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Reliability, Validity, and Item Response of MOS Social Support Score among Incarcerated Women

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Introduction

The number of incarcerations in the US has dramatically increased in recent years (1). More than 2.2 million individuals were held in custody in state or federal prisons or local jails in 2009 (2). The proportion of female inmates accounts for less than 9% of the incarcerated population, but the number of female inmates in state and federal correctional facilities has grown faster (66.7%) than the number of male incarcerations (42.8%) between 1995 and 2007 (3, 4).

Incarcerated women are affected by a myriad of difficult life circumstances, including poverty, unemployment, lack of education, and unstable housing conditions (5–7). Typically, their socioeconomic difficulties exist before their incarceration (8–10). One survey conducted in Chicago found that over 50% of women in a local jail were living in unstable housing or were homeless prior to incarceration (11). A high rate of shelter use is also reported among ex-offenders released from correctional facilities (12–14). A disproportionate number of incarcerated women engage in sex trade to meet their drug or survival needs. Studies have documented that women often engage in prostitution for shelter, drugs, and other survival needs (8, 15–17), and such unmet needs among incarcerated women affect their recidivism (8, 18, 19).

A disproportionate number of women in correctional facilities suffer from co-occurring conditions such as mental illness and substance abuse (20–24). Many of these women have a physical and sexual abuse history (25, 26). Childhood abuse history and trauma may contribute to the higher rates of posttraumatic stress disorder (PTSD), depression, and substance use among female inmates in comparison to their male counterparts (23, 27–31).

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Female inmates often come from neighborhoods characterized by concentrated incarceration, poverty, and segregation (32), which lack social and economic resources. In addition, female inmates' frequent substance use and law involvement may contribute to further deterioration of social support networks and resources (31, 33–38).

The role of social support among incarcerated women

Social support can be defined and operationalized in various ways, but a broad definition of social support is the resources provided by others. Cohen and Syme define social support as "the existence of people on whom we can rely, people who let us know that they care about, value, and love us." (39). Social support can be measured as the perceived assistance available and the actual support that they received. The concept of social support describes both sources and types of support. Sources of social support could include: professionals, peers, and family members (40, 41). Types of social support are: emotional support, instrumental support (i.e., providing tangible assistance, such as help with childcare, housekeeping, provision of transportation or money), information or education, and appraisal support (e.g., assisting individuals in self-evaluation). Social supports exist at several levels of society: in the immediate interactions within families and among friends and within larger social networks of neighborhoods, and at institutional levels (42).

Studies have documented beneficial effects of social support on mental and physical health in various groups (43–52). One's availability to obtain resources and emotional support may reduce one's negative physical and mental health outcomes (40, 43, 44, 52–58). Social support can help inmates navigate through difficult life circumstances as they return to the community by providing resources to deal with life strains (59). Social support also has been known to have a protective effect on future criminal engagement (49, 60–64).

And yet, due to their individual and neighborhood characteristics, incarcerated women may have limited access to social supports. Studies have documented that substance using women tend to be more isolated and to have limited sources of social support compared with non-substance users (65–67). Incarcerated women often have difficulty identifying people who do not use drugs in their support networks. Many women have strained their support sources due to recidivism, mental health problems, and substance abuse. Women with lengthy histories of drug use often exhaust the social support offered by family members (68).

The direction of the association between social support and health and behavioral outcomes is not always consistent. Studies have shown that social support and networks were negatively associated with cancer outcomes and HIV survival (47). One of the reasons for the inconsistent findings might be that characteristics of social support networks determine negative and/or positive relations among individuals in the networks (69–71). Women who are released from jails usually return to the same environments where they began using drugs. Lack of social and economic skills make it difficult for these women to land a job, which often results in relapse to drug use and recidivism. Individuals in their drug or crime networks may affect female inmates to continue to participate in drug use and/or criminal activities. It has been documented that substance using women received social support from substance using individuals in their networks, who also enable women's substance use (65,

67, 69). Social support from illegitimate sources can promote further criminal activities and substance use (69–71).

The potential impact of social support on recidivism and other outcomes among female inmates is apparent, but the characteristics of social support among incarcerated women have not been fully studied (62, 72). Characteristics, functions, and size of social networks may influence the amount and type of social support that incarcerated women identify.

Rasch model

To explore the characteristics and pattern of social support among female inmates, we use the Rasch model to analyze the Medical Outcomes Study (MOS) social support scale. The MOS social support survey is designed to assess the functional components of social support, which refers to the degree to which interpersonal relationships serve particular functions (53, 73, 74). The survey consists of four separate social support subscales (emotional/information support, tangible support, affectionate support, and positive social interaction) and an overall functional social support index. A higher score indicates a greater amount of social support (53, 73, 75).

Although the he MOS social support measure has been widely used and validated in a variety of groups, this measure has not been thoroughly examined for its valid and reliable use with incarcerated women. Conceptually, the Rasch model is a special single-parameter Item Response Model (IRT) which assumes that a group of items is measuring a unidimensional latent trait (76). In the case of the MOS social support scale, it is assumed that the single underlying trait is amount of perceived social support.

The Rasch model allows for the estimation of item difficulties (77). The outcome of Rasch focuses on a given latent trait, independent of particular scales with which the latent trait is measured. The instrument independent characteristics of Rasch measurement means that a respondent’s ability for a given latent trait is assessed independently of the particular characteristics of the items administered, and are revealing of the trait and not simply the specific instrument. If the MOS scale accurately measures the construct of social support among incarcerated women, the items should form a hierarchy that is consistent with the theory of the measure. Items form a range from frequently endorsed items (considered ‘easy’) to items that are less frequently endorsed (considered ‘difficult or rare) (76).

In this way, Rasch procedures also enable the test developer to examine the equivalence of item calibrations across different samples and contexts, including various cultural settings. This is useful for detecting biases that may be inherent in the items or the measure (78, 79). For example, Rasch analysis can help detect differences in the incarcerated population compared with the general population. Incarcerated individuals may respond to and identify certain types or items regarding social support, while other social support items or concepts may be limited, when compared to the general population. Our preliminary qualitative interview research identified that incarcerated women report that they do not have close friends; they also often describe their relationships with others as ‘acquaintances’. This qualitative in-depth interview results prompted us to explore reliability, validity, and item response of the MOS social support among this population.

Although the Rasch model has been applied in a broad range of health related studies, it has been not been employed to validate the MOS social support questionnaire, and has never been validated for use for incarcerated women. This paper examined:1) if the measure is measuring a unidimensional construct and 2) the level of reliability and validity of the measure in the sample, and 3) the ease and difficulty of endorsement of social support items (item difficulty) varies enough to examine variability of the respondent's social support level (person ability).

Methods

Measure: the MOS Social Support Scale

The MOS Social Support questionnaire contains 19 items rated on a five-point Likert scale (i.e., 1=Not at all; 2=A little of the time; 3=Some of the time; 4=Most of the time; and 5= All of the time). An original psychometric analysis of the MOS Social Support Survey (MOS) was performed, and the survey was found to have good psychometric properties (53). The authors found the measure to have good item variability (though with a positive skew in distribution), to have high correlation among subscales, to be reliable over time, and demonstrate good construct validity. Impressively, the authors found an overall Chronbach's alpha of 0.97 for the entire scale, and alphas of 0.91–0.96 for the four subscales.

Internal Consistency

Internal consistency of a measurement indicates the correlations between items of a measure, which determines whether the items reflect a particular construct that the items were designed to measure. Internal consistency was estimated with Chronbach's alpha. Chronbach's alpha estimates the lower bound of internal consistency of the measure's item by using responses obtained from a single administration of the tests (80).

Exploratory Factor Analysis

In factor analysis, the correlation between the items and the factors are represented by factor loadings, which provide information about how strongly an item correlates with an underlying factor (80). Hence, factor analysis estimates how much of the variability in item response is due to common factors.

Factor analysis can be a method to test for unidimensionality, as a 'factor' is considered to be the reflection of some unobserved latent variable (or construct). Therefore, it would be expected that if the MOS were unidimensional, there should be one strong factor that is clearly related to the underlying construct being measured (80, 81). It is important to note that although a factor analysis may yield several components (as can be the case of measures with subscales), an argument can still be made for unidimensionality through other techniques. In the analysis of the MOS, a factor analysis was performed using a statistical software, SPSS (82), with further rotations (e.g., varimax) to provide clarity to the factor structure.

Rasch Analysis

The MOS was analyzed with a Rasch dichotomous model (83, 84) with Winsteps (version 3.72.0) statistical software (85) to obtain linear interval measures. The Rasch model estimates the probability that a responder will choose a particular response category for an item as:

$$\ln \frac{P_{nij}}{1 - P_{ni(j-1)}} = B_n - D_i - F_j$$

where P_{nij} is the probability of respondent *n* scoring in category *j* of item *i*, $P_{ni(j-1)}$ is the probability of the respondent *n* scoring in category *j−1* of MOS item *i*, B_n is the person measure of respondent *n*, D_i is the difficulty of the MOS item *i*, and F_j is the difficulty of category step j (76). Rating scale categories are considered ordered steps on the measurement scale, where completing the j^{th} step can be considered choosing the j^{th} alternative over the $(j-1)^{th}$ in response to an item (86). The Rasch rating scale model was used to provide additional insight about the measure, how individual items function, and how respondents utilize the five-point Likert scale.

Response category analysis—One of the requirements of the Rasch model is that of monotonicity, which requires that as person ability increases, the item step response function (ISRF) increases monotonically (76). This means that choosing one categorical response over the prior (i.e., moving from selecting “2=A little of the time” to selecting “3=Most of the time”), increases with person ability. A response category analysis allows for a check of this assumption.

Principal components analysis—Principal component analysis (PCA) of Rasch residuals is related to unidimensionality, and yet different from the traditional factor analysis. In the case of the Rasch model, the data are first constructed into a linear measure through typical Rasch analysis estimation, and then a factor analysis of the residuals that remain after the Rasch analysis is conducted. The Rasch factor analysis of the residuals is used to detect common variances that are left unmodeled after the Rasch measure has been performed (76). This allows for the detection of a substantial ‘rival’ factor in the residuals after a primary measurement dimension (in this analysis, the MOS social support scale) is estimated.

Criterion that will be used for unidimensionality will be variance explained by the measurement dimension to be greater than 40% (87). Unexplained variance in the first contrast of the data should also be low, and fall under the criterion of 15% for a rival factor. Moreover, additional criteria for unidimensionality will employ item and person fit statistics, which will be discussed next.

Item quality—Using Wilson’s criterion of > 1.33 and <0.75, an item was regarded as misfitting if its mean squares on both infit and outfit were higher than 1.33 or lower than 0.75, i.e., the latter being over-fit (88). That is, items with greater than 1.33 infit or outfit, with a significant ZSTD (this is a t-statistic, so acceptable values are those accepted for t,

which is ranged between −2 and +2) will be evaluated. These criteria are appropriate for even large samples (76). Such indices might reflect a poor item. Other problem items might include those that are endorsed by most respondents, and might not be useful in providing information about the construct or the persons.

Another useful diagnostic provided by the person/item maps of the Rasch model is that of how well the items are centered on the population of interest. As a criterion, the mean of the items and the mean of the persons should be within one logit of each other to indicate that the items fit the population of interest. This would be an indication that the items are appropriate for the target population. Additionally, items should have an appropriate spread that ranges across the span of persons measured to capture the wide range of variability of person abilities on the construct (76).

Reliability—Both Chronbach's alpha and Rasch item/person reliability statistics provide estimates of the proportion of variance of the person scores or measures to total variance (76, 81). However, Rasch person/item reliability reflects the reliability of the placement of both on the measurement scale. Rasch person reliability, which is equivalent to Chronbach's alpha, would be expected to meet the 0.80 criteria (the same as for the alpha). Item reliability, which is reflective of reproducibility of the order of persons on the scale if given a parallel test, should also be above the 0.80 criteria.

Further, a Rasch analysis provides estimates of item and person separation. The item separation index provided by a Rasch analysis details the number of standard errors of spread across the items (76). This estimate, along with the item reliability estimate, indicates the ability of the measure to reliably position the items on the hierarchy.

Validity—Perhaps the most important type of validity is that of construct validity: the degree to which the items account for the latent construct, θ. It is useful to think of the many different types of validity as evidence of a strong measure (89).

Construct validity can be tested in different ways. According to Rasch theorists, the item hierarchy provided by the item difficult estimates support construct validity (90). It is argued that the items of a scale should form a hierarchy with frequently endorsed items on the bottom, and less frequently endorsed items on top.

Results

Setting and Sample

We utilized survey data collected from female detainees in the Cook County Jail. The Cook County Jail is the largest single-site jail in the US. Between 1995 and 2004, there were over 875,000 incarcerations involving 389,532 individuals, with an average of over 97,000 incarcerations per year within this facility (unpublished preliminary study by the authors). Of those, 63% were African Americans, 17% were Hispanic, and 19% were non-Hispanic white. The proportion of women in the inmate population increased modestly from 14% in 1996 to 16% in 2004. On average, the jail makes over 16,000 female incarcerations per year.

A total of 271 survey results were included for this analysis. The mean age of the survey participants was 39.1 years old (SD=10.5). Nearly 70% of the female inmates in the study were African-American, 16.7% were white, and 6.3% were Hispanic women.

Forty three percent of the participants reported to be single, 12% were married. More than 80% of women reported that they have one or more children. Almost half of the women (47%) had high school or more education, and 10% were employed part time, 10% were employed full time and 64% were unemployed prior to the index incarceration. Forty seven percent reported that they ever had a drug problem and 42% reported they ever had an alcohol problem.

The average score on the MOS for this sample was 3.75. Inter-item correlations were strong, ranging from 0.57 to 0.83 for the items. Examining the subscales, the mean score was 73.0 for the Emotional/Information Support; 81.4 for the Affectionate Support; 76.4 for Positive Social Interaction; and 72.6 for the Tangible Support. The average overall support index score was 75.0.

Internal Consistency

The Chronbach's alpha coefficient of the MOS was 0.97, which did meet the criterion for the alpha. The Chronbach's alphas for the subscales were 0.96 for Emotional/Informational Support, 0.97 for Tangible Support, 0.95 for Affectionate Support, and 0.94 for Positive social interaction. There were no items that correlated poorly with the other items, or contributed negatively to the Chronbach's alpha estimate. Furthermore, the Chronbach's alpha of 0.98 was confirmed during the Winsteps estimation process.

Factor Analysis

The factor solution revealed three measurement components (Table 2). The three components included: Emotional/Informational Support (Component 1), Affectionate and Positive Social Interaction (Component 2), and Tangible Support (Component 3). From the original MOS four subscales, affectionate support and positive social interaction were loaded on a same factor (Component 2). All of the items loaded clearly on a single component, with the weakest loading for 'someone to do things with' (item #19), the additional item that was not subsumed under any of the subscales. However, the item loaded with Affectionate and Positive social interaction, and could be considered a positive social interaction along with the other items on the measure.

Rasch Analysis

The Rasch item map (Figure 1) depicts person ability and item difficulty on the same logit scale. The item mean is fixed at 0 logits. The person mean on the measure is 0.88 logits, indicating that for this population, the social support score was higher than the average mean of the items.

The difference between the mean of the items and the mean of the persons was within one logit, suggesting that the items fit the population of interest. However, the items did not have an appropriate spread that ranges across the span of persons measured. This finding

indicates that the MOS does not capture the variability of person abilities on the construct. In other words, there is not enough variability in the MOS item difficulties to adequately capture the full range of person ability. In addition, as shown in the figure, many women endorsed the highest categorical response of all items, which indicates a 'ceiling' effect in this sample. It is important to note that all 'extreme' cases (floor or ceiling) are not included in the Rasch analysis procedure. Therefore, the number of cases used in the estimation procedure was 224.

Examining the item quality, the item fit statistics provided by Winsteps indicated no items misfit on the scale. The infit ranged from 1.20 to 0.75, which were all within the range of the Wilson criterion (which was between 0.75 and 1.30). The outfit ranged from 1.22 to 0.69. The only item with the outfit of 0.69 was the item 19, the additional question. Except for the additional item, all items were within the reasonable range of the criterion (85, 88).

Results of the principal components analysis showed that the variance explained by the measurement dimension was 60.4%, much greater than the 40% recommendation by Reckase (91). The unexplained variance (8.4%) in the first contrast of the data fell below the criterion of 15% for a rival (or second) factor (which is a competing factor). This finding further confirmed that the measure is unidimensional, and is appropriate for analysis via the Rasch model.

The response category analyses for each of the subscales revealed the response categories behaved as required by the Rasch model. This indicates that the respondents were using the response category properly and were able to discriminate among response options.

Reliability—Table 2 describes Rasch reliability. The person summary statistics for the 224 respondents yielded a person reliability of 0.88. The item summary statistics revealed an item reliability of 0.94, which was comparable to the reliability from the original Rand study in the general population (alpha = 0.91).

Validity—In terms of construct validity, the items of the MOS form a hierarchy with most commonly endorsed items on the bottom, and less endorsed items on the top (Figure 1). The more frequent (more endorsed) items were 'feel wanted' (item #14), 'someone to give you hugs (item # 15), and 'someone shows you love' (item # 13), all of which were from the subscale Affectionate Support. This finding demonstrated that affectionate support was more endorsed among incarcerated women. The least endorsed item was 'share private worries and fears' (item #6), followed by 'getting advice that they want' (item #5), 'someone to turn to for suggestions to deal with problems' (item #7), 'someone who understands your problems' (item #8), and 'help with daily chores if you were sick' (item #12). All but item #12 were items from the Emotional/Information Support domain, implying that women in our sample reported having difficulty getting advice and support to deal with their problems.

Discussion

Overall, the MOS social support scale was shown to be a good instrument to capture the level of social support among incarcerated women. Although, to our knowledge, there was

no previous Rasch analysis on MOS, the descriptive statistics in the original article on the scale in the general population showed that the Affection social support subscale had the highest mean score (92). Similarly, an analysis of MOS among 330 mothers in the US showed that the Affection subscale also had the highest average score (93). In our sample of incarcerated women, all three items in the Affection social support domain were shown to be most endorsed items. This finding might describe that despite their difficult life circumstances which often include social networks evolved around substance use and illegal activities that lead to incarceration, incarcerated women still obtain affectionate support from their personal networks.

On the other hand, having someone to share worries and fears was the most difficult item on the scale. Studies have shown that many incarcerated women have histories of childhood physical and sexual abuse, which often results in running away from home in early age and difficulty forming and maintaining friendships. Related, their substance use and recidivism may exhaust networks of family and close friends with whom they can confide with. While incarcerated women may obtain social support from other sources, they may feel the lack of having confidantes. This is significant considering the fact that incarcerated women go through problems with illegal drug use, other criminal activities, and incarceration, and yet, it is difficult for them to find someone to talk about their worries and fears.

We observed the ceiling effect on the scale, which means that the MOS items did not seem to measure a wide range of social support among these women. In addition, the mean of person ability is higher than the mean of the item difficulty, which means that women in our sample tended to endorse the social support items at a high rate. Potential reasons for this finding might be simply the MOS items are too easy to endorse. If this is the case, the MOS items are not highly discriminatory in terms of differentiating the level of social support received among incarcerated women.

A second possibility might be that incarcerated women may not perceive the need and the lack of support. The average scores for the four subscales ranged from 72.6 to 81.4. Indeed, our sample scored higher compared with the average scores from the general population (92), which ranged from 69.6 to 73.7. Although there is no comparative study between incarcerated women and women in general, we could suspect that difficult life circumstances and persistent socioeconomic hardship may contribute to their low expectations of social support. Another possibility would be that incarcerated women simply receive sufficient support due to the fact that they have high needs. Or, regardless of their drug and criminal social networks, they still receive support from each other. Finally, this instrument was administered while they were in jail, a setting where these women could develop a bond with other women in similar situation, which might have contributed to the high level of social support measure.

In any case, this finding indicates the need for improvement in the MOS scale in order to appropriately capture the level of social support among incarcerated women, especially if the MOS scale is used to identify needs and resources among incarcerated women with the intent of developing interventions for the population, or if the MOS is used to track changes in support over time. Without clearly delineating the measure of social support and the lack

thereof, the MOS results may not provide meaningful information for interventions and services to reduce recidivism.

Implications

The MOS could be improved by retooling the instrument to measure the full range of variability in the item difficulties. It might be that additional “more difficult” items are needed that can finely differentiate the level, dimensions, and sources of social support in this population. Another way to obtain better information might be that other supplemental instruments, such as a measure of size and strength of a social network, can be used in conjunction with the MOS social support scale to best measure social support.

As noted, the conditions and sources for social support may be different for incarcerated women. As an example, the questions of the MOS ask if there is ‘someone’ available to help in certain domains. Considering the highly overlapping criminal and drug networks among incarcerated women, the persons who are available to provide support may also be involved in criminal behavior and/or substance use. This makes it difficult to separate out social supports from the negative influence from individuals in their social networks. One way to deal with this issue may be that the scale can be modify for use in incarcerated populations, which can ask specific questions regarding those who are not involved in criminal or drug networks.

Another important element to consider is the identification of formal supports, such as social services for medical care, housing, and jobs. Women living in poverty may lack resources to support each other, and formal supports may play an important role in successful reentry into the community. It is suggested that if the MOS is to be used to concretely identify the level of social support experienced by incarcerated women and be used as a tool for discharge; items should be changed to reflect these issues. Adding specific questions regarding formal and informal tangible supports that can help reduce risks of recidivism may prove beneficial to designing and implementing discharge plans.

Any changes to the MOS instrument would have to be tested and validated in this population prior to implementation, and it would be suggested that more qualitative work (i.e., focus groups and cognitive interviewing techniques) be used to fine-tune the instrument and insure generalizability and utility of the revised scale.

Conclusions

Incarcerated women are affected by a myriad of issues, including substance use, mental health problems, and other health issues. And yet, they are vulnerable because of lack of resources from which they can draw emotional and tangible supports to deal with such issues. Accurate assessment of the level and the type of social support in this population is particularly important in designing interventions to reduce recidivism.

Further research is warranted to explore social support systems and related concepts, such as social networks in incarcerated populations. Incarcerated women’s social support networks frequently overlap with their drug and crime networks. The functions of social support in the

context of substance use and crime may have both positive and negative aspects in reducing relapse to drug use and recidivism. Such dual functions of social support networks can help better understand risks and resources among incarcerated women.

Current health disparities research strives to identify and reduce disparities in the exposure to risk factors and the distribution of health conditions that affect differently specific population groups. To achieve this goal, the development of theory and methods to investigate health disparities is an important aspect of health disparities research. However, it is often a challenge to develop reliable and valid instruments that can accurately capture attributes under study in vulnerable populations, such as incarcerated individuals and/or substance users. Their life experience and context may require an additional adjustment to existing instruments, even if the instruments have been validated in the general population. Studies concerning reliability and validity of instruments among vulnerable populations should be a key component in disparities research. Examining constructs of an instrument indeed is part of theory building, which can contribute to health disparities research.

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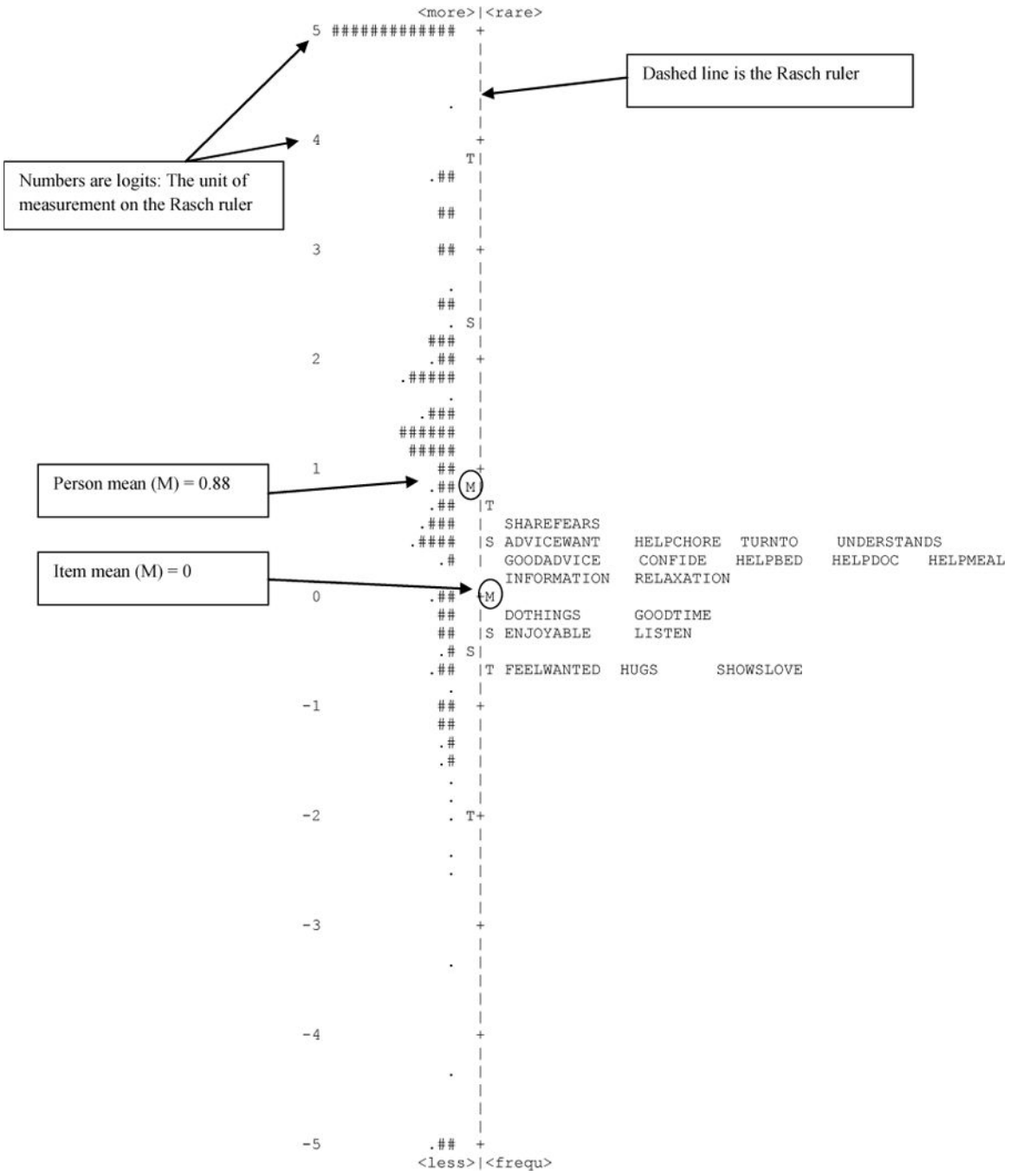

Figure 1.

Rasch Item/Person Map

Note: Each "#" = 3; Each "." = 1 to 2

S = one SD; T = two SDs

Left of dashed line is SD for persons; right is SD for items.

Table 1

Demographics characteristics of the sample (N=271)

	%
Race/Ethnicity	
African American	69.6
Caucasian	17.0
Hispanic	6.3
Other	3.5
Age	
< 20	1.1
20–30	24.9
31–50	54.5
> 50	18.0
Marital Status	
Single	65.5
Married	12.1
Separated/Divorced	9.9
Widowed	3.6
Education	
Less than high school	53.0
High school/GED	44.3
More than High school	2.0
Employment	
Unemployed	76.1
Part-time employed	9.8
Full-time employed	10.3

Table 2

Factor components, factor loading, and subscale domains

Subscale	Mean	Factor component	Factor loading
Emotional/Information Support	**3.65**	**1**	
1. Someone you can count on to listen to you	3.91		.665
2. Someone to give you information	3.67		.787
3. Someone to give you advice about a crisis	3.69		.809
4. Someone to confide in or talk about your problems	3.69		.742
5. Someone whose advice you really want	3.61		.741
6. Someone to share your most private worries and fears	3.51		.741
7. Someone to turn to for suggestions to deal with problems	3.57		.828
8. Someone who understands your problems	3.56		.770
Tangible Support	**3.63**	**3**	
9. Someone to help you if you were confined to bed	3.62		.790
10. Someone to take you to the doctor if you needed it	3.65		.810
11. Someone to prepare your meals if you were unable	3.66		.842
12. Someone to help with daily chores if you were sick	3.60		.805
Affectionate Support	**4.07**	**2**	
13. Someone who shows you love and affection	4.10		.731
14. Someone to love and make you feel wanted	4.05		.756
15. Someone who hugs you	4.07		.779
Positive Social Interaction	**3.82**	**2**	
16. Someone to have a good time with	3.83		.746
17. Someone to get together with for relaxation	3.66		.727
18. Someone to do something enjoyable with	3.98		.804
Additional Item		**2**	
19. Someone to do things with to help you get mind off	3.83		.653

Table 3

Rasch model summary statistics

	Person		Item
	All cases	**Non-extreme cases only**	
Total N	271	224	19
Rasch Measure (in logits)	1.4	0.88	0.00
SD	2.4	1.45	0.34
Range	5.61 ~ −5.59	4.40 ~ −4.32	0.43 ~ −0.72
Model reliability	0.88	0.94	0.94
Raw score-to-measure correlation	–	0.92	−0.99
Chi-square	9,101.71		
df	3,980		
sig	< 0.01		
Unidimensionality			
Variance explained by measure	29.0 (60.4%)		
Unexplained variance in 1st contrast	4.0 (8.4%)		