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ORIGINAL PAPER

# Assessing the Organizational Social Context (OSC) of Mental Health Services: Implications for Research and Practice

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**Abstract** The organizational social context in which mental health services are provided is believed to affect the adoption and implementation of evidence-based practices (EBPs) as well as the quality and outcomes of the services. A fully developed science of implementation effectiveness requires conceptual models that include organizational social context and tools for assessing social context that have been tested in a broad cross-section of mental health systems. This paper describes the role of organizational social context in services and implementation research and evaluates a comprehensive contextual measure, labeled Organizational Social Context (OSC), designed to assess the key latent constructs of culture, climate and work attitudes. The psychometric properties of the OSC measure were assessed in a nationwide study of 1,154 clinicians in 100 mental health clinics with a second-order confirmatory factor analysis of clinician responses, estimates of scale reliabilities, and indices of within-clinic agreement and between-clinic differences among clinicians. Finally, the paper illustrates the use of nationwide norms in describing the OSC profiles of individual mental health clinics and examines the cross-level association of organizational-level culture and climate with clinician-level work attitudes.

**Keywords** Organizational social context · OSC · Organizational culture · Organizational climate · Implementation research · Services research · Organizational assessment

## Introduction

The conceptual model guiding the child systems and treatment enhancement projects (ChildSTEPs) initiative, as explicated in the introduction to this issue, recognizes that community-based mental health services are delivered through complex organizational systems. The success of such systems is likely to be affected by several macro-level factors that include, for example, federal and state regulations, funding requirements, and collaborative agreements among related service systems. But these broader system-level factors fail to explain why some mental health service organizations that operate in specific service, financial, and policy environments, are more successful than other organizations that operate in those same environments. Moreover, these differences in organizational success underscore the question of why evidence-based treatments implemented in actual community-based service systems are less effective than when implemented in controlled efficacy trials (Bickman 1996a, 1996b; Burns et al. 1999; Hoagwood et al. 2001; Kazdin and Weisz 1998; Weisz 2004; Weisz et al. 1992).

One reason that organizations are believed to play a central role in service effectiveness in a variety of human

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service arenas is that they establish a social context of shared service provider expectations, perceptions and attitudes that affect the adoption and implementation of evidence-based practices, the nature of the relationships that develop between service provider and consumers, and the overall availability, responsiveness, and continuity of the services (Aarons and Palinkas 2007; Grol and Grimshaw 2003; Nelson and Steele 2007; Nelson et al. 2006). Therefore, variations in organization-based social contexts may explain in part the gap between what we know about treatment efficacy and about how to best deliver effective treatments in the community. For this reason, a well-developed science of implementation effectiveness requires a better understanding of organizational social context and of methods for measuring and incorporating organizational social context into community-based effectiveness studies. This paper presents a conceptual model of organizational social context, identifies key dimensions of organizational social context, and describes the Organizational Social Context (OSC) measurement system for creating norm-based profiles of community mental health clinics. We argue that the measurement of OSC can contribute to a better understanding of the differences in mental health service systems and to research focused on how those differences affect service implementation, quality and outcomes.

## The Role of OSC in a Science of Implementation Effectiveness

Theory and research in several fields suggest the social context of a mental health service organization plays an important role in creating and sustaining the shared expectations, perceptions and attitudes of the clinicians who provide mental health services (Aarons and Palinkas 2007; Glisson 2002; Nelson and Steele 2007; Nelson et al. 2006). The expectations (e.g., the extent to which clinicians are expected to be proficient in their work), perceptions (e.g., whether clinicians perceive a high level of personal engagement in their work with clients), and attitudes (e.g., clinicians commitment to the organization in which they work) are believed to either encourage or inhibit the adoption of best practices, strengthen or weaken fidelity to established protocols, support or attenuate positive relationships between service providers and consumers, and increase or decrease the availability, responsiveness and continuity of services provided by the organization.

Empirical efforts to understand implementation effectiveness have a long history in organizational research (Klein and Sorra 1996). One of the most conceptually useful models from the organizational literature for implementation science integrates the social context and core technical processes of an organization to understand how each affects the other (Porras and Robertson 1992; Rousseau 1977). This model, labeled the *socio-technical model of organizational effectiveness*, assumes that the organization's "core technology" (e.g., mental health treatment) is embedded within a social context that is created by the organization, and that successful implementation depends as much on *social processes* in the organization as on technical processes. This assumption is particularly relevant to the development of a science of implementation effectiveness in mental health services research because mental health services depend on both social and technical processes, and clinicians' expectations, perceptions, and attitudes can directly affect how consumers are served. The expectations, perceptions, and attitudes that form an organization's social context can complement and enhance the adoption and successful implementation of new technologies, present barriers to the adoption of new technologies, or truncate or adapt a technology (e.g., treatment model) in ways that reduce the technology's effectiveness.

We use the socio-technical model to argue that the implementation of effective mental health services requires certain types of social contexts, and that effective implementation strategies must address the characteristics of the social contexts in which services are provided as much as the core treatment technologies that are implemented by clinicians. Studying these assumptions as well as the development of strategies for improving services in community-based practices require a method for assessing social contexts in mental health service organizations.

This paper describes the OSC measurement system and presents the results of the first national survey of social contexts in mental health service organizations. The paper includes a description of the norm-based social context profiles produced by the OSC, illustrates how the profiles can be used to characterize the social contexts of specific mental health service organizations, and presents methods for incorporating organizational social context profiles in services and implementation research. The paper summarizes the theoretical basis of the OSC profiles, the methodology used to establish the profiles for an organization, and a discussion of the contribution that such profiles can make to the development of a science of implementation effectiveness.

## Key Constructs in the OSC Measurement System

Organizational culture theory identifies culture and climate as central constructs in organizational social context (Ashkanasy et al. 2000a). The evolution of each construct in the organizational research literature has a unique history

that has been documented previously (Glisson and James 2002; Reichers and Schneider 1990; Verbeke et al. 1998). Although multiple definitions of culture (e.g., Handy 1976; Pettigrew 1979) and climate (e.g., Argyris 1958; Fleishman 1953) have evolved, there is some consensus that climate refers to "the way people perceive their work environment" and culture refers to "the way things are done in the organization" (Verbeke et al. 1998).

## Climate

Two types of climate, *psychological* and *organizational*, provide the basis for understanding the role climate plays in linking organizational properties to mental health service provider attitudes and behavior (Glisson 2002; Glisson and James 2002). *Psychological* climate is the individual's perception of the psychological impact of the work environment (e.g., stress) on his or her own well-being (James and James 1989). When members of the same organization agree on their perceptions (e.g., the shared perception that their work environment is stressful), their shared perceptions can be aggregated to describe their *organizational* climate (e.g., the work environment is characterized as stressful) (Jones and James 1979; Joyce and Slocum 1984). As shown in Fig. 1, psychological and organizational climate are assessed by the OSC measure with eight first-order scales that form the three second-order scales that define the organization's climate profile (i.e., stress, functionality, engagement).

## Culture

Culture describes how the work is done in the organization and is measured as the behavioral expectations reported by members of the organization. These expectations guide the way work is approached and socialize new employees in the priorities of the organization (e.g., rigidity, proficiency). Organizational culture is often described in "layers," with behavioral expectations representing an outer layer, and values or assumptions representing an inner layer (Rousseau 1990). Stated in another way, Hofstede (1998) described behavior as the visible part of culture and values as the invisible part. For this reason, culture is sometimes described as a "deep" construct. Although Stackman et al. (2000) pointed out that it is not clear what "deep" means in an organization, the description of the "deep" aspects of culture parallel the "inner layer" described by Rousseau (1990) and the "invisible" part of culture described by Hofstede (1998).

Several studies suggest that culture is transmitted among employees more through behavioral expectations than through "deeper" values or assumptions (Ashkanasy et al. 2000b; Hofstede 1998; Hofstede 1990). This is because individuals in an organization can comply with behavioral

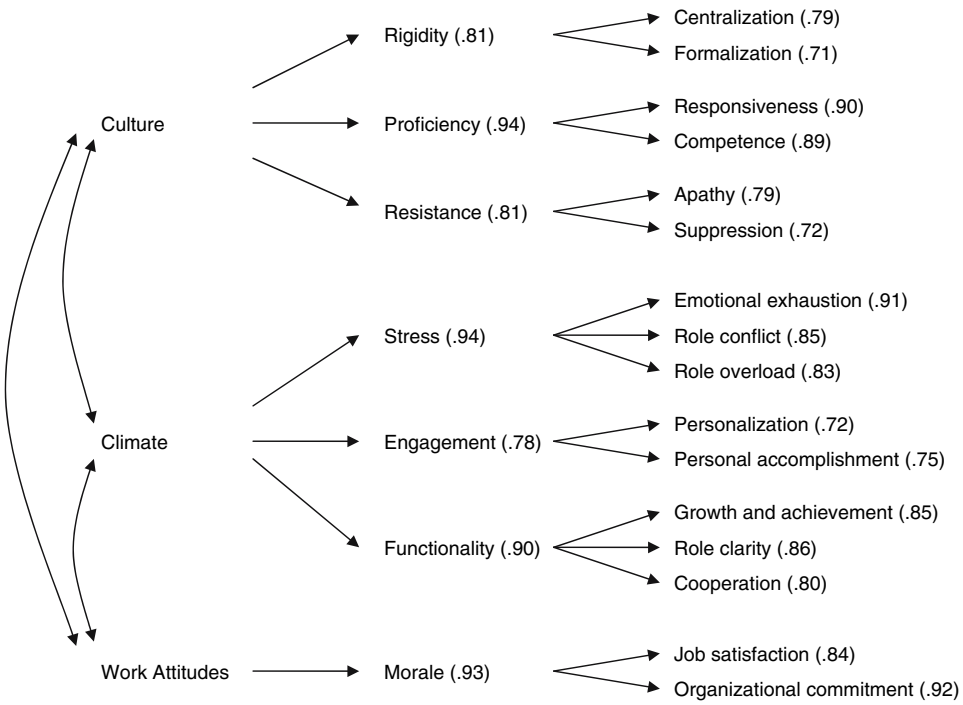


**Fig. 1** Confirmatory factor analysis (CFA) of organizational social context (OSC)

expectations without necessarily internalizing the values and assumptions that contribute to those expectations. Or, expectations can be determined by the demands that workers face of the job, regardless of the values of top management (Hemmelgarn et al. 2001). As shown in Fig. 1, organizational culture is measured by the OSC with six first-order scales that form the three second-order scales that define the organizational culture profile (i.e., rigidity, proficiency, resistance).

### Work Attitudes

Work attitudes form an individual-level construct and most frequently include job satisfaction and organizational commitment (Glisson and Durick 1988). Locke (1976) defined job satisfaction as the positive appraisal of one's own job or job experiences. Mowday et al. (1982) described organizational commitment as a willingness to exert considerable personal effort on behalf of one's organization and a strong desire to remain a member of the organization. These definitions view commitment as an employee's attachment to the organization, whereas satisfaction is viewed as the employee's reaction to specific job tasks and duties (Mowday et al. 1982; Williams and Hazer 1986). Although the two variables are related, an employee who is attached to a specific organization can be unhappy with certain aspects of a specific job within that organization, and vice versa. Viteles (1953) argued that high employee morale is a function of both satisfaction and commitment. That is, employees with the highest morale are both attached to their organization and experience a positive reaction to their specific jobs within the organization. As shown in Fig. 1, the OSC measures work attitudes with two first-order scales, job satisfaction and organizational commitment that form the second-order scale, morale.

## Composition Models and the Cross-Level Effects of Culture and Climate

Composition models specify the functional relationships that guide the aggregation of individual responses to measure organizational level phenomena with the OSC (Chan 1998; Glisson and James 2002; Rousseau 1985). The composition models used to aggregate data play an important role in the use of national norms for identifying positive or negative social contexts and in cross-level inferences that link organizational climate and culture to individual-level criteria such as work attitudes, staff performance and client outcomes. The typology of *elemental composition* presented by Chan (1998) provides a useful framework for understanding the similarities and differences in the composition of culture and climate. This is important because the differences are frequently overlooked in discussions of multilevel research, leading to confusion about the distinctiveness of each construct (e.g., Klein et al. 2001). Glisson and James (2002) provide a detailed explanation of the differences between the composition models for culture and climate. To summarize, both the direct consensus (for climate) and referent-shift consensus (for culture) models of composition specify within-group consensus as a precondition for using aggregation to compose a higher-level organizational construct from individual employee-level responses.

It is well known that work attitudes are a function of *psychological* climate at the individual level, but there are fewer studies of the cross-level relationships between *organizational-level* climate and culture, on the one hand, and individual-level work attitudes or behaviors on the other (Glisson and Durick 1988; Hackman and Oldham 1975; Herman et al. 1975; Herman and Hulin 1972; Morris and Sherman 1981). And only a few studies examined the simultaneous effects of multiple dimensions of both culture and climate at the organizational level on work attitudes or behaviors at the individual level (Aarons and Sawitzky 2006; Glisson and Green 2006; Glisson and James 2002). Instead, many studies examine all variables at the same level by either aggregating work attitudes to the organizational level or disaggregating organizational culture and climate to the individual level (Klein and Kozlowski 2000a). To illustrate the analyses of cross-level effects that avoid these problems, we present analyses that focus on the simultaneous cross-level effects of multiple dimensions of organizational culture and climate on individual work attitudes. Similar approaches can be used to model cross-level effects of social context on client outcomes and other individual-level criteria.

Cross-level effects describe relationships between variables operationalized at different levels of analysis and require statistical models that provide estimates of effects that link variables at different levels (James and Williams 2000; Klein and Kozlowski 2000a, b; Rousseau 1985). Although cross-level inferences can be made using a variety of approaches, hierarchical linear models analysis (HLM), random regression models (RRM), and related techniques were designed specifically for cross-level inferences that link the characteristics of one level (e.g., the individual) to the characteristics of another level (e.g., the organization) in which the first-level units (e.g., individuals) are nested (Hedeker and Gibbons 2006; Raudenbush and Bryk 2002). These analytic models provide ideal approaches for assessing the relationships that link organizational culture and climate to individual-level criteria.

### Objectives of the Study

The objectives of the study are to (1) confirm the factor validity of the measure of OSC in a national sample of mental health clinics and clinicians, (2) describe the variation in clinician responses to the OSC and in the organizational social context profiles that distinguish mental health clinics nationwide, and (3) assess the relationships that link dimensions of mental health clinic-level culture and climate profiles to clinician-level work attitudes. The study contributes to the use of the OSC as a tool in assessing social context in mental health services and implementation research and in practice improvement efforts that include organizational interventions.

## Methodology

### Sample

The national survey of mental health clinics described here was conducted as part of the clinical systems project (CSP) of the Research Network on Children's Mental Health that began with the counties sampled in the National Survey of Child and Adolescent Well-being (NSCAW). The design and sampling strategy used in the CSP are described by Schoenwald and colleagues (this issue), and the NSCAW study has been described previously (Burns et al. 2004; Dowd et al. 2004; NSCAW Research Group 2002).

The sample of 100 clinics studied here is a subset of the 200 clinics whose directors participated in the Director's Survey (Schoenwald et al this issue) and represents the only national sample to date of mental health service clinics to participate in an onsite clinician survey of organizational social context. The clinics participating in the OSC survey met minimum size criteria (five or more clinicians) and were clinics in which the director agreed to allow the OSC to be administered by CSP researchers directly to clinicians in scheduled onsite staff meetings. A comparison of the characteristics of clinics that did and did not participate in the OSC survey, respectively, indicates that the clinics are statistically similar in the average total number of therapists employed by each clinic (37.48 vs. 27.66) and proportions of therapists in each clinic who are psychiatrists (10.40% vs. 10.07%), Ph.D. psychologists (5.75% vs. 5.75%), and MSW-level social workers (25.14% vs. 29.77%). However, a higher proportion of therapists in the participating clinics were BSW-level social workers (13.11% vs. 8.02%).

ChildSTEPS research assistants administered the OSC in person at one site of each of 100 mental health clinics to clinicians who treated either children or both children and adults. The number of clinicians who met this criterion ranged from 6 to 86 per site. The response rate per site for the clinicians who met this criterion ranged from 30 to 100% with an overall average response rate of 76%. Respondents in each clinic completed the surveys simultaneously during a staff meeting with no upper-level managers present, after receiving assurances of confidentiality from the research assistant. The respondents returned the surveys at the end of the meeting directly to the research assistant using sealed envelopes. In some sites, more than one meeting was necessary to obtain data from all clinicians.

### Characteristics of Participants

As shown in Table 1, almost 1200 clinicians from 100 clinics completed the OSC in 75 cities in 26 states from all parts of the country. As shown in Table 2, the participating clinicians ranged in age from 21 to 74 years, and had up to 50 years of experience. Most of the clinicians who completed the OSC were female (76%) and Caucasian (71%), had masters degrees (67%) and majors in social work (41%) and psychology (32%). As shown, 7% held doctorates, 15% were African American, and 7% were Hispanic. The lack of national data describing the mental health services workforce makes it difficult to determine how representative the sample is of that workforce in terms of demographic characteristics. However, as the only onsite survey of organizational social context that includes a nationwide sample of clinics, the responses appear to provide a reasonable basis for establishing organizational social context norms for mental health clinics.

### Measures

#### *Organizational Culture*

Culture is defined as the expectations that govern the way things are done in an organization and as shown in Fig. 1, the OSC assesses culture on three second-order

**Table 1** Number and location of clinics

| | |
|---|---|
| Participating clinicians | 1,154 |
| Clinics | 100 |
| Midwest | 31 |
| South | 28 |
| Northeast | 22 |
| West | 19 |
| Cities | 75 |
| Counties | 61 |
| States | 26 |

**Table 2** Characteristics of clinicians

| | Min. | Max. | Mean | SD |
|---|---|---|---|---|
| Number of participating clinicians per site | 3 | 52 | 11.54 | 8.32 |
| Age of participants | 21 | 74 | 38.26 | 11.48 |
| Years of experience | 0 | 50.0 | 10.76 | 8.55 |
| Years in agency | 0 | 35.0 | 4.36 | 4.96 |
| Participant | Percentage | | | |
| Gender | | | | |
| Male | 23.6 | | | |
| Female | 76.4 | | | |
| Ethnicity | | | | |
| African American | 15.1 | | | |
| Asian American | 2.0 | | | |
| Caucasian | 70.7 | | | |
| Hispanic | 7.3 | | | |
| Native American | .3 | | | |
| Other | 4.7 | | | |
| Educational level | | | | |
| High school | .5 | | | |
| Some college | 2.2 | | | |
| Bachelors degree | 15.9 | | | |
| Some graduate work | 7.0 | | | |
| Masters degree | 67.4 | | | |
| Doctoral degree | 7.1 | | | |
| Major of highest degree | | | | |
| Education | 4.8 | | | |
| Medicine | 1.1 | | | |
| Nursing | .7 | | | |
| Psychology | 31.8 | | | |
| Social work | 40.9 | | | |
| Other | 20.7 | | | |

dimensions: rigidity, proficiency and resistance. *Rigid* cultures are characterized by expectations that clinicians have little discretion or flexibility in carrying out their jobs, provide limited input into key management decisions, and carefully follow a host of bureaucratic rules and regulations. This dimension is assessed with two first order scales, seven items measuring centralization (e.g., "I have to ask a supervisor or coordinator before I do almost anything") and seven items measuring formalization (e.g., "The same steps must be followed in processing every piece of work"). These scales have been developed over many years to capture the social structure of the organization operationalized as "how work is done" and are included here to reflect a dimension of culture labeled "rigidity" (Glisson 1978; Glisson and Durick 1988).

P*roficient* organizational cultures are characterized by expectations that clinicians will place the well-being of each client first and that clinicians will be competent and have up-to-date knowledge. Proficiency is assessed with two first-order scales: seven items measuring responsiveness (e.g., "Members of my organizational unit are expected to be responsive to the needs of each client") and eight items measuring competence (e.g., "Members of my organizational unit are expected to have up-to-date knowledge").

*Resistant* cultures are characterized by expectations that clinicians will show little interest in change or in new ways of providing service, and that clinicians will suppress any change effort. Resistance is assessed with two first-order scales: six items measuring apathy (e.g., "Members of my organizational unit are expected to not make waves") and seven items measuring suppression (e.g., "Members of my organizational unit are expected to be critical").

### *Organizational Climate*

Psychological climate is defined as an employee's perceptions of the psychological impact of the work environment on his or her own well-being and functioning in the organization (Glisson and Hemmelgarn 1998; Glisson and James 2002). An organizational climate is formed when employees in the same organizational unit share similar perceptions. The OSC measures climate on three second-order factors: engagement, functionality and stress. *Engaged* climates are characterized by employee perceptions that they are able to personally accomplish many worthwhile things and remain personally involved in their work and concerned about their clients. Engagement is assessed with two first-order scales: five items measuring personalization (e.g., "I feel I treat some of the clients I serve as impersonal objects"—reverse coded) and six items measuring personal accomplishment (e.g., "I have accomplished many worthwhile things in this job").

*Functional* climates are characterized by employee perceptions that they receive the cooperation and help they need from coworkers and administrators to do a good job, and have a clear understanding of how they fit in and can work successfully within the organization. Functionality is assessed with three first-order scales: five items measuring growth and advancement (e.g., "This agency provides numerous opportunities to advance if you work for it"), six items measuring role clarity (e.g., "My job responsibilities are clearly defined"), and four items measuring cooperation (e.g., "There is a feeling of cooperation among my coworkers"). *Stressful* climates are characterized by employee perceptions that they are emotionally exhausted from their work, are overloaded in their work, and are unable to get the necessary things done. Stress is assessed with three first-order scales: six items measuring emotional exhaustion (e.g., "I feel like I am at the end of my rope"),

seven items measuring role conflict (e.g., "Interests of the clients are often replaced by bureaucratic concerns–e.g., paperwork"), and seven items measuring role overload (e.g., "The amount of work I have to do keeps me from doing a good job").

### *Work Attitudes*

In contrast to culture and climate, work attitudes is an *individual-level* construct defined as each service provider's affective attachment to the organization and positive reaction to his or her job (Glisson and Durick 1988). The OSC measures individual-level work attitudes as a single second-order factor labeled *morale*. Morale is characterized by an employee's commitment to the organization and satisfaction with his or her job. Morale is measured with two first order scales: nine items measuring employee's job satisfaction (e.g., "How satisfied are you with the chance to do something that makes use of your abilities") and eight items measuring the employee's commitment to the organization (e.g., "I really care about the fate of this organization").

## Results

In addition to confirming a priori factor structures, individual-level responses to valid measures of organizational culture and climate must be consistent among individuals who work within the same organization. In addition, individual-level responses must be different for individuals who work in different organizations. These characteristics of the individual-level responses were assessed with the following analyses to (1) confirm the factor validity of the responses to the OSC culture, climate and work attitudes measures, (2) assess the variation in clinician responses to the measures of culture and climate *within* mental health and *between* mental health clinics, and (3) estimate the variation in individual-level work attitudes explained by organizational-level culture and climate formed by aggregating individual responses to these latter measures.

The first objective of the study is addressed using confirmatory factor analysis (CFA) to provide evidence that culture, climate, and work attitudes are distinct constructs as assessed with clinician responses to the OSC (Bollen 1989; Byrne 1998). The second objective of the study is important because the use of composition models to measure organizational-level characteristics (e.g., culture, climate) requires within-clinic consistency and significant between-clinic differences to confirm that the responses of clinicians to these scales vary by organization (Klein and Kozlowski, 2000a, b). Within-clinic consistency is assessed with $r_{wg}$ and between-clinic differences are assessed with ANOVA-based eta-squared and HLM-based ICC (Bliese 2000; James et al. 1993). The third objective is met with two HLM analyses. As described above, HLM addresses a number of conceptual and technical difficulties that plague analyses of multilevel data in which individuals are nested or clustered within groups (Hedeker and Gibbons 2006; Hofmann et al. 2000; Raudenbush and Bryk 2002).

### Confirmatory Factor Analysis (CFA)

A CFA of the proposed measurement model shown in Fig. 1 was conducted with LISREL 8 using maximum likelihood estimation procedures. The proposed second-order measurement model included the scales described above as indicators of three latent constructs: climate, culture, and work attitudes. The model specifies that the latent constructs affect only their respective indicators. The latent constructs were allowed to correlate and correlations among the error terms for the indicators were constrained to zero. Following strategies described by Bollen (1989), Byrne (1998), and others, the intent was to confirm that the latent constructs were measured by their respective scales. The CFA confirmed that the 16 scales form seven factors that compose the higher-order constructs of culture, climate, and work attitudes.

Fit indices in Table 3 include the standardized root mean squared residual (SRMR), root mean square error of approximation (RMSEA); comparative fit index (CFI), normed fit index (NFI) and incremental fit index (IFI). These indices include absolute fit indices (SRMR, RMSEA) as well as an incremental fit indices (CFI, IFI) in which the hypothesized model is assessed in comparison to a null model. Because different indices can provide different information and are sensitive to different aspects of model fit, multiple indices should be examined. For example, SRMR is more sensitive to the specified factor covariance structure, and RMSEA is more sensitive to the specified factor loadings (Hu and Bentler 1999).

Rules of thumb for evaluating models with fit indices continue to evolve, but the practice of specifying the CFI, NFI, and IFI as greater than .90 for acceptable model fit is

**Table 3** CFA Fit Indices ($n = 1{,}154$)

| Index | Value |
|---|---|
| RMSEA | .05 |
| CFI | .96 |
| NFI | .95 |
| SRMR | .07 |
| IFI | .96 |

widespread in applied social science research (Byrne 1998). Applied rules of thumb specify acceptable fit for RMSEA < .10, moderate fit for RMSEA < .08, and close fit for RMSEA < .05 (Browne and Cudeck 1993; MacCallum et al. 1996). Hu and Bentler (1999) recommended a cutoff value for SRMR of .08 or less to be used along with either a cutoff value of close to .95 for CFI or a cutoff value close to .06 for RMSEA. Using these rules of thumb, the fit indices in Table 3 provide substantial support for the proposed measurement model that specifies climate, culture, and work attitudes as distinct constructs formed by the second-order factor structure shown in Fig. 1.

## Correlations Among OSC Profile Dimensions and Individual-Level Constructs

The indicators of each second-level factor, or dimension, were summed to form an OSC profile, and the correlation matrix in Table 4 shows the relationships among the dimensions and the individual-level constructs of job satisfaction and organizational commitment. The absolute values of the correlations among the constructs vary between .04 and .52, with an absolute value average of .22. This range is important in confirming that the measures of the OSC dimensions are not merely reporting common method error variance. Most importantly, the pattern of correlations conforms to theoretical expectations. Focusing on psychological climate, case managers' responses to items measuring functionality are unrelated to their responses to items measuring engagement (.04), but are inversely related to their responses to items measuring stress (−.52).

Some of the highest correlations among the constructs are between work attitudes and psychological climate. For example, the correlation between organizational commitment and functionality is .77. This replicates findings reported in previous studies. The high correlation between the two constructs has resulted in some researchers combining measures of climate and measures of work attitudes into a single construct (Glisson and Hemmelgarn 1998). To test whether psychological climate and work attitudes should be merged into one construct, a second CFA was conducted with the indicators of the two factors combined to load on a single latent construct. The fit indices for the reduced model deteriorated, providing evidence that although related, work attitudes and psychological climate represent distinct factors.

## Within-Clinic Consistency Analysis

An index of within-group consistency of responses, $r_{wg}$, was computed for each of the four constructs that describe characteristics of the mental health clinics (James et al. 1993). The range and average of $r_{wg}$ values are reported for each construct in Table 5. The $r_{wg}$ values for each construct for all clinics range between .58 and .99, with an average between .91 and .96. Although minimum values are below .70, these values as a group indicate within-clinic consistency of responses. It should be noted that $r_{wg}$ values are independent of the number of responses per organization. Here the correlations between $r_{wg}$ and the number of responses for an organization average −.09 over the six constructs. These values, when combined with factor

**Table 5** Within-group consistency analysis of clinician responses in 99 clinics ($N = 1{,}112$)

| Construct | $r_{wg}$ | | |
|---|---|---|---|
| | Minimum | Maximum | Average |
| Rigidity | .66 | .98 | .92 |
| Proficiency | .59 | .99 | .94 |
| Resistance | .58 | .98 | .91 |
| Stress | .63 | .99 | .93 |
| Engagement | .85 | .99 | .96 |
| Functionality | .87 | .98 | .95 |

**Table 4** Correlations among OSC profile dimensions and clinician-level work attitudes

| | Functionality | Engagement | Stress | Resistance | Proficiency | Rigidity | Organizational commitment | Job satisfaction |
|---|---|---|---|---|---|---|---|---|
| Functionality | | 0.04 | −.52** | −.37** | .50** | −.18** | .77** | .70** |
| Engagement | | | .24** | .17** | .11** | .20** | .08* | .13** |
| Stress | | | | .41** | −.26** | .38** | −.51** | −.53** |
| Resistance | | | | | −.30** | .43** | −.34** | −.34** |
| Proficiency | | | | | | −.10** | .48** | .43** |
| Rigidity | | | | | | | −.22** | −.21** |
| Organizational commitment job satisfaction | | | | | | | | .70** |

* $P < .05$; ** $P < .01$; *** $P < .001$

**Table 6** Between-groups analysis of clinician responses in 99 clinics ($N = 1{,}112$)

| Construct | Clinic variance | Residual variance | ICC | $MS_{BG}$ | $MS_{WG}$ | Eta squared |
|---|---|---|---|---|---|---|
| Rigidity | 10.64*** | 55.50 | .16 | 168.07 | 55.31 | .23*** |
| Proficiency | 7.16*** | 95.15 | .07 | 175.27 | 95.46 | .15*** |
| Resistance | 5.73*** | 54.29 | .10 | 116.25 | 53.88 | .17*** |
| Stress | 48.33*** | 189.36 | .20 | 656.78 | 188.62 | .25*** |
| Engagement | 3.07*** | 24.09 | .11 | 61.59 | 24.09 | .20*** |
| Functionality | 17.30*** | 76.04 | .19 | 265.16 | 75.99 | .25*** |

* $P < .05$; ** $P < .01$; *** $P < .001$

validity and the between-clinic differences described below, provide justification for aggregating individual-level responses to measure clinic-level constructs.

## Between-Clinic Differences Analysis

Between-clinic differences were calculated using the intraclass correlation coefficient (ICC) and eta-squared. In addition to the within-clinic consistency of responses as shown by $r_{wg}$ values, the coefficients reported in Table 6 provide evidence of between-clinic differences. The ICC (type 1) computed via a random intercepts model indicates the proportion of total *variance* that is between clinics, and eta-squared indicates the proportion of total *variation or sums of squares* that is between clinics (see Bliese 2000; Cohen and Cohen 1983; and Raudenbush and Bryk 2002). Type 1 ICC values are typically less than .20 and are usually much smaller than eta-squared values (Bliese 2000). The data in Table 6 indicate that the consistency of responses within each clinic is not due simply to consistency of responses across the entire sample. That is, high $r_{wg}$'s could be found within clinics if there was a high consistency of responses throughout an entire sample that crossed multiple clinics. Eta squared ranged between .15 and .25, corresponding to multiple Rs between .39 and .50. The meaningful composition of responses by clinic was therefore supported by between-clinic differences in responses that accompany the within-clinic similarities in responses. These analyses show that a significant proportion of the variance in responses to each measure is explained by the clinic in which the respondent worked.

The factor validity of the responses, the within-clinic consistency of responses, and the between-clinic differences in responses justified composing measures of climate and culture for each mental health clinic. These clinic-level compositions of culture and climate were included in the following analyses.

## Norm-Based OSC Profiles

To compare specific clinics with the national sample of clinics, the means ($\mu$) and standard deviations ($\sigma$) of the clinic-level compositions from the national sample are used to calculate z scores [$z = (\bar{x} - \mu)/\sigma$], T values [$T = 50 + 10z$], and percentiles in relation to the national sample. The clinic-level scores ($\bar{x}$) are produced for each dimension of culture and climate by aggregating clinician responses by clinic. Mental health clinic T scores and associated percentiles, based on the transformed means ($\mu_T = 50$) and standard deviations ($\sigma_T = 10$) of the clinic scores from the national sample range from the 1st to the 99th percentile on the various dimensions of culture and climate.

Examples of actual culture profiles from existing mental health clinics in the national sample are shown in Fig. 2 and illustrate the variety of culture profiles across mental health clinics serving children. Several profile types could be identified from the sample. As shown in Fig. 2a, one type of clinic scored at the mean on all three dimensions of

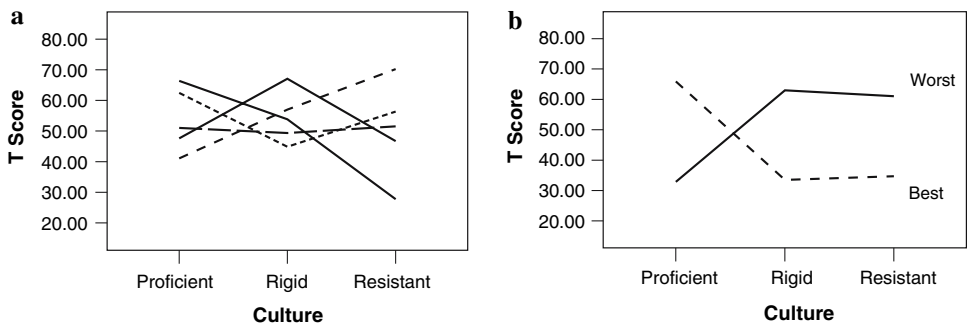


**Fig. 2** Examples of culture profiles from nationwide sample of mental health clinics

culture, producing a flat profile. Another type is high on resistance and low on proficiency. Another is just the opposite, high on proficiency and low on resistance. Another is high on rigidity relative to the other dimensions. And yet another is low on rigidity relative to the other two dimensions.

Ten percent of the clinics had the best culture profile. As illustrated with one clinic profile shown in Fig. 2b, the criteria for this type of profile is a proficiency score of two or more standard deviations above both its resistance and rigidity scores. Approximately 9% of the clinics had the worst culture profile. Fig. 2b includes a profile from one clinic that illustrates this type of profile in which the clinic's proficiency score is two or more standard deviations below both its resistance and rigidity scores.

As shown in Table 7, the morale of the clinicians varied significantly between the clinics with the best and worst culture profiles. Two indicators of morale, job satisfaction and commitment, were over one standard deviation higher in the clinics with the best cultures. We have linked specific dimensions of culture to service quality and staff turnover, as well as work attitudes, in other studies, so we conclude that mental health and social service organizations have a variety of culture profiles and that the characteristics of those profiles are associated with several service-related criteria (Glisson 1978; Glisson and Green 2006; Glisson and James 2002; Hemmelgarn et al. 2001).

We also identified several distinct climate profiles among the national sample of mental health clinics. Fig. 3 shows the clinic profiles that turned up most frequently. As shown in Fig. 3a, one type of clinic had average scores on all three climate dimensions. Another type was high on engagement, and low on stress. Another type was low on engagement and high on stress. Another type scored high on functionality related to engagement and stress. Yet another type scored high on both engagement and stress, and low on functionality.

**Table 7** Comparing clinician morale in clinics with best and worst culture profiles

| Criterion | Alpha | Standardized effect size | df | *F* | *P* |
|---|---|---|---|---|---|
| Job satisfaction | (.87) | 1.12 sd units | 1/204 | 75.87 | <.000 |
| Commitment | (.92) | 1.28 sd units | 1/197 | 102.36 | <.000 |

**Table 8** Comparing clinician morale in clinics with best and worst climate profiles

| Criterion | Alpha | Standardized effect size | df | *F* | *P* |
|---|---|---|---|---|---|
| Job satisfaction | (.87) | 1.39 sd units | 1/195 | 129.53 | <.000 |
| Commitment | (.92) | 1.34 sd units | 1/190 | 91.20 | <.000 |

About eight percent of the mental health clinics in the national sample had the best climate profile. As shown in an example of the best profile in Fig. 3b, the clinic's scores on engagement and functionality are at least two standard deviations above its score on stress. Approximately seven percent of the clinics in the national sample had the worst climate profile. As shown in an example of the worst profile in Fig. 3b, the clinic's scores on engagement and functionality are over two standard deviations below its score on stress. As shown in Table 8, clinicians' reports of their morale, as indicated by job satisfaction and commitment, differed by one and a half standard deviations between the clinics with the best and worst climates.

## Hierarchical Linear Models Analysis

Two HLM analyses employing a random intercepts model are used to estimate cross-level relationships between clinic-level dimensions of culture and climate, and individual-level work attitudes (Hedeker and Gibbons 2006; Hedeker et al. 1994; Raudenbush and Bryk 2002). Specifically, the HLM analyses estimate the contributions of three dimensions of organizational climate and three dimensions of organizational culture to individual-level clinician job satisfaction and commitment, respectively, over and above the contribution made by individual-level covariates (i.e., age, education, job tenure, gender, race).

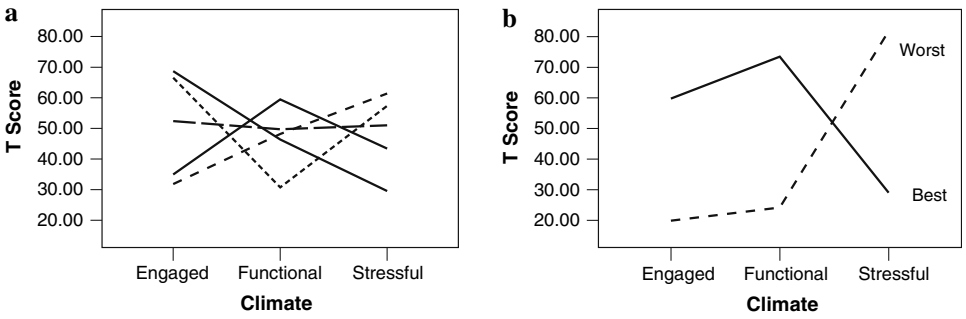


**Fig. 3** Examples of climate profiles from nationwide sample of mental health clinics

The HLM analyses were conducted using maximum marginal likelihood estimation for mixed effects regression models uses HLM 6 software (Raudenbush et al. 2004). Each HLM analysis was conducted in a hierarchical fashion (Hedeker and Gibbons 2006; Hedeker et al. 1994; Hofmann et al. 2000; Raudenbush and Bryk 2002). In the first stage, only the clinic "random effects" were included. This provided estimates of the clinic variance (i.e., variance in the dependent variable attributable to clinics) and residual variance without individual-level covariates or clinic-level constructs in the model.

Individual-level demographic covariates (i.e., age, job tenure, education, gender, and minority status) were included to control for any differences in these variables when assessing the unique effects of other variables in the model. The analysis provides (1) estimates of the incremental proportions of clinic and residual variance explained by individual-level and clinic-level characteristics, and (2) estimates of the relationships that link each clinic-level dimension of culture and climate with the individual-level criteria (job satisfaction, organizational commitment) after controlling for all individual-level covariates. For each criterion, preliminary analyses tested the homogeneity of regression slopes for the individual-level covariates. Fixed effects were confirmed for each covariate.

The intraclass correlation (ICC) and test of clinic variance for the model that includes only the clinic random effects (stage one) in Table 9 show that a significant proportion of the variance in job satisfaction was associated

**Table 9** HLM analysis of clinicians' job satisfaction

| Model | Variable | Coefficient | SE | *t*-ratio | df | *P*-value |
|---|---|---|---|---|---|---|
| Random effects only | | | | | | |
| | Constant | 30.681 | .274 | 111.886 | 98 | .000 |
| | Organizational variance | 3.932 | | | | |
| | Residual variance | 33.479 | | | | |
| | $\chi^2$ | 224.716 | | | 98 | .000 |
| | ICC | .105 | | | | |
| Clinic-level and clinician-level covariates | | | | | | |
| | Constant | 7.182 | 4.706 | 1.526 | 90 | .130 |
| Clinic | Rigidity | −.180*** | .042 | −4.269 | 90 | .000 |
| | Proficiency | .142** | .051 | 2.784 | 90 | .007 |
| | Resistance | .076 | .058 | 1.297 | 90 | .198 |
| | Stress | −.054 | .028 | −1.922 | 90 | .057 |
| | Engagement | .336*** | .084 | 3.989 | 90 | .000 |
| | Functionality | .174*** | .045 | 3.840 | 90 | .000 |
| | Number of clinicians | .002 | .006 | .246 | 90 | .806 |
| Clinician | Age | .024 | .024 | .998 | 1080 | .319 |
| | Female | .374 | .387 | .967 | 1080 | .334 |
| | Level of education | −.474** | .159 | −2.981 | 1080 | .003 |
| | Years of experience | .005 | .032 | .170 | 1080 | .865 |
| | Race | | | | | |
| | African American | 1.516* | .689 | 2.199 | 1080 | .028 |
| | Asian American | 2.014** | .762 | 2.644 | 1080 | .009 |
| | Hispanic | 1.598** | .613 | 2.608 | 1080 | .010 |
| | Native American | 3.057 | 3.900 | .784 | 1080 | .433 |
| | Other ethnicity | −.189 | .912 | −.207 | 1080 | .836 |
| | Major | | | | | |
| | Education | −2.242* | .947 | −2.369 | 1080 | .018 |
| | Medicine | 1.990 | 1.454 | 1.369 | 1080 | .171 |
| | Nursing | .124 | 1.354 | .092 | 1080 | .927 |
| | Psychology | −.109 | .455 | −.240 | 1080 | .811 |
| | Social work | −.149 | .468 | −.319 | 1080 | .750 |
| | Organizational variance | .010 | | | | |
| | Residual variance | 31.530 | | | | |
| | $\chi^2$ | 54.784 | | | 90 | .500 |

Proportion of organizational variance explained = 99.75%

Proportion of residual variance explained = 5.82%

* $P < .05$; ** $P < .01$; *** $P < .001$

with the clinic in which the clinician worked (10.5 percent). In the second stage of the analysis, Table 9 shows that the model accounted for most of the clinic-based variance in job satisfaction (99.75%). This is represented by the clinic variance being reduced to near zero. Dimensions of both climate and culture were each significantly related to job satisfaction after controlling for other clinic-level constructs, the individual-level demographic characteristics of the clinicians, and the random clinic effects. Clinicians in mental health clinics with more engaged and functional climates and less rigid and more proficient cultures reported higher levels of job satisfaction. Several individual-level demographic variables also predicted job satisfaction. As found in other studies, more educated respondents reported less job satisfaction and minority groups reported higher job satisfaction.

Table 10 describes the results of an HLM analysis of individual-level organizational commitment as the dependent variable. There were significant between-clinic differences in organizational commitment with the clinic in which the clinician worked accounting for almost 19% of the variance. The model explained a lower proportion of individual variance in commitment (1.45%) than they explained in job satisfaction. As in the variance in job satisfaction, the model accounted for most of the clinic-based variance in commitment (93.54%). A significant proportion of unique variance in commitment was explained by the clinic-level variables of rigidity,

**Table 10** HLM analysis of clinicians' organizational commitment

| Model | Variable | Coefficient | SE | *t*-ratio | df | *P*-value |
|---|---|---|---|---|---|---|
| Random effects only | | | | | | |
| | Constant | 26.365 | .377 | 69.874 | 98 | .000 |
| | Organizational variance | 9.437 | | | | |
| | Residual variance | 41.510 | | | | |
| | $\chi^2$ | 331.177 | | | 98 | .000 |
| | ICC | .185 | | | | |
| Clinic-level and clinician-level covariates | | | | | | |
| | Constant | 2.253 | 5.571 | .404 | 90 | .687 |
| Clinic | Rigidity | −.182** | .067 | −2.724 | 90 | .008 |
| | Proficiency | .216** | .081 | 2.653 | 90 | .010 |
| | Resistance | .026 | .096 | .273 | 90 | .785 |
| | Stress | −.031 | .035 | −.877 | 90 | .383 |
| | Engagement | .026 | .098 | .265 | 90 | .792 |
| | Functionality | .391*** | .059 | 6.593 | 90 | .000 |
| | Number of clinicians | −.005 | .010 | −.487 | 90 | .627 |
| Clinician | Age | .046 | .026 | 1.805 | 1,080 | .071 |
| | Female | .319 | .436 | .732 | 1,080 | .464 |
| | Level of education | −.627** | .242 | −2.590 | 1,080 | .010 |
| | Years of experience | .006 | .032 | .181 | 1,080 | .857 |
| | Race | | | | | |
| | African American | .422 | .695 | .607 | 1,080 | .544 |
| | Asian American | 1.654 | 1.260 | 1.313 | 1,080 | .190 |
| | Hispanic | 1.216 | .838 | 1.452 | 1,080 | .147 |
| | Native American | 7.154 | 4.298 | 1.665 | 1,080 | .096 |
| | Other ethnicity | −1.370 | .970 | −1.412 | 1,080 | .158 |
| | Major | | | | | |
| | Education | −.101 | 1.033 | −.097 | 1,080 | .923 |
| | Medicine | .449 | 1.345 | .334 | 1,080 | .738 |
| | Nursing | −.491 | 1.250 | −.393 | 1,080 | .694 |
| | Psychology | .228 | .532 | .429 | 1,080 | .668 |
| | Social work | −.207 | .508 | −.407 | 1,080 | .684 |
| | Organizational variance | .606 | | | | |
| | Residual variance | 40.876 | | | | |
| | $\chi^2$ | 94.731 | | | 90 | .346 |

Proportion of organizational variance explained = 93.58%

Proportion of residual variance explained = 1.53%

* $P < .05$; ** $P < .01$; *** $P < .001$

proficiency, and functionality. Clinicians in clinics with less rigid and more proficient cultures and more functional climates reported higher levels of organizational commitment.

## Discussion

The description and analysis of a model of organizational social context in a national sample of mental health clinics contributes to mental health services research, implementation research, and practice in several ways. First, the clinic-level measures of the theoretically and empirically supported constructs were composed in a way that can be efficiently replicated in services and implementation studies, as well as in organizational improvement efforts. In addition to providing a means of assessing the effects of organizational social context, the national norms associated with the OSC measure provide the basis for selecting organizational sites that meet certain social context criteria and for determining the generalizability of findings beyond the selected sites. Moreover, the availability of national norms for the OSC make it possible to meaningfully describe the organizational social context profile of a specific mental health clinic to facilitate services improvement and organizational change efforts that could include the implementation of evidence-based practices, installing a clinical information system, or other innovations.

Second, empirical evidence that culture and climate are distinct constructs and that each includes multiple dimensions that vary by clinic to form comprehensive social context profiles can be used to develop typologies of mental health service organizations. Such typologies could be especially useful in identifying specific contextual characteristics that affect the implementation and outcomes of evidence-based practices in a number of ways. This could include the direct, interactive and mediating effects of organizational social context that are central to understanding why mental health organizations vary in effectiveness and why treatments implemented in community-based settings are less effective than in clinical trials. Within ChildSTEPs, for example, we expect to assess treatment outcomes as a function of the interaction between treatment models, on the one hand, and OSC profiles on the other.

Third, the hierarchical linear models (HLM) analysis illustrates an approach to estimating cross-level relationships that link specific organizational-level dimensions of mental health clinic culture and climate to individual-level criteria (e.g., clinician morale) that can be used with other individual-level criteria such as client treatment outcomes. In the example, less rigid and more proficient cultures were associated with higher clinician morale, but resistant cultures were not associated with morale. Also, more functional climates were positively associated with higher clinician morale, but stressful climates were not associated with morale. Such findings can be useful in efforts to create organizational social contexts for specific purposes. For example, these findings suggest that clinician morale might be improved with less emphasis on rigid bureaucratic rules and regulations, and more emphasis on proficiency within the organization, regardless of the level of stress in the work environment. Moreover, it also appears that efforts to improve clinician morale need not focus on reducing the stress that clinicians experience at work, if they focus on improving the functional characteristics of the organization. In other words, high clinician morale can be maintained in the face of high work environment stress if the organizational machinery is well-oiled and working to support the clinicians' efforts.

These findings suggest the OSC may be useful in a variety of studies. Even with small samples of organizations, the specification of a priori hypotheses, clear theoretical support, and statistical control of confounding variables can establish plausible links between organizational social context, treatment models and service outcomes (Hemmelgarn et al. 2001; Hemmelgarn Glisson and James 2006). With larger samples of organizations, randomized blocks designs based on organizational social context can be used to randomly assign organizations to new treatment models and control conditions within each contextual profile (e.g., best and worst). This approach allows the assessment of both the main and moderating effects of culture or climate by including them as factors in the design. Blocking can control differences in organizational social context that might confound results when randomly assigning treatments within a small sample of organizations. The randomization of treatment conditions (e.g., new treatment model versus treatment as usual) increases the internal validity of the treatment effects while representation of varying levels (e.g., best versus worst) of organizational culture and climate can increase the external validity of the findings.

Another approach is to include organizational social context in statistical analyses of service outcomes across a sample of organizations. This allows main, moderating, and mediating effects to be assessed or the effects of specific dimensions of organizational social context to be controlled as covariates. Additionally, the analyses of relationships linking organizational-level variables to individual-level service outcomes (e.g., client's functioning) can reflect the multilevel nature of the variables and the composition models that link constructs across levels of analyses (Glisson and James 2002; Klein and Kozlowski 2000a, b).

The measurement and methodological issues inherent in defining and examining relations between variables assessed at different levels of an organization are important to mental health services and implementation research because they facilitate the examination of organizational social context in community-based systems. The implicit assumption of randomized efficacy trials conducted in controlled laboratory settings has been that the interactions between clinician and client take place in an organizational vacuum. That is, efficacy RCTs have been used to eliminate the "noise" of the work setting that might moderate or mitigate the treatment effects. In actual community-based service systems, such noise is a constant reality of service provision and we argue that much of that noise is a function of organizational social context. When expressed as the shared expectations, perceptions and attitudes of clinicians, such contextual influences may be shown to influence the adoption of new treatment models, the fidelity with which those models are implemented, the nature of the treatment relationships that develop between clinician and consumer, and the availability, responsiveness and continuity of services. More studies such as the multi-site randomized trials that comprise the Clinic Treatment Project (CTP) of the Child STEPs initiative and NIMH-funded Rural Appalachia Project (RAP) should examine relations between these contextual influences and the implementation and outcomes of evidence-based practices (Glisson and Schoenwald 2005).

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