, one determines the possible sources of bias and attempt to minimize them and maximize the power of detecting a treatment effect in the design of the study.

In fact, several Foundation grantees have conducted such extended G-studies to: (a) increase reliability, (b) improve the design and power of their setting-level impact studies, and (c) optimize the deployment and use of their resources. This includes studies of quality of classroom social climate (Mashburn et al. 2011, under review) and the quality of mathematics instructional resources (Charalambous et al. 2010), among others. In the study of classroom climate, the investigators used videotapes of language arts classroom lessons to code the CLASS. In the G-study, they estimated the different sources of variance. Next, they used these variance estimates in a D-study to identify observation procedures, within practical and budgetary constraints, to improve the reliability of the CLASS and increase the statistical power to detect setting-level intervention effects.

Norms

Behavioral observations are used to assess patterns over time, assessing social norms requires using aggregate global self-reports from setting members. While norms about social climate and other constructs have always been viewed as a setting measure, the nature of their aggregation assumes that the mean or average accurately represents the setting. This assumption needs to be tested.

Chan (1998) has emphasized the importance of variability when assessing setting norms. He argues that within-group consensus should be a precondition for aggregation. Specifically, within-setting variability itself can be used as a setting-level measure derived from individual level reports. Henry et al. (2004) found that both the degree of consensus and the range of acceptable behaviors within classrooms predicted aggressive behavior in a study of rural, urban, and suburban classrooms. Most recently, Henry and Chan (2010) examined the role of norms for non-violence in middle schools in four states. Examining two entering middle school cohorts, consensus and range of acceptable behavior measures predicted aggression both cross-sectionally and 1 year later, and accounted for

substantial variance in excess of that explained by the mean of individual perceptions of norms.

Using consensus measures, Glisson (2002, 2007) developed a self-report instrument to tap higher-order constructs of organizational climate and culture in mental health and child welfare clinics. Here, organizational climate refers to employees of the same setting sharing similar perceptions regarding: (a) engagement, which is the ability to personally accomplish worthwhile things and remain personally involved and concerned with their clients; (b) functioning, defined as the receipt of needed help from co-workers and administrators, and having a clear understanding of how they fit in and can work successfully in the organization; and (c) stress, or emotional exhaustion, overload, and inability to get necessary things done at work. In contrast, organizational culture governs the way things are done. It can be characterized by: (a) rigidity, or having little discretion or flexibility, limited input into key management decisions, and a host of bureaucratic rules and regulations; and (b) proficiency, which involves placing the well-being of each client first and being competent and up-to-date in knowledge; and (c) resistance, which is characterized by showing little interest in change or new ways of providing service, and suppressing change efforts. Studies of representative national samples of child welfare agencies and mental health clinics have linked this consensus measure of organizational climate to child outcomes (Glisson 2010) and staff turnover (Glisson et al. 2006), respectively.

Social Networks

Assessing social networks is another way of evaluating social regularities. Gest et al. (2011) highlight the relevance of social networks to interventions aimed at reorganizing relationships among actors and norms in schools and other settings. They define networks as "the patterning of social ties among members of the network, without reference to individual member characteristics (e.g., attitudes or behaviors)." Using friendship ties, they describe three aggregated measures—density, reciprocity, and transitivity. Density is the proportion of possible ties. Reciprocity is the proportion of all peer nominations that are reciprocated by that peer. Transitivity is the extent to which friends of friends are named as friends. In sum, there are a rich set of setting-level, and in particular social regularity, constructs that have been operationalized and are available for use in research and practice. Feinberg et al. (2010) hypothesized that the reduction in rates of adolescent substance abuse in the experimental relative to the control conditions in a large-scale, community-based universal prevention program (Redmond et al. 2009) would be associated with change in the influence potential of antisocial relative to prosocial youth in the peer network. Reports of youths' best and other close friends revealed this increase in influential positions for prosocial youth in the experimental communities.

Social Setting Interventions: Exemplary Experiments

Several innovative social setting experiments, using the previously described framework as a guide, are attempting to create or alter important social regularities. The experiments take place in college classrooms; elementary and high school classrooms and schools; after-school settings; and mental health-servicing youth agencies.

Intergroup Dialogues

The first major intervention project funded after I began my work at the William T. Grant Foundation in 2004 enabled me to circle back to my earliest childhood concerns with misunderstanding and conflict across different racial and ethnic groups. Patricia Gurin and her colleagues (e.g., Nagada et al. (2009) were creating innovative settings on university campuses around the country, known as *Intergroup Dialogues,* to foster meaningful communication between social identity groups. The groups were established in accordance with two conditions—composition of the group (i.e., equal numbers of "two different social identity groups that share a history of contentious relationships with each other or have lacked opportunities to talk to each other in meaningful ways," p. 46) and prescribed pedagogical practices.

The study included 52 social experiments at 9 universities across the country. Student applicants were randomly assigned to an Intergroup Dialogue or a wait-list condition. Compared to the wait-list control condition, students in the experimental condition became increasingly critical of inequality and had a stronger post-college commitment to action. Change in these two outcomes was significantly related to the experienced communication processes in the groups, such as engaging self, appreciating difference, critical reflection, and alliance-building. Here we observe how the conditions and practices of a created setting overcome the age-old problem of group misunderstanding and conflict. Currently, this team of investigators is analyzing the actual content of the group interactions. This should help us to understand if the intentional group composition and the pedagogical practices actually changed the dynamic transactions within the Intergroup Dialogues, and ultimately, whether they are related to individual-level outcomes.

The 4Rs Program

One school-based exemplar of a change at the setting-level is the 4Rs Program (Reading, Writing, Respect, & Resolution), which was developed by Morningside Center for Teaching Social Responsibility, a practitioner organization. The program consists of school-wide implementation of three interwoven strategies: (1) a social-emotional learning and literacy curriculum, (2) training and technical assistance to teachers, and (3) ongoing coaching/mentoring for teachers and staff. The direct targets of these intervention strategies are teacher practices, teacher-student interactions, and classroom norms. The norms, in turn, are hypothesized to impact classroom and school climate and individual student's cognitive and social-emotional competencies. The continual coaching and mentoring is a key intervention component that distinguishes this intervention from other popular curricular- or inoculation-based programs that include teacher training. The 4Rs program is responsive to teachers working under demanding, often chaotic conditions and in environments that lack economic and social resources. It fulfills teachers' genuine needs for regular one-on-one support and instruction.

Brown et al. (2010) evaluated the impact of 4Rs school-wide intervention program in a three-year cluster randomized trial in 18 matched, low-income, urban public elementary schools. After the first year, they examined the quality of 82 third grade classrooms, nested within experimental and control schools. The classrooms in the experimental schools showed significantly higher ratings in overall quality of teacher-student interactions on the CLASS, which was primarily attributable to the instructional and emotional support dimensions. After 2 years of program implementation, students in the intervention schools self-reported improvements in hostile attributional bias, aggressive interpersonal negotiation strategies, and depression, and teacher reports of attention skills, and aggressive and socially competent behavior among students (Jones et al. 2011). Moreover, changes in individual level academic outcomes, including teacher-reported academic skills and standardized reading and math achievement scores were moderated by students' baseline levels of behavioral risk, such that youth at highest risk made the largest positive gains in developmental outcomes. In short, 4Rs achieved both setting- and individual-level changes. The investigators are now pursuing how to determine whether setting-level change causally mediates change in student developmental outcomes.

The RULER

Brackett et al. (2009) developed a series of social and emotional learning programs based on the key role of emotions in attention, memory and learning, decision-making, and social behavior. This program teaches five key emotional literacy skills: recognizing, understanding, labeling, expressing, and regulating emotions (RULER) to both students and the adults involved in their education. Underlying the RULER is the assumption that educators must learn to practice and model emotional literacy skills in order to teach them. The researchers hypothesized that emotional literacy training is critical to teachers' ability to create engaging classrooms. In addition to the student-level emotional literacy curriculum, teacher-training intervention strategies were developed and implemented to provide coaching support for individual teachers. The investigators hypothesized that the RULER should change the nature of teacher-student interactions in terms of the emotional climate of the classroom so that children become emotionally engaged in learning and experience better cognitive and socio-emotional outcomes. In a way different from 4Rs, the RULER also addresses teachers' needs for regular one-on-one support and instruction.

The field experiment took place in 62 urban parochial elementary schools (Rivers et al. 2011, under review). The schools were randomly divided into pairs and then each pair was randomly assigned to the RULER condition or treatment-as-usual. This experiment was also school-wide, though the analyses are based on the 5th and 6th grade teachers and classrooms that were nested within the experimental and control schools. Following a full academic year of intervention, analyses revealed that classrooms in the experimental schools had significantly higher supportive emotional climates than the control classrooms, as measured by the latent factor of emotional support on the CLASS. Of the four first-order dimensions of emotional support, the effect was accounted for primarily by changes in positive climate and regard for student perspectives. Consistent with these objective ratings, teachers reported increased use of emotion-focused interactions and cooperative learning strategies. Thus, similar to the 4Rs, the RULER approach was successful in altering key aspects of classroom settings. The investigators hope to determine if these positive changes in the emotional climate of the classroom translate into student-level improvements in emotional literacy, peer relationships, and academic performance.

My Teaching Partner

The My Teaching Partner-S (MTP-S) intervention is targeted toward altering the quality of secondary school classrooms (Allen and Pianta 2010). MTP is designed to support and coach teachers and give feedback on their classroom performance. Formally, MTP-S consists of five major phases carried out using a web-based platform; these

five phases are repeated every 2 weeks across the academic year. In first phase, the teacher video records 40 min of his/her instruction and electronically sends it to the MTP-S coach or consultant. Next, the consultant reviews and edits the video, and identifies at least one positive aspect of the teachers' performance, and tries to help the teacher improve their self-observation and reflection by directing them to different clips on the website. During the third phase, the teacher reviews these materials and responds to the consultant. Next, the consultant and teacher have a telephone conference to discuss the teacher's relationships with students and their teaching practice, and to create an action plan for the next cycle. In the fifth phase, the consultant summarizes the major conference topics and e-mails a summary and action plan. MTP-S is innovative because it uses an efficient web-based platform that allows master and novice teachers to work together in a supportive and practical manner.

In contrast to the school-wide interventions of 4Rs and the RULER, MTP-S is a randomized cluster trial of secondary school classrooms or teachers (N = 88). Analyses of the data after a year of the program revealed significant changes in observed, but not self-reported positive peer interactions (Mikami et al. in press). In addition, there were also significant differences in observed behavioral engagement of students where indirect effects of CLASS-S dimensions of Instructional Learning Formats and Analysis and Problem-Solving were manifested (Gregory et al. 2011, under review). However, at the end of the first year there was a promising, but not significant effect of the intervention on student academic progress. Interestingly, while Allen et al. (2011b) did not detect a significant change in achievement at the end of the first year between experimental and control students, they did detect a significant and meaningful change in achievement in the spring of the second year of follow-up. There was also a significant indirect effect of overall quality of observed teacher-student interaction in accounting for student achievement, as measured by the CLASS-S. The investigators suggest that the success of the intervention on change in student behavioral engagement at 1 year and in achievement after 2 years of intervention is suggestive of mediation by teaching strategies and the overall quality of teacher-student interaction, respectively. While these two indirect effects are suggestive of mediation, mediation has yet to be causally demonstrated.

YPQI

Smith and Akiva (2008) were interested in facilitating the continuous improvement of quality in after-school settings. They first developed the Youth Program Quality Assessment (YPQA) to assess four aspects of the quality of after-school activity settings. These included physical and emotional safety, supportive environment (e.g., encouragement, skill building), interaction (e.g., small groups, partnered with adults), and engagement (e.g., make choices, reflect). Conceptually, these four qualities are hierarchically organized in terms of both their difficulty of attainment and overall importance. Next, they developed the Youth Program Quality Intervention (YPQI), which consists of training after-school site managers to use the YPQA as both an assessment device and to provide continual feedback from the instrument to modify staff instructional practices. Coaches provided "light" technical assistance to site managers to foster continuous improvement of their work. While feedback has been an important part of the three previous school-based interventions, in the YPQI it is the central element and support via coaching appears to be of secondary importance.

Using a randomized cluster design, Smith et al. (2009) assigned 87 after-school programs within each of five distinct networks (and across four states) to YPQI or a treatment-as-usual condition. Experimental versus control condition site managers engaged in more continuous improvement, and correspondingly, in those after-school settings, staff implemented more high-quality instructional practices. The social regularities of the settings were successfully altered.

ARC

We turn from educational to human service settings. Glisson et al. (2006) developed an intervention model—called ARC (Availability, Responsiveness and Quality)—to alter the organizational cultures and climates in youth service agencies. ARC has three major components: (a) the provision of organizational tools to identify and address service barriers (e.g., teamwork, goal setting, and feedback systems), (b) the introduction of effective service systems (e.g., mission-driven, results-oriented, and participation-based), and (c) the development of service provider behavior and attitudes to support service improvements (e.g., flexibility, openness, engagement).

These components are expected to simultaneously and reciprocally impact organizational social context and service provider behavior. In turn, this should influence organizational climate and culture, as well as staff turnover and absenteeism. The overarching goal of ARC is to foster the development of a continuous learning organization. ARC creates Organizational Action Teams (OATs), whose role in coaching and engagement of front-line staff is an integral part of the intervention model. Feedback is also a critical component.

Glisson et al. (2010) reported the results of a randomized cluster trial of ARC in 28 community-based mental

health clinics. After 18 months of intervention, the treatment settings showed significant improvements in work attitudes (i.e., increased morale, job satisfaction and organizational commitment), organizational culture (i.e., decreased role conflict and increased personalization, functionality, and growth and advancement), and climate (i.e., decreased rigidity, centralization, and apathy). In future analyses, the team will examine ARC's impact on youth outcomes and whether the setting-level changes might mediate youth-level outcomes, as hypothesized.

Research Design and Data Analysis

Research design and data analysis are inextricably intertwined and setting-level experiments raise even more complex issues and challenges about this relationship than do individual-level experiments. The calculation of power is not straightforward since in setting-level experiments, there are often several levels of nesting. Here, the work of Raudenbush and Bloom and colleagues in developing Optimal Design software, and its continual refinements, has been a boon to researchers (Bloom 2005; Bloom et al. 2007; Raudenbush 1997; Raudenbush et al. 2007). In the past, it was not uncommon for a randomized cluster trial to assign only a few schools (often 10 or so) to experimental and control conditions. The solution, however, is not to simply increase the number of individuals. Many factors influence statistical power and the precision of an impact estimate. For example, the number of levels and the nature of nesting (as students are both nested within classrooms and nested within schools), the unit of random assignment (e.g., classrooms or schools), the proportion of variation attributable to between versus within cluster factors (statistically referred to as rho or intraclass correlation coefficient {ICC}), salient covariates, and the conditions under which matching may be beneficial or harmful are all important considerations. Using the advanced versions of Optimal Design to plan for the design of randomized cluster trials was central to all the setting-level experiments discussed above. Work is also increasing on how to estimate reasonable effect sizes in different outcome domains (e.g., Jacob et al. 2010). This will provide further guidelines for investigators in planning their studies.

Lessons Learned, Future Challenges, and Conundrums

Theory

What is a social setting and how does it operate? Social settings can be studied and promising advances are occurring. Several groups of scholars have offered frameworks to describe what goes on inside the "black box" of social settings (Cohen et al. 2003; Glisson 2002; Pianta 2006; Tseng and Seidman 2007). Although these frameworks vary, they all try to explain the key processes and mechanisms by which social settings operate, and how they are linked to individual-level outcomes. In the context of a social setting framework, neither the unit of observation nor the focus of the intervention is the individual, but a dynamic social setting with resources, allocation of resources, and social regularities. By whatever label, a focus on the social regularities of settings appears central to many of the frameworks. Hopefully, the description of several exemplary intervention projects illustrates the potential utility of proximal social setting conceptualizations. As a set, they provide a common framework for research and intervention, and open up fruitful new areas for further theory development.

A future challenge for us is to understand how social settings work in concert with other levels of observation/analysis, both smaller and larger in scope and complexity. We must also try to understand: (a) the interrelationships among settings; (b) how they are impacted with the larger systems in which they are embedded and influenced by policy and other macro forces; and (c) how phenomena at each of these levels of analysis unfolds over time and impacts other levels. While there are many fruitful conceptualizations of such dynamic, multi-layered ecological systems, few are tied to rigorous research studies.

Cascade theory, used in recent developmental psychopathology research, provides promising future directions for social setting research (e.g., Mastin and Cicchetti 2010). This work, however, is limited by its focus on domains and dimensions of the person and how they cascade and unfold over time within the individual's course of development. Cascade theory could be applied to social settings in multiple ways. Within settings one might wonder how norms affect teacher-student interactions or peer social networks and how these constructs cascade over time. How do changing social regularities affect the course of the regularity over time and individual outcomes, both for the student and the teacher? Outside the setting, we can ask how the imposition of a policy like No Child Left Behind (NCLB) unfolds to affect how school testing practices impact classroom norms, practices, and routines. Such cascading processes can be transactional, bi-directional, or unidirectional. These are challenging theoretical issues. Their resolution needs to go hand-in-hand with the development of concordant methods for the dynamic measurement and analysis of social setting phenomena.

Measurement

How can we measure the complexity of social setting features and processes, and social regularities in particular,

with satisfactory levels of reliability and construct validity? The challenges are numerous, but it can and has been done. Witness the preceding descriptions of behavioral observations of teacher-student interactions, norms, and social networks. There is a need to explicate other manifestations of social regularities as well as appropriate methods of measurement. Daily diaries are beginning to play such a role in studying family settings. The use of artifacts might be useful. Technological innovations, including the use of cell phones with GPS capabilities may have an important role to play as well.

Classic psychometric assessments are not up to the task of measuring settings and social regularities because the level of measurement does not match the level of the concepts. Ecometrics may be a better solution. Although behavioral observations of interactions, self-reports of norms, and network analyses are not new techniques, ecometrics uses them in different ways to tap social setting constructs. In this vein, the highlighted measurement instruments illustrate the need to extend generalizability to examine observations across raters, time of day, and subject matter. It is possible to measure setting norms while still using self-report measures, but we can no longer naively aggregate these measures unless we can demonstrate reasonable consensus at the setting level.

Since social regularities are patterned processes that emerge over time, we must ask whether we are capable of taking into account dynamic and temporal perspectives for the multiple participants in a setting. The measurement of norms is an effective method of taking multiple perspectives into account, as norm measurement is based on aggregating global judgments that are not time-dependent. Dyadic data analysis techniques suggest ways of using self-reports of multiple setting participants and analytic methods for dealing with both multiple perspectives and temporal data (Kenny et al. 2006). With regard to dynamic social network data, some investigators, mainly in computer science (e.g., Lahiri and Berger-Wolf 2009), have begun to use sub-graphs to capture patterns in social network data that occur with a natural periodicity. Marchov chain analysis may be a powerful way of examining interactional data. Studying emergent patterns of social regularities, with multiple participants, is in need of further exploration and development.

While the measurement of social setting features and processes is clearly possible, it often requires considerable resources. We must develop and create not only reliable and valid instruments, but cost-effective instruments that can be used by practitioners as well as researchers. For example, it may be more costly to do live behavioral observational studies than videotaped studies, which can be efficiently rated later in the lab. We have already witnessed the beginning of this. Can we further develop less costly individual reports of social processes that are validated against these behavioral observations? Several research teams have begun to take up this challenge. We must find ways to balance the trade-off between reliability and validity. The quest for high reliability can often obscure more important issues of validity while increasing costs exponentially.

Intensive qualitative measurement studies have an important role to play in advancing measurement and our understanding of social regularities. These studies seem especially suited to the close examination of what goes on inside the "black box" of the setting in terms of practices, routines, interactions, and norms. It would be fruitful to embed such qualitative studies in large-scale cluster randomized trials. For example, as part of the 4Rs program, LaRusso et al. (2009) used student maps, observations, and focus groups in a mixed-methods study to examine the social climate of these non-instructional micro-contexts beyond the classroom (i.e., lunchrooms, playground, and hallways). While their findings are nuanced, there is a great deal of variation across these contexts, many of which have their own social regularities depending on location, peer composition, and qualities of adult supervision.

Intervention

Can social settings be intentionally created or altered, and, if so, how? As the examples demonstrate, changing settings—and social regularities in particular—is possible. New and effective settings have been created by structuring group composition and implementing a novel curriculum or changing the practices, routines, organizational climate, and/or organizational culture of the setting.

But have the critical strategies needed to change educational and human service settings been identified? I think we are beginning to identify them. In many of the examples, social regularities were altered by two strategies: intensive one-on-one coaching or mentoring and guided feedback of the results of assessment or intervention. In fact, coaching interventions were often focused on actual performance or practices and an exploration of the universe of other alternatives.

Feedback or knowledge of results has a long tradition of making a difference in areas ranging from individual to organizational performance (Butler and Wimme 1995). However, while professional development training and workshops have a long history, few have included sustained, intensive on-the-job coaching or mentoring. The examples described in this article differ from past efforts in that they include ongoing and intensive on-the-job coaching interventions focused on daily provider practices and/or routines. In this way, they provide the type of continuous

feedback and support that front-line service staff rarely receive. In educational and human service settings, practitioners are often overworked and overwhelmed with daily responsibilities to youth, the bureaucracy, peers, and supervisors. Yet, each of the teams described found a unique way to provide ongoing and intensive feedback and support. In the spirit of Sarason, each examined the setting's daily practices and routines, explored the universe of alternatives, and created an alternative setting or altered its regularities to make a difference in the lives of youth.

The most important question, however, is whether these changes lead to meaningful improvements in the well-being of the settings' inhabitants? The evidence is promising in the short and longer term—in several of the examples, both correlational data and tests of indirect effects were suggestive of mediation, while in others, mediation had not yet been examined. However, until the analytic problems in testing for causal meditation are solved (see the discussion in the next sub-section), the evidence for setting-level processes mediating individual-level outcomes can only be considered as a plausible mechanism.

Can we develop a theory of action for social settings? In the examples we have discussed, the emphasis has been on directly changing or restructuring setting-level regularities in terms of practices (teacher-student interactions) and or norms using "knowledge of results" or feedback and coaching to stimulate efforts at continuous improvement. At a minimum, these examples provide existence proofs. Are there additional strategies that are likely to alter the regularities of social settings?

A theory of action would need to consider what would be required for durability of effects. For example, in the three classroom and school-based interventions described, are the changes in teacher practices sustainable in the next year with a new class? Some teams are planning to explore this question. Others believe that the organization has to become a continuous learning organization; if not systemic forces will lead to a return of the status quo, and limit the changes to a short-span of time. What would it mean to have a continuous learning organization, that is, one that can alter its own regularities on an ongoing basis in response to its constituents' needs? We have just begun to scratch the surface of a mini-theory of action.

Can regulatory mechanisms such as policies and administrative orders that directly target change in structural features of a setting (i.e., resources and their allocation) alter social regularities and setting outcomes (Seidman and Tseng 2011)? For the most part, we have not examined policy studies that have endeavored to regulate or change setting resources or their allocation, so we have little knowledge as to whether they can effectively alter the regularities of settings, and in turn, youth outcomes. Moreover, policy impact studies that have been done often neglect to focus on how a change in resources may lead to changes in what goes on inside the setting. These studies miss the opportunity to understand whether the regularities are impacted and, in turn, affect the outcomes.

Research Design and Data Analysis

How do design issues differ when social settings, in contrast to individuals, are the unit of assignment and the focus of intervention? In designing setting-based intervention studies, we have seen that the unit of assignment is no longer individuals but the setting (e.g., classrooms, schools, after-school programs, clinics) with individuals nested within one or more of these levels. This is fundamental to the calculation of power and the proper design of a randomized cluster trial and dictates the use of hierarchical linear models to analyze the data. In calculating statistical power, the number of settings to be randomly assigned is far more critical than the number of individuals within settings to be assessed. Knowledge of covariates and intraclass correlations between levels of analysis needs to be taken into account when deciding how many units of analysis to randomly assign. Optimal Design software was designed for this purpose and should be used by any researcher studying setting-level phenomena.

The analytic conundrum that stands out the most is how to establish causal mediation. In randomized cluster trials, one can separately establish the (a) direct causal effect of the intervention on the outcome and (b) the direct causal effect on the setting or social regularity. Functionally, the intervention was randomly assigned to both the outcome and setting. When both of these causal effects are demonstrated, the setting effect is hypothesized to mediate the intervention effect on the outcome. However, the setting change is not randomly assigned to the outcome, so even if the correlation is strong, a causal effect of the mediator cannot be firmly established. The claim that change at the setting level mediates the intervention effect on the outcome is at best only suggestive of mediation, as discovered in several of the projects described above. To date, meditational tests do not establish causality. Raudenbush (2011) explored this issue thoroughly during his keynote address to the Society for Research in Educational Effectiveness. Experts have employed several different approaches to solve this conundrum, including instrumental variable and principal stratification approaches. Each of these methods only works under very strong assumptions and restrictions. This is an overarching challenge for all experimental work, not just for an action science of social settings.

Conclusion

An action science of social settings is in an exciting but turbulent phase of development. Its evolution has been influenced by Seymour Sarason's concepts of social settings and regularities and by many contemporary scholars. Several conceptual frameworks and key constructs guide this research. As we focused on measuring social regularities, we have made considerable progress. Several intervention strategies appear promising, but they require more extensive testing and other strategies need to be developed and tested. This is also true for research design and data analysis. I believe we are ready to do this work and meet the challenges.

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