

Psychometric evaluation of the Spanish version of CONNECT: a measure of continuity of care in mental health services

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Abstract

This article provides the results of the psychometric testing of the Spanish version of CONNECT(-S), a measure of continuity of care in mental health services. CONNECT-S is a multidimensional measure designed for use with seriously mentally ill respondents. Consisting of 12 scales and one single-item indicator, it addresses qualities of interaction in current relationships between mental health service providers and consumers in five conceptual domains: (1) practitioner knowledge of their clients, (2) creating flexibility, (3) practitioner availability, (4) practitioner co-ordination, and (5) smoothing transitions. One-hundred-and-fifty participants took part in the study. Participants were recruited from mental health outpatient clinics in both the Puerto Rican (n = 109) and the San Antonio (n = 41) samples. Internal consistency for scales in a combined site estimate ranged from 0.68 to 0.96. Test-retest reliability ranged from fair to substantial in all but one scale. Concurrent validity hypotheses based on a priori predictions were mostly supported. The Spanish translation and adaptation of CONNECT-S provided sound psychometric results across both sites. CONNECT-S addresses the gap in measurement of continuity of care for the two largest US Latino subgroups, Mexican Americans and Puerto Ricans; and provides an encouraging starting point for a measure that is both relevant and culturally sensitive. Copyright © 2007 John Wiley & Sons, Ltd.

Key words: continuity of care, mental health services, culturally sensitive, outcome assessment

Continuity of care is essential to the delivery of all health services but it is particularly important in the psychiatric treatment of individuals with severe and persistent mental illness (Durbin et al., 2004). Deinstitutionalization and the ensuing fragmentation of services for this population have focused attention on continuity as an indicator of quality of care.

Continuity of care represents a central part of the psychiatric rehabilitation of the severely mentally ill. However, at the general level, continuity of care has received little attention as a measure of process of care. One exception is a study by Sytema et al. (1997) which

examined two indicators of continuity of care (readiness of aftercare and flexibility of care) in comparing the care of patients with schizophrenia in two kinds of mental health systems. They found that both indicators showed higher continuity of care in the mental health system that offered more co-ordinated care compared with the institution-based system.

A number of inquiries into the relationship of service delivery to consumer outcomes have focused specifically on continuity of care (Tessler, 1987; Lehman et al., 1994; Shern et al., 1994; Glisson and Hemmelgarn, 1998; Bindman et al., 2000; Chien et al.,

2000; Greenberg et al., 2002; Dickey et al., 2003). Both longitudinal and cross-sectional formulations of continuity are represented in these efforts. A broad array of outcomes ranging from the clinical (symptoms, functioning, hospitalizations) to the social (employment, social networks, adjustment to community living) have been assessed. However, few associations have emerged. One reason for this may be poor measurement. Recent reviews of the literature (Adair et al., 2003; Joyce et al., 2004) indicate that measurement of continuity of care needs to become more sophisticated in order to examine the relationship between continuity of care and outcomes and evaluate the effectiveness of psychiatric rehabilitation and treatment programmes. Moreover, the importance of developing a valid, reliable and cost-effective continuity of care measure is evident not only to some consumers but to researchers and policymakers working in this field.

With few exceptions, relatively little attention has been paid to the study of continuity of care among Latino populations (Alegría et al., 1997). According to the 2002 Population Survey US Census, Latinos are the largest ethnic group in the US, with Mexicans and Puerto Ricans comprising the two largest Latino sub-groups. A considerable number of Latinos living in the US (11%) either speak only Spanish, or consider Spanish their first language or language of preference. By the year 2050, more than a quarter of the clients seeking any mental health care will be ethnic minorities, many of them Latino with limited English proficiency (Institute of Medicine, 2002). In the Surgeon General's report on mental health needs of ethnic minority groups (US Department of Health and Human Services, 2001), the central argument was that the culture and context of the patient was relevant to the provision of quality services. Previous work (Canino and Bravo, 1994; Rogler, 1999; Lopez and Guarnaccia, 2000) highlights the importance of using culturally sensitive instruments to avoid the pitfalls of misdiagnosis and to answer the call of the National Institute of Mental Health (2000) for prioritizing the reduction of health disparities for ethnic minorities. Measures developed for or adapted to cultural minorities are needed to increase the accuracy of assessment. The usefulness of a continuity of care measure for the Latino population is greatly enhanced if it has cross-cultural applicability and it can be administered in both English and Spanish.

The CONNECT measure development project is a mixed, qualitative-quantitative research effort designed

to improve measurement of continuity of care in mental health services. The intent has been to produce a psychometrically sound assessment tool that:

- represents continuity directly rather than indirectly;
- consists of domains of assessment derived from the results of systematic empirical research;
- depicts continuity at the level of interpersonal interactions and relationships between consumers and practitioners;
- reflects seriously mentally ill individuals' priorities for mental health care;
- represents aspects of care that are meaningful to service providers.

Content domains for the measure were defined on the basis of an ethnographic study (Ware et al., 1999).

The product of this effort is CONNECT – a multi-dimensional measure designed for use with seriously mentally ill respondents. CONNECT is a fixed-response interview that can be administered by lay interviewers following brief training. It addresses qualities of interaction in current relationships between mental health services providers and consumers in five conceptual domains:

- practitioner knowledge of their clients;
- creating flexibility;
- practitioner availability;
- practitioner co-ordination; and
- smoothing transitions.

CONNECT consists of 12 scales and one single-item indicator. Seven of these scales are considered 'core scales' as they apply to all respondents. The remaining five apply only to respondents who have experienced particular transitions in the preceding year. Items include both questions and statements, which respondents rate using five-point rating scales.

CONNECT has been psychometrically evaluated (Ware et al., 2003) and assessed for cultural relevance with African-Americans and English-speaking Puerto Ricans living in the mainland US. The purpose of the cultural relevance assessment was to examine the applicability of the measure to minority populations by determining whether:

- African-Americans, Puerto Ricans and whites rated the importance of CONNECT domains and items differently; and

- domains and items relevant to African-Americans and Puerto Ricans could be identified that were not already included in the measure.

Results revealed no significant differences among cultural groups in ratings of importance and no domains and items that should be added to CONNECT to improve cultural relevance. The results of this evaluation suggest that CONNECT is culturally appropriate for English-speaking Puerto Ricans living in the domestic US.

To make CONNECT more widely accessible and useful, it has also been adapted for Spanish speakers. Adaptation has unfolded in two phases. The first consisted of translating the measure into Spanish, and evaluating the Spanish version (CONNECT-S) for semantic, content, and technical equivalence with English CONNECT. The initial phase of translation and adaptation, including changes made to the instrument as a result, has been documented elsewhere (Matías-Carrelo et al., 2003). This phase included the use of a bilingual and multi-national bilingual committee with focus group discussions of the translated instrument, followed by back translation and re-review by the multi-national bilingual committee. This procedure follows a conceptual model developed for the translation and adaptation of instruments (Bravo et al., 1993; Canino and Bravo, 1994; Canino et al., 1997). Evaluation of the psychometric properties of CONNECT-S constituted the second phase. The purpose of this paper is to report the results of the psychometric evaluation.

Methods

Sample

One-hundred-and-fifty participants took part in the study. Seventy-three per cent ($N = 109$) of the participants were recruited in San Juan, Puerto Rico, and twenty-seven per cent ($N = 41$) were from San Antonio, Texas. Participants were recruited from mental health outpatient clinics in both the Puerto Rican and the San Antonio samples. The percentage of Hispanics treated at the San Antonio clinic was 87.3%. Both clinics primarily provided clinical and rehabilitative services for individuals with severe and persistent mental illness in an effort to prevent re-hospitalization and provide help in adapting to community living. An array of services was offered to adults suffering from

severe depression, schizophrenia, bipolar disorders and other disorders with emotionally impairing symptoms. In both sites, a non-probabilistic convenience sample of Spanish-speaking consumers was recruited.

Table 1 summarizes the demographic characteristics of participants from each site. Differences between sites were tested using likelihood ratio chi-square statistics for association among categorical variables. For the continuous, age variable, ANOVA was used. Puerto Rican consumers were significantly different from San Antonio consumers in that they were older and the majority was female. However, in both sites, most participants were of low and low-to-middle socio-economic status. In each of the two sites more than half of the participants had fewer than 12 years of education. In Puerto Rico, almost 50% of the participants were separated, widowed or divorced. At the San Antonio site, extrapolating from the demographic composition of the general population, we estimated that approximately 80% to 85% of the Latinos were of Mexican origin. While the study protocol did not include a structured assessment measure of acculturation for Latinos in San Antonio, the Latino participants' self-reported preference for the Spanish language suggested a low level of acculturation. (Rogler et al., 1991).

Instrument description

CONNECT-S includes seven core scales and five transition scales. The core scales are:

- physician knowledge (of client);
- case manager/therapist knowledge;
- physician availability (to client);
- case manager/therapist availability;
- practitioner support (of clients);
- practitioner flexibility;
- practitioner co-ordination;

The transition scales are:

- moves from inpatient to outpatient care;
- use of emergency services;
- change in physician;
- change in case manager/therapist and;
- change in housing.

CONNECT-S also includes a general co-ordination single item indicator.

As in the English version, CONNECT-S interviewees provide responses to questions and statements using five-point rating scales. For the transition scales that

Table 1. Demographic characteristics of field test-participants

	San Juan N = 109		San Antonio N = 41	
	N	%	N	%
Gender*				
Male	31	28.44	24	58.54
Female	78	71.56	17	41.46
Education				
Fewer than 12 years	56	51.38	23	56.10
12 years	25	22.94	9	21.95
More than 12 years	28	25.69	9	21.95
Marital status				
Never married	29	26.61	16	39.02
Married/living as a couple	29	26.61	10	24.39
Separated/divorced/ widowed	51	46.79	15	36.59
Place of birth*				
Puerto Rico	102	93.58	0	–
Mexico	0	–	5	12.20
US	5	4.59	35	85.37
Other	2	1.83	1	2.44
Age*				
	Range	Mean (SD)	Range	Mean (SD)
	24–76	48.85 (11.00)	24–65	40.95 (9.42)

Note: an asterisk denotes a significant difference between sites ($p \leq 0.05$).

applied only to respondents who had experienced a particular transition in the preceding year, CONNECT-S modified the response format so that gate questions for each of these scales directly preceded the questions for the scale.

A psychometric evaluation of the English version revealed that five of the measure's 13 scales met the 0.80 criterion for internal consistency and reliability and the remainder approached standard criterion (0.70 or above). Estimates of two-week test-retest reliability indicated fair-to-good agreement. Broad validation strategies that included both known groups and convergent validity assessments produced inconclusive results (Ware et al., 2003).

Procedures and design

A test-retest design was used to examine CONNECT-S at each participating site. Participants were approached in the waiting rooms of the mental health clinic and

were informed of the project and the procedure involved, including the possible times and places for the interviews. Those interested were given a consent form that was read and reviewed by the interviewer to assure that the information had been completely understood. Formal consent was required for the interview to proceed. The measure was administered twice to each study participant with an optimal two-week period. A different interviewer interviewed participants at time 2. Having the second interviewer blind to the responses of the first interview eliminated response bias that could have resulted from having the same interviewer at both times. Interviews were mostly carried out either at the clinic or at the patient's home. In a few cases, an alternative location was arranged. Average administration time was approximately 30 minutes in both locations. The mean time elapsed between test and retest was less than 10 days in both San Juan and San Antonio. The response rate for the second

interview was high in both sites, 92% for Puerto Rico and 90% in San Antonio. The principal reason for not having a time-2 interview was that the participant was unable to be located within the specified time frame. The demographic information for these participants was compared to the demographics of those that had interviews at both time periods and it resembles that of their respective sample.

To maximize quality control, qualified interviewers were recruited and trained to administer the instrument. Training consisted of didactic presentations on the structure of the instrument and on methods of conducting interviews. A protocol manual was created and shared between sites to specify the procedures to be followed in the data collection process. For example, instruction included what to do when a person did not understand a question and how to rephrase the question. Interviewers were asked to comply with the structured format and to code each item according to the conventions instructed in the manual. The quality control process of the present study consisted of several steps to ensure the highest quality of data. All interviews were audiotaped and 10% were randomly selected and reviewed to verify interviewers' compliance with the study protocol and to verify responses had been coded appropriately. Supervisors reviewed all questionnaires collected to verify that each had been completed according to the pre-specified coding system. Few inconsistencies were observed. Nevertheless, when they occurred, a supervisor gave feedback and made sure that the necessary steps were taken to correct the problem. The quality-control procedure also included telephone calls and letters to a random sample of 5% of interviewees, to confirm that the interviews had been completed properly and thoroughly and in all cases proper compliance was reported.

Statistical analysis

For CONNECT-S, scales were constructed based on the original English language version of the instrument. For ease of understanding, the unit of measurement for each scale was re-scaled so that each scale score would range from 0 to 100. Each scale score is therefore represented as a percentage of the total value. For CONNECT, a higher score represents greater continuity of care. Means per site, for each scale, were compared using an unbalanced ANOVA statistical test.

Test-retest reliability for scales was estimated by intra-class correlation coefficients (ICC) (Shrout and

Fleiss, 1979). Much like the interpretation of kappas (Shrout, 1998), we considered an ICC of 0 to <0.1 as having no reliability, 0.1 to <0.4 as having slight reliability, 0.4 to <0.6 as fair, 0.6 to <0.8 as moderate and above 0.8 as having substantial reliability. We acknowledge that, even in the interpretation of substantial agreement, bias is possible in the associations. Cronbach alpha (internal-consistency) and item-total correlations were also calculated for each multi-item scale. Item-whole statistics were used to flag items that were not strongly associated with the total scale.

A concurrent validity strategy was implemented to obtain preliminary evidence of the validity of the Spanish version of CONNECT. Concurrent validity refers to the extent to which a measure correlates or varies directly with another accepted measure of (or criteria for) the same or a similar construct. Concurrent validity is appropriate when both the test and criterion estimates are obtained at the same time. In this case, we predicted that the longer a physician had worked with a consumer, the more knowledge he or she would have about the consumer and the more accessible he or she would be rated by the consumer. The same hypothesis was made for the case manager/therapist relationship with the consumer. Linear regression analyses were used to estimate these independent associations. (The shape of the distribution of variables was examined to be sure that the reported results were not due to a few influential points that accounted for the association.)

Results

Table 2 reports descriptive statistics for CONNECT-S core and transition scales for San Juan and San Antonio. Mean differences across sites were tested for each scale, controlling for demographic differences observed in age and gender. Only one core scale showed a significant difference. The case manager/therapist (CM/T) was reported as being significantly more available in San Antonio compared to Puerto Rico. Nevertheless, scores for both sites were quite low, suggesting poor availability. The highest score for a scale was 78.2 for general co-ordination in San Juan. The three lowest rated scales were practitioner support, physician availability and case manager/therapist availability. For transition scales, the skip patterns involved greatly reduced the number of participants for both sites. Small numbers of cases precluded analysis of the data for two of the transition scales: case manager/therapist transition and

Table 2. Wave 1 descriptive statistics for San Juan and San Antonio

Core scales	San Juan			San Antonio		
	N	Mean	SD	N	Mean	SD
Knowledge – CM/T	74	46.12 ^a	29.36	22	46.41 ^a	20.83
Knowledge – Psychiatrist	108	60.05 ^a	30.82	36	50.86 ^a	27.67
Availability – CM/T	74	14.77 ^a	23.65	22	31.82 ^b	34.25
Availability – Psychiatrist	108	9.96 ^a	17.87	36	16.19 ^a	26.89
Practitioner support	108	15.08 ^a	15.11	37	13.94 ^a	15.35
Practitioner flexibility	108	54.52 ^a	27.29	37	48.81 ^a	26.50
Practitioner co-ordination	77	63.94 ^a	30.55	22	49.27 ^a	29.75
General co-ordination	79	78.16 ^a	30.58	22	65.91 ^a	36.63
Transition scales						
Inpatient – outpatient transition	11	76.36 ^a	20.87	9	60.56 ^a	15.30
Emergency services transition	27	72.30 ^a	19.41	10	69.50 ^a	24.02
Psychiatrist transition	12	24.50 ^a	33.85	11	24.45 ^a	34.86
CM/T transition	4	18.75	22.29	5	56.40	37.50
Housing transition	9	13.89	28.73	7	22.86	31.34

CM/T = case manager/therapist.

Note: a higher score represents greater continuity of care. Means between sites were compared controlling for age and gender. Means with the same letter are not significantly different. Significance was set at $p \leq 0.05$. Difference in means was not tested for change in CM/T or change in housing transition scales because n for analysis was less than 10 cases in each site.

housing transition. scale means for emergency services transition and psychiatrist transition were similar in San Juan and San Antonio.

Internal consistency results are given in Table 3. An estimate is given for each site, in addition to a third estimate combining both sites. We considered our combined site estimate appropriate because of the similarity of results and the increased precision of our estimates due to the larger sample size. Cronbach's alpha was above 0.80 for six of the 11 scales that we were able to assess, and between 0.68 and 0.78 for the remaining five scales. Item-total correlations were examined for each scale and as a result three items were identified as problematic, indicating that the removal of the items would improve the alpha for the scale. The first problematic item was: 'I have left a phone message for [name of psychiatrist]', from the physician availability scale. The second item came from the practitioner support scale: 'In the last year, one of my providers has helped me get medical care.' The third was from the housing transition scale: 'Thinking about your recent change of housing, how much did your providers help you in making the transition smoother?' The removal of these items would increase alphas to 0.82 for physician

availability, 0.72 for practitioner support and 0.93 for housing transition.

The test-retest reliability results for each site, as measured by the Pearson's correlation, were tested using Fisher's r to z transformation. No significant differences were observed between sites. Combined site test-retest reliability estimate results are shown in Table 4. Most scales fell within a moderate estimate of reliability (0.50 to 0.87). Emergency services transition and housing transition were in the slight-to-fair reliability range. Intra-class correlation coefficients (ICC) were estimated for each of the items in these two scales. Poor reliability ($ICC \leq 0.4$) was observed for all four items of the emergency transition scale. For the housing transition scale one item was identified as having no reliability. The removal of this item, which was the same housing transition item previously identified as having poor internal consistency, improved the ICC of this scale to 0.52.

Partial correlations between CONNECT core scales were conducted adjusting for site (see Table 5). Most scales were not highly correlated (range 0.05 to 0.56). This was also observed in the English version (-0.11 to 0.52). These results were anticipated because

Table 3. Internal consistency estimates for Spanish CONNECT

Scale name	San Juan			San Antonio		Combined site estimate	
	k	n	Internal consistency	n	Internal consistency	n	Internal consistency
Knowledge CM/T	6	73	0.92	22	0.79	95	0.90
Knowledge psychiatrist	6	108	0.94	36	0.93	144	0.94
Availability CM/T	3	72	0.84	21	0.89	93	0.86
Availability psychiatrist	3	105	0.68	36	0.92	141	0.78
Practitioner co-ordination	3	74	0.86	22	0.76	96	0.84
Practitioner support	7	107	0.68	36	0.69	143	0.68
Practitioner flexibility	6	74	0.79	21	0.70	95	0.77
Inpatient – outpatient Transition	5	11	0.77	9	–	20	0.71
Emergency services Transition	4	26	0.74	10	0.69	36	0.71
Psychiatrist transition	4	12	0.96	11	0.96	23	0.96
CM/T transition	4	4	–	5	–	9	–
Housing transition	5	8	–	7	–	15	0.89

N indicates number of cases available at time 1, using the no missing cases option for Alpha. N < 10 cases will not be presented. The letter k indicates the number of items per scale.

Table 4. Reliability combined sites

Scale name	n	Pearson correlation (CI)	Intra-class correlation (CI)
Knowledge CM/T	68	0.66 (0.50, 0.78)	0.60 (0.48, 0.70)
Knowledge psychiatrist	125	0.79 (0.71, 0.85)	0.77 (0.71, 0.81)
Availability CM/T	68	0.74 (0.61, 0.83)	0.66 (0.56, 0.74)
Availability psychiatrist	124	0.78 (0.70, 0.84)	0.76 (0.71, 0.81)
Practitioner co-ordination	71	0.50 (0.30, 0.66)	0.50 (0.37, 0.62)
General co-ordination	73	0.76 (0.64, 0.84)	0.72 (0.63, 0.79)
Practitioner support	127	0.65 (0.54, 0.74)	0.60 (0.52, 0.67)
Practitioner flexibility	124	0.62 (0.50, 0.72)	0.59 (0.50, 0.67)
Inpatient – outpatient transition	12	0.82 (0.46, 0.95)	0.59 (0.30, 0.83)
Emergency services transition	20	0.30 (–0.16, 0.66)	0.22 (–0.05, 0.53)
Psychiatrist transition	17	0.87 (0.67, 0.95)	0.79 (0.63, 0.90)
CM/T transition	4	–	–
Housing transition	12	0.45 (–0.17, 0.81)	0.42 (0.08, 0.76)

N indicates number of cases available to estimate test–retest reliability. N < 10 cases are not presented. CI stands for confidence interval.

CONNECT was intended to measure multiple distinct constructs. The highest correlation ($r = 0.56$) was observed between physician and CM/T availability, a predictable result as they both measure availability. The next highest correlation ($r = 0.53$) was observed between practitioner flexibility and practitioner co-ordination. Both of these scales imply a willingness of the practi-

tioners to make extra efforts to accommodate consumers. The only other correlation above 0.5 was between physician knowledge and general co-ordination ($r = 0.52$). We interpret this relationship as an indication that practitioners who know their clients better are better able to co-ordinate their care. Transition scales were not evaluated because of the small sample size.

Table 5. Partial correlations between CONNECT core scales adjusted by site relationship

	CM/T knowledge	Psychiatrist knowledge	CM/T availability	Psychiatrist availability	Practitioner co-ordination	General co-ordination	Practitioner support	Practitioner flexibility
CM/T knowledge	█	0.39*	0.31*	0.07	0.35*	0.29*	0.34*	0.28*
Psychiatrist knowledge	█	█	0.09	0.18	0.26*	0.52*	0.36*	0.40*
CM/T availability	█	█	█	0.56*	0.31*	0.05	0.38*	0.30*
Psychiatrist availability	█	█	█	█	0.25*	0.16	0.23*	0.24*
Practitioner co-ordination	█	█	█	█	█	0.48*	0.28*	0.53*
General co-ordination	█	█	█	█	█	█	0.34*	0.41*
Practitioner support	█	█	█	█	█	█	█	█
Practitioner flexibility	█	█	█	█	█	█	█	█

Note: * denotes statistically significant correlations $p \leq 0.05$.

Concurrent validity

Concurrent validity for Spanish CONNECT was estimated through linear regressions. We predicted *a priori* that the longer a practitioner had worked with a consumer, the more knowledgeable and accessible he or she would be. Significant regression coefficients were obtained ($p \leq 0.001$) for both psychiatrist knowledge ($B = 0.32$, $SE = 0.09$) and psychiatrist availability ($B = 0.22$, $SE = 0.06$), providing supporting evidence for the hypothesized relationship. The squared correlation coefficient indicated that time in treatment explained 8% of the variance in the knowledge scale and 7% of the variance of the availability scale. However, for CM/T no relationship was observed between time in treatment and either knowledge or availability.

We also tested the relationship between total number of providers working with a consumer and practitioner support. Our results indicated that the greater the number of providers, the more support was felt by the consumer ($p \leq 0.001$, $B = 3.98$, $SE = 1.10$). The variance explained by the squared correlation coefficient of this relationship was also around 8.5%.

Discussion

This paper reports on the second phase of a translation and adaptation study conducted in two sites – San Antonio, Texas and San Juan, Puerto Rico. The purpose of the study was to estimate the psychometric properties of the Spanish version of CONNECT (CONNECT-S). Results suggest that CONNECT-S has moderate-to-substantial reliability and basic validity in two different subgroups of Spanish-speaking Latinos. In fact, when compared to the English version, more scales in the Spanish version had greater reliability.

The initial validation strategy employed in this study was based on *a priori* predictions that the length of the practitioner-consumer relationship would engender more practitioner knowledge and accessibility from the point of view of the consumer. We also predicted that the greater number of providers would be related to increased support as perceived by the consumer. Except for the CM/T-consumer relationship, we found support for our hypotheses. The work of a case manager is to assist consumers in resolving problems, facilitating services and linking them with other available resources. Often, however, the client load for these providers is extremely high and the position is sometimes characterized by high turnover. In both our samples, the number of consumers interviewed who received

services from a case manager or a therapist was lower than the number receiving services from a psychiatrist. The lack of strong bonds with case managers may account for failure to observe the relationship hypothesized in the study's validation component. We encourage future validations of CONNECT-S to explore alternative strategies to preclude other possible causes for the results observed in terms of the knowledge and availability of the psychiatrist and case manager.

After controlling for sample differences, only one of the scales tested showed a significant difference in mean scores between sites. The difference found may reflect a particular characteristic of the system of care in San Antonio (a greater number of case managers/therapists and therefore, more availability than in Puerto Rico). The psychiatrist availability scale and practitioner support scale had extremely low means in both sites. This may be interpreted in two ways. First, consumers may be identifying a serious problem with the health system at these sites. Second, having the majority of the scores located at the lower ends of the scale may reflect a lack of equivalence for the Spanish version. For the English version of CONNECT, both these scales also had low means, nevertheless the score was somewhat higher (psychiatrist availability mean = 37.4, practitioner support mean = 41.4) (Ware et al., 2003). Additional items may need to be developed to capture a broader dimension of the domain for this scale in the Spanish version.

The poor test-retest reliability observed for the emergency transition scale is also of concern. The items for this scale try to capture the efficiency of an intervention implemented in a crisis situation during the last year. It is possible that respondents who experienced a recent crisis were experiencing more severe symptoms; therefore the cognitive impairment that may have resulted from their severe mental illness could have also interfered with their capacity to reliably recall the event.

Several additional limitations need to be addressed. The small sample size restricted analysis of some of the scales and prevented a more definitive interpretation of the results obtained. A replication study should be carried out with a larger sample, especially for the transition scales. Also, future testing should be based on a random clinical and community sample. However, an important strength of this study was our use of separate samples of mental health consumers representing two Spanish-speaking Latino subgroups with distinct

national origins and cultural traditions. A two-site, two-sample strategy increases the potential generalizability of the Spanish version of CONNECT to diverse US Latino subgroups.

This study builds on the strengths of the initial adaptation and translation phase, in which each item was subjected to rigorous testing, modification, and refinement using data from mental health consumers representing the two largest US Latino subgroups: Mexicans and Puerto Ricans. The measure was subsequently psychometrically tested for these same two groups. The original English version of CONNECT was derived from ethnographic research that elicited and operationalized continuity of care from consumers' points of view. Importantly, this inductive approach was extended to the adaptation and translation phase. Focus-group strategies integrating cultural flexibility as well as retaining generalizability were used in adhering to the highest standards of the cross-cultural equivalency model used in phase one of this study (Matias-Carreló et al., 2003).

A prominent problem identified in the measurement of continuity of care has been a failure to convey consumers' conceptions, perceptions and experiences of the care they receive (Joyce et al., 2004). CONNECT prioritizes the vantagepoints of consumers and also incorporates other stakeholder perspectives in the measure development process. This represents an important step towards addressing the gap in the measurement of continuity of care (Ware et al., 2003). Also, few studies have examined continuity of care among ethnically diverse populations. The Spanish version of CONNECT begins to address this gap by demonstrating its usefulness for the two largest US Latino subgroups.

Although the Spanish version is as reliable as the English version, future studies need to test CONNECT-S in other settings, other regions of the country, with other Latino subgroups and using additional validation strategies. These studies should consider the importance of deriving new domains from the subjective experience of Latino Spanish-speaking consumers in order to conceptualize and develop items that capture their experiences within the service-delivery system they encounter. Given that the Puerto Rican sample used for the cultural relevance study testing of CONNECT was English speaking, a higher level of acculturation would need to be assumed. As such, the worldview and perceptions that informed the

conceptual domains of the English CONNECT (mostly Euro-American and African-American consumers) may be quite distinct from those shared by Spanish-speaking Latinos. For example, several studies have found that Latino consumers diagnosed with a severe mental illness are more likely to live with their families than their Euro-American and African American counterparts (Guarnaccia, 1998; Kopelowicz, 1998). A Latino consumer's living situation that is accepting and supportive probably reflects a higher degree of interdependence in coping with the illness and greater family involvement in dealing with the mental health system. The family has an important role in the co-ordination of care for Latino consumers, which in turn has implications for how the familial context is considered in the assessment of continuity of care for this population (Barrio, 2000). This may be essential to establishing improved reliability and validity of CONNECT-S for the large and growing constituency of Latino mental health consumers.

The adequacy of an instrument in a given culture does not guarantee its reliability or validity in another and there is evidence that an inadequate translation and adaptation of an instrument can result in a translated instrument that is less reliable than the original version (Berkanovic, 1980). This does not seem to be the case for CONNECT-S. Based on the data presented, the Spanish version of CONNECT represents a successful translation and adaptation of the English version and encouraging starting point for a measure that is relevant and culturally sensitive for Puerto Rican and Mexican American populations in the US.

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