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# Caregivers' Readiness for Change: Predictive Validity in a Child Welfare Sample

Julia H. Littell

*Bryn Mawr College*, [jlittell@brynmawr.edu](mailto:jlittell@brynmawr.edu)

Heather Girvin

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Caregivers' Readiness for Change:  
Predictive Validity in a Child Welfare Sample

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Julia H. Littell  
Graduate School of Social Work and Social Research  
Bryn Mawr College

and

Heather Girvin  
School of Social Work  
University of Maryland, Baltimore

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Address correspondence to:

Julia H. Littell, Ph.D., Associate Professor  
Graduate School of Social Work and Social Research  
Bryn Mawr College  
300 Airdale Road  
Bryn Mawr, PA 19010  
610/520-2619 voice  
610/520-2655 fax  
[jlittell@brynmawr.edu](mailto:jlittell@brynmawr.edu)

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## Practice Implications

Two aspects of caregivers' readiness for change can be assessed, albeit imperfectly, in cases of child abuse and neglect. Caregivers' *recognition* of their problems and their *intentions* to change are distinct phenomena that predict somewhat different outcomes. Thus, it is useful to consider these qualities separately, instead of combining them in assessments of "readiness for change." It is not clear how these qualities affect caseworkers' responses to clients or patterns of service delivery. Practitioners should *not* assume that assessments of caregivers' problem recognition or intentions to change will predict who is most likely to benefit from treatment.

## Abstract

**Objective:** To assess the predictive validity of continuous measures of problem recognition (PR), intentions to change (ITC), and overall readiness for change (RFC) among primary caregivers who received in-home services following substantiated reports of child abuse or neglect.

**Method:** A modified version of the University of Rhode Island Change Assessment scale was included in interviews with a sample of 353 primary caregivers at 4 weeks, 16 weeks, and 1 year after referral for in-home services. Additional data were obtained from administrative records and caseworker surveys. Hierarchical linear and nonlinear models were used to assess relationships between PR, ITC, RFC and changes over time in measures of individual and family functioning (e.g., parenting behaviors, children's behaviors, housing and economic problems, social support, and life events). Bivariate probit regression analysis was used to examine relationships between PR, ITC, RFC and the likelihood of subsequent reports of child maltreatment and out-of-home placements within 1 year after referral.

**Results:** Initial problem recognition and intentions to change predict a few improvements in individual and family functioning, along with significant reductions in the likelihood of additional reports of child maltreatment within 1 year. Initial intentions to change also predict reductions in the substantiation of subsequent reports of maltreatment. An overall measure of readiness for change predicts reductions in the likelihood of out-of-home placement.

**Conclusions:** Problem recognition and intentions to change predict somewhat different outcomes; hence, there are few advantages of a combined measure of readiness for change.

Further inquiry is needed to determine whether and how these associations are mediated by intervention processes or other factors in child welfare services populations.

## Introduction

For assessment and case planning purposes, child welfare workers and other helping professionals usually consider parents' perceptions of the events that led to their involvement in the child welfare system (Dubowitz & DePanfilis, 2000). Parents and other caregivers who acknowledge abusive or neglectful practices and express a desire to change those practices are generally thought to pose less risk of future harm to children than caregivers in similar cases who deny caregiving problems or express little interest in addressing these issues (Gelles, 1995, 1996, 2000). Caregivers who seem ready for change at the outset are also expected to respond better to treatment than those who appear to be unwilling to change. Hence, readiness for change is considered an important component of risk assessment, case planning, decision-making, and allocation of treatment and out-of-home placement resources in child welfare (Gelles, 1995, 1996, 2000).

Although clients' readiness for change may affect intervention processes and outcomes, there is some evidence that problem recognition and stated intentions to change are not good predictors of behavior (Miller, 1985). As with outward compliance (Littell, 2001), it is possible that clients' apparent readiness for change affects casework decisions, which in turn influence outcomes. Other factors that are associated with apparent readiness could also account for differences in outcomes.

In this article, we view caregivers' readiness to change as a potential predictor of the outcomes of in-home child welfare services. Following substantiated reports of child abuse or neglect, caregivers who reported more readiness for change were expected to demonstrate greater improvement in targeted outcomes within several months and be more likely to maintain those gains at a 1-year follow-up.

## *Background*

Client motivation or readiness for change has been conceptualized in several ways: as part of a stage model of cognitive and behavioral change, as a single continuum, and as a multi-dimensional construct. Most of the recent empirical evidence on the predictive validity of readiness for change comes from research on the “stages of change,” which is the central organizing construct in Prochaska and DiClemente’s (1984, 1986, 1992, 1998) Transtheoretical Model of behavior change.

According to the Transtheoretical Model, readiness for change and behavioral change develop in an ordered sequence of discrete stages. These stages are termed precontemplation, contemplation, preparation, action, and maintenance (DiClemente & Prochaska, 1998). Although stage status changes over time, at any given moment a person is assumed to be in a single stage; hence, the stages are considered mutually exclusive (Martin, Velicer, & Fava, 1996). People are thought to “pass through each stage” in an orderly fashion (Prochaska, DiClemente, Velicer, & Rossi, 1992, p. 825, emphasis in the original), but this progression is not always linear. People may relapse, returning to a previous stage, and may cycle through the stage sequence more than once (Prochaska, DiClemente, Velicer, & Rossi, 1992).

The early stages of change are thought to be practical predictors of treatment participation and outcomes (Prochaska & Velicer, 1997). For example, people in the precontemplation stage are expected to be less likely than those in the contemplation and preparation stages to enter treatment, remain in treatment, and succeed in changing their behavior. However, empirical evidence does not provide consistent support for the predictive validity of these stages (for a review, see Littell & Girvin, 2002). Some studies found no significant relationship between stages of change and measures of treatment attendance, duration, or program completion. In other

studies, measures of precontemplation (indicating that the participant was not considering change) were predictive of drop-out (Smith, Subich, & Kalodner, 1995), but sometimes in the “wrong” direction (i.e., longer retention in treatment; Belding, Iguchi, Lamb, Lakin, & Terry, 1995; Jefferson, 1991). Similarly, baseline stage has been predictive of outcomes in some studies and not others, and there are mixed results within some studies. In a review of prospective studies of stages of change, Belding, Iguchi, and Lamb (1997) found that “none clearly and consistently supports the predictive validity” of the stages of change model (p. 65).

Some reviewers have noted that the empirical evidence is more consistent with a continuous model of readiness for change (Carey, Purnine, Maisto, & Carey, 1999; Davidson, 1998; Sutton, 1996; Weinstein, Rothman, & Sutton, 1998). A few studies provide evidence that a single continuous measure fits the data at least as well as a stage model (Budd & Rollnick, 1996; Satterfield, Buelow, Lyddon, & Johnson, 1995; Tsoh, 1995). Using a single continuous motivation score, the Project MATCH Research Group (1997) found that initial motivation for change was predictive of better outcomes among outpatients but not those in aftercare treatment for alcoholism.

Multidimensional models of readiness for change have been proposed by Bandura (1997, 1998), Miller and Tonnigan (1996), and others. Bandura suggested that the stages of change reflected fluctuations along two separate dimensions: intentions to change and gradations of the problem behavior. Others have identified continuous factors that appear to represent various cognitive, affective, and behavioral dimensions of readiness for change (Miller & Tonnigan, 1996; Hemphill & Howell, 2000). Isenhardt (1997) reported that three continuous pretreatment measures of readiness predicted some outcomes for alcohol dependent men, but not the quantity and frequency of their alcohol consumption.



There is little empirical research on readiness for change among caregivers of abused and neglected children. In a previous analysis of data on readiness for change among caregivers in a child welfare sample, we found that a two-dimensional model fit the data better than either a stage model or a single continuum (Littell & Girvin, 2004). These dimensions, termed Problem Recognition (PR, the inverse of precontemplation) and Intentions to Change (ITC, self-reported contemplation and action), were not correlated in our sample. Here, we examine the predictive validity of PR and ITC in comparison with an overall measure of readiness for change.

### Methods

A longitudinal study of 353 child welfare in-home services cases was conducted in Philadelphia, in conjunction with the Evaluation of Family Preservation and Reunification Services (EFPRS). The EFPRS was funded by the U.S. Department of Health and Human Services and conducted by Westat, Inc. and its subcontractors, the Chapin Hall Center for Children and James Bell Associates (see Westat, Inc., 2001, 2002). The study was approved by Westat's Institutional Review Board (IRB; our secondary analysis of EFPRS data was considered exempt from review by the Bryn Mawr College IRB).

Between March 1997 and June 1999, the Philadelphia Department of Human Services (DHS) identified 353 cases of child abuse and neglect in which there was "moderate risk" of future maltreatment. For purposes of the EFPRS, these families were randomly assigned to intensive family preservation services (FPS) or less-intensive Services to Children in their Own Homes (SCOH). Two private agencies provided FPS and three private agencies provided SCOH services to families in the evaluation (for a description of these services, see Westat, Inc., 2002).

Between March 1997 and July 2000, Westat staff conducted repeated, in-person interviews with caregivers (with caregivers' informed consent). The interviews usually took

place in caregivers' homes. In each case, interviews were scheduled in relation to the date of random assignment. On average, initial (Time 1) caregiver interviews occurred 4 weeks after random assignment, interim (Time 2) interviews occurred at 16 weeks, and follow-up (Time 3) interviews were conducted at 1 year after random assignment (Westat, Inc., 2002). Response rates were 75% at Time 1, 74% at Time 2, and 64% at Time 3. Missing data were due to difficulties locating caregivers and scheduling interviews with them; few caregivers refused to participate. Most (89%) of the caregivers in the study participated in at least one interview; 172 (49%) participated in all three interviews (Westat, Inc., 2002). Of the caregivers who completed initial interviews, there were no significant differences on 16 of 17 comparisons between those who completed follow-up interviews and those who did not; however, the latter had higher initial scores on a depression inventory than caregivers who completed both initial and follow-up interviews (Westat, Inc., 2002).

Event history data on official reports of child maltreatment, the findings of investigations of those reports, and out-of-home placements were obtained by Westat from DHS administrative records. Administrative data were available on almost all (350) of the study cases. Data were available on case events from April 28, 1992 through December 31, 1999. After random assignment, the observation period for event history data ranges from 191 days (for the last case enrolled in the study) to 1023 days (for the first case enrolled); that is a range of 6.3 to 33.6 months. The range is due to continuous enrollment in the study over a 28-month period. Missing data were treated as such (i.e., we did not impute missing values).

The EFPRS found no significant differences between the FPS and SCOH groups in family-level rates of subsequent child maltreatment (i.e., substantiated CPS reports) or out-of-home placement (Westat, Inc., 2002). Although there were a few differences in analyses of child

and family functioning, some favored the FPS group and others favored the SCOH group (Westat, Inc., 2002).

### *Sample Characteristics*

Most of the 263 caregivers who participated in initial interviews were African-American (81%) women (95%) who were unmarried (90%) and unemployed (83%). More than half (53%) were the only adult in their household. Their average age was 32.2 (sd=9.1). Caregivers had an average of 3.4 children (sd=1.7), ranging in age from newborn to 18. One-fifth of the caregivers had one or more children placed outside of their home at the beginning of the study (including informal placements with kin).

Approximately 70% of the caregivers were receiving AFDC or TANF at the beginning of the study, and 80% were receiving food stamps. Most (70%) reported annual household incomes below \$10,000. At least 20% of the caregivers reported that they had difficulty buying food for their families and paying rent; nearly 40% reported difficulty paying electric and heating bills and buying clothes for their children. Approximately one-third of the caregivers had lived at their current address less than 1 year. Thirty-seven percent reported that they had been abused or neglected in childhood. In-home services caseworkers reported that 37% of the caregivers had problems with alcohol or other drugs.

### *Variables in the Analysis*

#### *Independent Measures*

A modified version of the University of Rhode Island Change Assessment (URICA) scale was used to assess readiness for change among caregivers in the sample. This instrument was included in interviews with caregivers at all three points in time. Originally developed for use in research on psychotherapy (McConaughy, Prochaska, & Velicer, 1983; McConaughy,

DiClemente, Prochaska, & Velicer, 1989), the URICA is a self-report instrument that has been used to assess readiness for change across a range of problem behaviors (Prochaska, et al., 1994). The URICA has four scales that are thought to correspond to the stages of precontemplation, contemplation, action, and maintenance (there is no preparation scale, because preparation was not viewed as a distinct stage when the URICA was developed).

Beginning with the 24-item version of the URICA (Carbonari, DiClemente, Addy, & Pollak, 1996), we revised the instructions so that items refer to “problems you have in taking care of your children.” We dropped the maintenance scale because these items refer to relapse prevention and did not appear to be relevant for our population. This reduced the scale to 18 items.

Principal axis factor analysis of Time 1 responses to these 18 items produced two factors with eigenvalues greater than one. The first factor was associated with contemplation and action items. The second factor was associated with some precontemplation items. After varimax and promax rotations, some contemplation items also loaded (at  $|.4|$  or higher) on the second factor. Cluster analysis produced groups that did not correspond to the stages of change (Littell & Girvin, 2004). Given these findings and the strong positive associations between the contemplation and action scales, we combined those two scales. Intentions to Change (ITC) is the mean of contemplation and action items. Subsequent analyses utilized the ITC scale and Problem Recognition (PR) scale, which is the mean of reverse-scored precontemplation items. PR and ITC scores are not correlated in this sample (Pearson’s  $r = -.01$  at Time 1 (N=258),  $r = .12$  at Time 2 (N=252), and  $.02$  at Time 3 (N=224);  $p$ -values $>.05$ ).

Like other investigators (Carbonari et al., 1996; Hutchison, 1996; Project MATCH Research Group, 1997; Tsoh, 1995; Velasquez, Carbonari, & DiClemente, 1999), we also

computed an overall readiness for change (RFC) score. This is the mean of all responses on the 18 URICA items after the precontemplation items were reverse-scored. We were interested in whether this overall score performed better than the two unrelated scales in predicting outcomes.

The overall readiness scale and the PR and ITC scales have acceptable levels of internal consistency (Chronbach's alphas  $\geq .65$ ) at all points in time. We used standardized z-scores in this analysis (means=0, sd=1), since we were interested in potential effects of within-sample variations in measures of readiness. Change scores from Time 1 to Time 2 (e.g., PR at Time 2 minus PR at Time 1) were computed from the raw scores and then standardized.

### *Outcome Measures*

Outcome measures were selected by the EFPRS to reflect the goals of the in-home services programs. These programs hoped to improve parenting practices, strengthen family functioning by improving economic and housing conditions and bolstering social support for parents, reduce the recurrence of child abuse and neglect, enhance child well-being, and (to a lesser extent) prevent out-of-home placements.

Two indices of parenting behavior were derived from caregiver reports (items are shown by Westat, Inc., 2001). Both are expressed as the proportion of items endorsed (ranging from 0 to 1). An inventory of *parenting problems* is comprised of 8 items that reflect approaches to parenting that were viewed as problematic (e.g., hitting children to get them to listen, getting out of control when punishing children, blaming children for things that were not their fault, punishing children by not letting them into the house). Because these problems do not necessarily co-occur, this inventory has little internal consistency, as assessed with the Kuder-Richardson formula 20 (KR-20) reliability coefficient. An inventory of *positive parenting practices* was developed from caregivers' responses to 4 items (praising children, having fun, going to a park,

and reading).

An inventory of *housing problems* was derived from responses to 10 items that describe problems with heat, appliances, electricity, plumbing, building structure, and crowded or unsafe conditions in caregivers' homes during the three months prior to the interview (KR-20  $r > .7$  at all three points in time). An index of *economic problems* was created from four items (difficulty paying rent, bills, food, or clothing, KR-20  $r \geq .67$ ). As with measures of parenting, these indices were expressed as the proportion of items endorsed.

*Social network size* is defined as the number of family members (parents, brother, and sisters) and friends with whom the caregiver has contact at least once a month. On average, caregivers in this sample had monthly contact with 5.2 family members and/or friends at Time 1 (the range is 0 to 12,  $sd=2.6$ ). *Social network support* is the proportion of these network members upon whom the caregiver can rely for emotional support, material aid, or advice. On average, caregivers reported that 81% of their network members provided some form of support at Time 1 ( $sd=27.4\%$ ).

For the EFPRS, caregivers were also asked whether certain events had occurred in their lives during the past 3 months. Like most items in the caregiver interviews, these questions were asked at all 3 points in time. Caregiver responses were used to create measures of *positive life events* (from 6 items) and *negative life events* (8 items). Both measures were expressed in terms of the proportion of items endorsed.

Caregivers' reports of their children's characteristics and behaviors (Westat, Inc., 2001, 2002) were used to create inventories of *positive child behaviors* (from 9 items, e.g., child is funny, likes to share, is outgoing and friendly, likes animals), *children's school problems* (5 items, e.g., child is often absent, was suspended or expelled, failed a class), *children's behavior*

*problems* (7 items, e.g., child fights a lot, is aggressive, stole something), and *children's emotional problems* (3 items, child lacks interest in what is going on, gets upset easily, is shy and withdrawn). Because of age differences among the children in the families in the study, some of these items were only applicable in some cases (see Westat, Inc., 2001). For instance, since many of the families had young children, questions about school problems were not applicable in some cases. Like other measures, the inventories of children's problems and behaviors were expressed as the proportion of valid items endorsed by the caregiver.

*Caregiver depression* was assessed with the 13-item Depression Subscale of the SCL-90-R mental health inventory. Responses refer to symptom severity and range from 0 to 4 (where 0=not at all, 1=a little bit, 2=moderately, 3= quite a bit, and 4=extremely). Mean subscale scores were used in our analysis. The sample mean is 1.05 (sd=.91), which is between norms for outpatient clinical and nonclinical samples of adult women (Derogatis, 1994). The depression subscale has quite good internal consistency in this sample (Chronbach's alphas >.9 at all three points in time).

At Time 2 and Time 3, caregivers were asked to rate the *overall change* in their family life since the previous interview. Ratings were provided on a 5-point scale and were recoded so that -2 represents significant deterioration, 0 represents no change, and 2 represents significant improvement.

We used administrative data to identify *maltreatment* reports and *placements* that occurred within 1 year after random assignment (valid N=280 cases with an observation period of at least 1 year; 79% of the sample). Within that time, new reports of child maltreatment were filed in one-third (93) of the cases; there were new, substantiated maltreatment reports in about 17% (48); and one or more children were removed from the home in 17% (47) of the cases.

Although the figures are similar, out-of-home placements were not related to subsequent, substantiated reports. (Of the cases in which one or more children was placed outside of the home within a year after referral, only 21% (10) had a new, substantiated report of child maltreatment; other placements appeared to be based on prior maltreatment reports or were voluntary.)

### *Control Variables*

The selection of control variables for use in these analyses was based on prior research on the case characteristics related to these outcomes in home-based services in child welfare (e.g., Schuerman, Rzepnicki, & Littell, 1994; Westat, Inc., 2002). These include single parent status (i.e., whether the caregiver was the only adult in the household), caregiver age, number and ages of children, whether the caregiver had been maltreated as a child, caregiver substance abuse, caregiver depression, chronicity (number of prior substantiated reports) of child maltreatment, and prior out-of-home placements.

In addition, a measure of social desirability bias in caregiver reports was treated as a control variable. The denybad subscale of the 13-item version of the Marlowe-Crowne Social Desirability Scale (Reynolds, 1982) was used because it had better psychometric properties in this sample than the full scale (Littell & Reynolds, 2002). At all three points in time, caregivers endorsed an average of 5.6 (70%) of the 8 possible socially desirable responses on this scale. Compared with samples of college students and adults in the general population, the tendency to deny socially undesirable traits was particularly prevalent in this sample. Further, some caregivers' reports appeared to be affected by this social desirability bias (Littell & Reynolds, 2002). Standardized z-scores were used in the present study.

### *Data Analysis*



### *Growth Models*

We used piecewise linear growth models (Bryk & Raudenbush, 2002) to examine change over time in measures of individual and family functioning, and assess the ability of measures of readiness for change to predict these changes, controlling for effects of other variables. Growth models are useful in analyses of repeated measures with missing data. In our two-level models, the first level includes repeated measures of the dependent variable, with up to three measures per case. The second level includes case-level variables measured at a Time 1.

At level 1, two dummy variables are used to represent the passage of time. Time 1 is the omitted category. "Time 2" is coded as: 1 = time 2 or time 3 (0 = time 1); and "Time 3" is coded 1 for time 3 (0 = time 1 or time 2). This coding scheme is illustrated below.

Variable	Observation Point		
	1	2	3
Time 2	0	1	1
Time 3	0	0	1

Coefficients associated with the Time 2 variable represent change in the dependent variable from Time 1 to Time 2, while those associated with the Time 3 variable represent change from Time 2 to Time 3. In this two-piece model, change can occur in either direction (positive or negative) during each of the two intervals between observation points. If a coefficient associated with one of these "time effects" is not statistically significant, that means there has been no overall increase or decrease in the dependent measure during that interval.

At level 2, we examine potential effects of case-level variables on the time-varying dependent variable and on change in that dependent variable from Time 1 to 2, and from Time 2 to 3.

In equation form, the linear hierarchical model is:

Level 1: 
$$Y = \pi_0 + \pi_1(\text{Time 2}) + \pi_2(\text{Time 3}) + e$$

Level 2

base model: 
$$\pi_0 = \beta_{00} + \beta_{01}X_{01} + \beta_{02}X_{02} + \dots \beta_{0n}X_{0n} + r_0$$

model for Time 2: 
$$\pi_1 = \beta_{10} + \beta_{11}X_{11} + \beta_{12}X_{12} + \dots \beta_{1n}X_{1n}$$

model for Time 3: 
$$\pi_2 = \beta_{20} + \beta_{21}X_{21} + \beta_{22}X_{22} + \dots \beta_{2n}X_{2n}$$

where Y is a time-varying dependent variable,  $\pi_0$  is the case-level base rate,  $\pi_1$  is the slope (amount of change) in the dependent variable from Time 1 to 2, and  $\pi_2$  is the slope for Time 3. The Xs represent case-level variables that are not time-dependent;  $\beta$ s are the slopes (estimated effects) of these variables. Case-level variables are regressed on the base rate and on the slopes that represent change to Time 2 and Time 3. Random (unexplained) variance is represented by e (at level 1) and r (at level 2).

Initial (Time 1) measures of PR and ITC (or overall FRC) are included along with other predictor variables at level 2 in the equations for  $\pi_0$  (the base rate),  $\pi_1$  (change to Time 2), and  $\pi_2$  (change to Time 3). In addition, we included measures of any change in PR and ITC (or overall readiness scores) from Time 1 to Time 2 in the equation for  $\pi_2$  (Time 3) to determine whether increased (or decreased) readiness predicted changes in dependent measures from Time 2 to Time 3.

At level 2, we controlled for variations in social desirability bias, using the standardized case-level mean of denybad scores. We also controlled for variations in caregiver and family

characteristics at Time 1, such as caregiver age, number of children, and the number of substantiated maltreatment reports prior to random assignment. We included dummy variables to control for single parent status (i.e., whether the caregiver was the only person over 18 years of age in the household), whether the caregiver was abused or neglected as a child, whether the caregiver had a substance abuse problem (according to either the caregiver or caseworker), and whether a child had been placed prior to random assignment. We used backward elimination of control variables that were not significant at  $p < .1$ . Once eliminated, variables were not re-entered. Because denybad scores related to a number of case characteristics, denybad scores remained in the growth models (as a control variable in the level 2 base model) regardless of whether they predicted the dependent measure.

We centered interval-level predictors around their grand means so that the intercept represents the predicted baseline score for cases with average values on predictor variables (e.g., caregiver age, number of children), rather than the predicted score for a hypothetical case in which all predictors equal zero. Had we centered dummy variables around their grand means, the intercept would truly represent the predicted score for the “average” case, but this would have made interpretation of coefficients for dummy variables more difficult. Because we did not center dummy variables, the intercept is the predicted value of the dependent variable at Time 1 for cases without the characteristics (e.g., caregiver substance abuse, prior placement) represented by the dummy variables in the model.

Hierarchical linear models were used for interval-level dependent measures (e.g., caregiver depression scores). Poisson constant-exposure nonlinear hierarchical models were used for dependent measures that are expressed as proportions or counts (e.g., network size, network support). Ordinal nonlinear models were used for ratings (e.g., of overall change in family life).

These models were estimated with HLM 5.04 (Raudenbush, Bryk, Cheong, & Congdon, 2001). Results of population-averaged models with robust standard errors are reported below.

### *Bivariate Probit Analysis*

We used bivariate probit regression analysis to examine factors associated with new reports of child maltreatment, the substantiation of those reports, and out-of-home placement of children within 1 year after referral for in-home services. Courtney, Piliavin, and Wright (1997) showed that bivariate probit analysis is preferable to separate models of dichotomous outcomes that may be affected by sample selection bias. Unmeasured selection effects may influence both the reporting and substantiation of child maltreatment, as well as out-of-home placement of children.

Two bivariate probit models were developed. Dependent variables in the first model were dichotomous indicators of 1) whether or not one or more new reports of maltreatment had been filed within 1 year after referral and 2) whether any of these new reports had been substantiated (for both outcomes, 0=no and 1=yes). The second bivariate probit model included dummy variables that represent 1) the recurrence of new, substantiated maltreatment reports and 2) out-of-home placement of one or more children within 1 year after referral (0=no, 1=yes). Although subsequent maltreatment reports were not closely related to out-of-home placement in our sample, we used “seemingly unrelated bivariate probit analysis” (StataCorp., 1999) to model these events because they may be affected by selection bias.

Using Stata 6.0, the Huber/White/sandwich estimator of variance was used to produce robust standard errors. This allowed us to relax the assumption that observations are independent (StataCorp., 1999)

As in the growth models, we used baseline measures of readiness (either PR and ITC, or

the overall RFC score), along with measures of change in readiness scores from Time 1 to Time 2, to examine the predictive power of these measures in relation to maltreatment and placement events. Control variables included social desirability (denybad) scores along with other variables that remained in the bivariate probit models after backward elimination of variables that were not significant (at  $p < .1$ ).

## Results

### *Predicting Changes in Individual and Family Functioning*

Results of the first eight two-level growth models are shown in Tables 1 and 2; results of the remaining growth models are available from the first author. Main results are described below and summarized in Table 3.

#### *Parenting Behavior*

Controlling for other variables in the model, caregivers with higher baseline PR scores tended to report more parenting problems at Time 1 than those with lower PR scores (coeff. = .11,  $p < .1$ ; Table 1). ITC scores were not related to the proportion of parenting problems reported at baseline. There was a significant overall reduction in the proportion of parenting problems reported from Time 1 to Time 2 (Time 2 coeff. = -.26,  $p < .001$ ), although baseline PR and ITC scores were not associated with reductions in reported parenting problems during this time. There was no significant change in the proportion of caregiver-reported parenting problems from Time 2 to Time 3 and, again, baseline PR and ITC scores did not predict changes during this period. Further, changes in PR and ITC from Time 1 to Time 2 did not predict changes in reported parenting problems from Time 2 to Time 3.

[insert Table 1 about here]

Caregivers with higher PR scores reported fewer positive parenting practices at baseline,

although they reported more of these practices at Time 2. These results could be due to statistical regression (the tendency for extreme scores to move toward the sample mean over time). ITC scores and changes in PR and ITC were not related to positive parenting practices.

### *Housing and Economic Problems*

Although PR and ITC were not related to housing problems at baseline, high ITC scores predicted a reduction in these problems from Time 1 to Time 2. None of the readiness measures predicted change in housing problems to Time 3.

Caregivers with high PR scores tended to report more economic problems than others at Time 1, although they reported fewer economic problems at Time 2 than at Time 1. Again, this could be due to statistical regression.

[insert Table 2]

### *Social Networks*

PR scores were negatively associated with network size at Time 1 (see Table 2). ITC scores were not associated with network size at Time 1, but high initial ITC scores predicted an increase in network size from Time 1 to Time 2.

Network support was negatively associated with PR and ITC scores at Time 1. Time 1 PR scores and ITC scores predicted a reduction in network support by Time 2. Further, increases in ITC from Time 1 to Time 2 predicted another increase in network support from Time 2 to Time 3.

### *Life Events*

PR and ITC were not related to positive or negative life events at Time 1. Caregivers with higher ITC scores at Time 1 tended to report more positive life events at Time 2 than they had at Time 1. Caregivers whose PR scores increased from Time 1 to Time 2 reported an increase in

negative life events from Time 2 to Time 3.

### *Caregiver Depression*

PR and ITC scores were positively associated with caregiver depression at Time 1. However, caregivers with high PR scores at the beginning appeared to be less depressed at Time 2 than they were at Time 1. There was no overall change in caregiver depression from Time 2 to Time 3, and none of the readiness measures predicted changes in depression during this period.

### *Overall Change*

Initial PR and ITC scores did not predict caregiver ratings of overall change in family life at Time 2 or Time 3. Increases in ITC scores from Time 1 to Time 2 predicted greater perceived improvement in family life by Time 3.

### *Children's Problems*

Initially, caregivers with relatively high ITC scores reported that their children had more school problems. These problems appeared to decrease from Time 1 to Time 2 and increase from Time 2 to Time 3.

At Time 1, high PR scores were associated with reports of more children's behavioral problems and high ITC scores were associated with fewer behavior problems. High initial PR predicted a reduction in children's behavior problems from Time 1 to Time 2. Increases in PR from Time 1 to Time 2 predicted an additional reduction in behavior problems from Time 2 to Time 3.

Initial PR scores also predicted a reduction in children's emotional problems from Time 2 to Time 3. Increases in PR from Time 1 to Time 2 predicted a reduction in the proportion of positive child behaviors reported by caregivers from Time 2 to Time 3.

### *Overall Readiness Scores*

We ran the growth models again, substituting overall readiness scores for PR and ITC. Results of all of the growth models are summarized in Table 3. A comparison of these models shows that the overall score captures some, but not all, of the relationships between PR and ITC and measures of individual and family functioning. The PR and ITC scores provide more information and are more easily interpreted than the overall score; hence, we find no advantages of the overall score here.

[insert Table 3]

#### *Predicting Child Subsequent Maltreatment and Out-of-home Placement*

In bivariate probit analysis, higher initial PR scores predict a reduction in the likelihood of one or more new reports of child maltreatment within 1 year, controlling for effects of other variables in the model, but PR scores are not related to the risk of substantiated maltreatment reports (Table 4). Initial ITC scores predict reductions in the likelihood of both new reports and substantiated reports of maltreatment. Changes in PR and ITC scores from Time 1 to Time 2 do not predict changes in the likelihood of subsequent maltreatment events. Overall readiness scores and early changes in these scores are not predictive of later maltreatment events.

[insert Table 4]

In a seemingly unrelated bivariate probit model, PR and ITC scores do not predict out-of-home placements, but overall readiness scores do (Table 5). High overall readiness scores at Time 1 and increases in these scores from Time 1 to Time 2 predict significant reductions in the likelihood of out-of-home placement. (Similar results are obtained with a simple probit regression of placement.)

[insert Table 5]

Discussion



Controlling for the influence of social desirability bias and other factors, early measures of problem recognition (PR) and intentions to change (ITC) predicted some changes in caregiver reports of caregiver, child, and family functioning. PR and ITC also predicted reductions in official reports of child maltreatment, but only ITC predicted reductions in the likelihood of substantiated maltreatment reports within one year after referral for in-home services. An overall readiness score predicted reductions in out-of-home placement.

### *Limitations*

It is important to remember that these findings, which are discussed below, are essentially correlational in nature and should not be used to make causal inferences. With the exception of administrative data (on child maltreatment and out-of-home placement), information on individual and family functioning was obtained from caregivers; thus, common method error variance may account for some correlations. In particular, problem recognition is not independent of most measures of problem severity. Finally, due to attrition, results cannot be generalized to the full sample, let alone to other child welfare populations.

### *Problem Recognition*

Initial variations in problem recognition were related to initial problem severity, as reported by caregivers. Shortly after referral, caregivers with higher PR scores tended to be more depressed than other caregivers and reported more parenting problems, fewer positive parenting practices, more economic problems, smaller social networks, less social support, and more child behavior problems. Conversely, caregivers with low problem recognition reported fewer problems at the outset. This provides support for the concurrent validity of the PR scale.

Early PR scores predicted problem reduction in five domains of individual and family functioning between Time 1 and Time 2. Several explanations for these findings are plausible.

First, greater problem recognition might have enabled caregivers and caseworkers to address and alleviate more problems. Second, caregivers who overlooked or minimized their parenting problems at first (those with low initial PR scores) may have become better able to recognize their problems later on. Both explanations fit with anecdotal information from in-home services caseworkers, who have said that they usually see more progress when clients recognize their problems at the outset, but are often able to help other caregivers recognize--if not change--problems that affect the care and safety of their children. However, statistical regression could also account for these findings (i.e., extreme scores tend to move toward the sample mean over time).

Problem recognition predicted a few improvements that cannot be accounted for by statistical regression: High initial PR scores were not related to initial reports of children's emotional problems but predicted reductions in children's emotional problems by Time 2 and increases in PR from Time 1 to Time 2 predicted reductions in children's behavior problems from Time 2 to Time 3. However, increases in PR scores also predicted more negative life events and fewer positive views of children at Time 3. In some cases, increased PR at Time 3 might indicate that the situation was deteriorating, but that pattern is not consistent across outcome measures and was not reflected in caregivers' overall assessments of changes in their family life (i.e., increased PR did not predict overall change).

High initial PR scores predicted a significant reduction in official reports of maltreatment, but no change in the likelihood of substantiated maltreatment reports or out-of-home placement. Problem denial may trigger concerns about the safety of children among service providers, but it does not necessarily mean that children are at greater risk than in cases in which caregivers showed more problem recognition at the outset.

Overall, the findings regarding the predictive validity of problem recognition are somewhat inconclusive. PR predicted some changes and most are in the directions expected, but other explanations for most of these findings (e.g., statistical regression) are possible.

### *Intentions to Change*

Caregivers with relatively high initial ITC scores seemed to have some reasons to change. At Time 1, they tended to report less network support, more depression, and more school problems than caregivers with lower ITC scores. Hence, as with PR, initial ITC may be related to problem severity.

High baseline ITC scores predicted some positive changes in family life: reductions in housing and school problems and increases in network size, network support, and positive life events from Time 1 to Time 2. Statistical regression could account for the changes in school problems and network support, but it does not explain the other changes (because ITC was not associated with initial variations in housing, network size, or positive life events). School problems seemed to reoccur in families with caregivers who have high initial ITC scores. (In these cases, school problems were more apparent at the beginning, were reduced by Time 2, but increased again by Time 3.) Further support for the relationship between ITC and social support comes from the finding that increases in ITC from Time 1 to Time 2 predicted increases in network support by Time 3. In addition, increases in ITC predicted greater perceived improvement in family life at the 1-year follow-up.

High ITC scores at Time 1 predicted reductions in the likelihood of maltreatment reports and substantiated reports, but were not related to placement rates. Hence, it is possible that intentions to change were carried out, resulting in improvements in some areas of family functioning, and reductions in the risk of subsequent child maltreatment. It is also possible that

caregivers' intentions to change influence caseworkers' reporting behavior and substantiation decisions. As indicated above, anecdotal evidence and some published reports suggest that in-home services and child protective services workers consider caregivers' readiness for change in assessment and treatment decisions (Depanfilis, 2000; Gelles, 1995, 1996, 2000).

ITC is a somewhat more consistent predictor of outcomes than PR. While other explanations for these findings are certainly possible, the pattern of predictions here suggests that initial intentions may matter. However, if this is true, we do not know *why* initial intentions matter. It is possible that caregivers with "good intentions" at the outset received better treatment, which in turn produced better outcomes; or initial intentions may have been associated with unmeasured factors that affected outcomes; or (as indicated above) intentions to change may have been carried out. In other words, it is not clear what processes might mediate or moderate relationships between initial, stated intentions and outcomes.

#### *Advantages and Disadvantages of an Overall Readiness Score*

We found few advantages of an overall readiness score. In analyses of changes in individual and family functioning, the overall score predicted some, but not all, of the changes that were predicted by PR and/or ITC. The overall score is not as easy to interpret as PR and ITC, since it combines these two separate, largely unrelated dimensions. Thus, in most analyses, the PR and ITC scales were more useful than the overall score. However, the overall score has one clear advantage: it predicted significant reductions in the likelihood of out-of-home placement, while PR and ITC did not predict placement. This finding is intriguing, the reasons for it are unclear, and it deserves further investigation.

#### *Implications for Policy and Practice*

In cases of child abuse or neglect, caregivers' problem admission and apparent intentions

to change appear to be important to CPS investigators and caseworkers. We found that these constructs can be assessed (albeit imperfectly) in a child welfare sample and they predicted some changes in individual and family functioning and subsequent maltreatment events within 1 year. As indicated above, this does not necessarily mean that greater problem recognition or intentions to change resulted in better outcomes. In fact, we suspect that such direct causal connections are unlikely in this situation. The families in this study were involved in home-based interventions that were either intensive or fairly long-lasting. Caregivers' initial views of their problems and readiness for change may have affected caseworkers' responses to them and subsequent patterns of service delivery (Girvin, 2002). These intervention processes (in conjunction with initial case characteristics) may have influenced outcomes. Therefore, it should not be assumed that initial problem recognition, intentions to change, or apparent readiness for change determine who is most likely to benefit from treatment.

There is a growing body of literature on interventions aimed at enhancing clients' readiness for change across a range of populations and problem behaviors (Miller & Rollnick, 2002). Brief interventions that combine problem-feedback with motivational interviewing may improve outcomes, but there is no evidence that they work by enhancing motivation (Burke, Arkowitz, & Dunn, 2002). Instead, differences between counselors (perhaps related to an empathetic style), providing clients with feedback on assessment results, and enhanced treatment participation may account for the effects of brief motivational interventions (Burke et al., 2002). These interventions have not been carefully evaluated in child welfare samples or settings.

#### *Directions for Further Research*

In spite of a recent resurgence of interest in client motivation and readiness for change, these constructs have not been well-defined in the literatures on health psychology, addictions,

mental health, or child welfare. It is not clear whether readiness for change is a set of discrete intra-personal states, whether it has affective as well as cognitive and behavioral components, or whether it is somewhat problem-specific or situational. Further research and conceptual work are needed to explore the construct and components of readiness for change, and their meanings to clients and helping professionals in different cultures and contexts. New measures of readiness will also be needed, since available instruments rely on an unsound stage theory and are marred by problems with item and test construction (Carey et al., 1999; Davidson, 1998; Hutchison, 1996; Jefferson, 1991; Littell & Girvin, 2002).

Overall, evidence of the predictive validity of measures of readiness for change is quite mixed (Littell & Girvin, 2002). Additional research is needed to understand relationships between various aspects of readiness for change and outcomes. It is important to know whether and how caregivers' readiness for change relates to actual improvements in caregiving, child safety, and individual and family functioning. But even reliable predictions will not necessarily explain these associations. Hence, further research should also focus on identifying variables that may moderate or mediate relationships between clients' readiness for change and outcomes.

An important line of future inquiry concerns whether and how helping professionals' perceptions of clients' readiness for change affect case decisions. Better understanding of caseworkers' interpretations of and reactions to their clients' apparent readiness or resistance could be quite useful. It is not clear whether or how readiness for change affects and/or is affected by alliance formation, other service delivery processes, characteristics of treatment settings, and larger social and economic factors. How readiness interacts with these factors and relates to outcomes is a subject for further inquiry.

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Table 1: Predictors of Parenting, Housing, and Economic Outcomes (Poisson Constant-exposure Hierarchical Nonlinear Models)

	Parenting Problems		Positive Parenting		Housing Problems		Economic Problems	
<u>Fixed Effects</u>	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
<i>Model for Case Mean (<math>\pi_0</math>)</i>								
Intercept	-1.77***	.08	-.09***	.01	-2.35***	.14	-1.22***	.09
zPR @ T1	.11+	.06	-.03**	.01	-.03	.10	.12+	.07
zITC @ T1	<.01	.08	.01	.01	.12	.12	.02	.06
SD bias (zdenybad)	-.36***	.05	.02*	.01	-.31***	.08	-.20**	.06
Single parent					.33*	.14		
Caregiver age					-.03***	.01		
Youngest child's age							.04**	.02
N of children					.20***	.04	.08*	.03
Caregiver maltreated	.28**	.10					.33***	.11
CG substance abuse					-.62***	.16	-.23*	.11
Prior subst. reports			.01+	.01				
Prior placement								
<i>Model for Time 2 (<math>\pi_1</math>)</i>								
zPR @ T1	-.05	.06	.03**	.01	.04	.11	-.19**	.07
zITC @ T1	.05	.05	<.01	.02	-.22*	.10	-.07	.07
<i>Model for Time 3 (<math>\pi_2</math>)</i>								
zPR @ T1	-.10	.08	<.01	.01	-.07	.15	-.09	.11
zITC @ T1	.03	.09	<.01	.02	-.10	.16	.03	.10
zPR T2-T1	-.01	.06	<.01	.01	-.05	.11	.09	.10
zITC T2-T1	.03	.09	<.01	.01	-.01	.15	.05	.08
<u>Random Effects</u>								
Level 2 var. component		.43		.01		.70		.48
Df		193		201		199		199
$\chi^2$		676.17***		395.94***		628.75***		578.67***
N obs, N cases		540, 198		567, 206		574, 207		575, 207

+ = p<.1, \* = p<.05, \*\* = p<.01, \*\*\* = p<.001

Table 2: Predictors of Network Outcomes and Significant Life Events (Poisson Constant-exposure Hierarchical Nonlinear Models)

	Network Size		Network Support		Positive Life Events		Negative Life Events	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
<u>Fixed Effects</u>								
<i>Model for Case Mean (<math>\pi_0</math>)</i>								
Intercept	1.59***	.03	-.19***	.03	-1.84***	.06	-2.54***	.11
zPR @ T1	-.08*	.03	-.07**	.02	.04	.07	.10	.08
zITC @ T1	-.03	.03	-.04+	.02	.01	.06	-.02	.07
SD bias (zdenybad)	.08*	.04	.04*	.02	-.02	.05	-.02	.06
Single parent			-.05+	.03			-.31*	.13
Caregiver age								
Youngest child's age							.04*	.02
N of children			-.02+	.01	-.07*	.03		
Caregiver maltreated			-.07*	.03			.40**	.14
CG substance abuse			-.06*	.03				
Prior subst. reports								
Prior placement								
<i>Model for Time 2 (<math>\pi_1</math>)</i>								
zPR @ T1	.04	.02	.07**	.02	.01	.07	-.39**	.13
zITC @ T1	.03	.03	.05+	.03	-.07	.06	-.01	.13
zITC @ T1	.03+	.02	.06*	.02	.12+	.07	-.02	.09
<i>Model for Time 3 (<math>\pi_2</math>)</i>								
zPR @ T1	.08*	.03	.03	.02	.35***	.07	.34*	.14
zPR @ T1	-.02	.04	.01	.02	.07	.08	-.09	.14
zITC @ T1	-.02	.03	.02	.03	-.06	.07	-.02	.11
zPR T2-T1	-.04	.03	-.02	.02	<.01	.06	.24+	.12
zITC T2-T1	-.02	.03	.04*	.02	-.03	.05	-.03	.08
<u>Random Effects</u>								
Level 2 var. component		.16		.03		.37		.50
Df		203		199		202		200
$\chi^2$		1266.42***		476.33***		617.77***		405.43***
N obs, N cases		577, 207		577, 207		577, 207		577, 207

+ = p<.1, \* = p<.05, \*\* = p<.01, \*\*\* = p<.001

Table 3: Summary of Relationships Between Measures of Caregiver Readiness for Change and Outcomes Derived From Caregiver Interview Data (HNLN and HLM coefficients with  $p < .1$ )

	Problem Recognition (PR)				Intentions to Change (ITC)				Overall Readiness (RFC)			
	Time 1			T2-T1	Time 1			T2-T1	Time 1			T2-T1
	T1	T2	T3	T3	T1	T2	T3	T3	T1	T2	T3	T3
Parenting Problems	.11+											
Positive Parenting	-.03**	.03**										
Housing Problems						-.22*				-.17+		
Economic Problems	.12+	-.19**								-.15+		
Network Size	-.08*					.03+			-.06*	.04*		
Network Support	-.07**	.05+			-.04+	.06*		.04*	-.06**	.07**		
Positive Life Events						.12+						
Negative Life Events				.24+								
Child Behavior Problems	.14*	-.16+		-.15*	-.15**							
Child Emotional Problems			-.13+									
Child School Problems					.24**	-.29***	.19*		.24**	-.30**	.22*	
Positive Child Characteristics				-.03*								
Caregiver Depression	.16**	-.17**			.15***				.20***	-.10*		
Overall Improvement in Family Life								.13*				

+ =  $p < .1$ , \* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$

Table 4: Bivariate Probit Regressions of New Reports and Substantiated Reports of Child Maltreatment

	Model 1 (with PR and ITC)				Model 2 (with Overall RFC)			
	New Reports		Substantiated Reports		New Reports		Substantiated Reports	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
zPR @ T1	-.31**	.12	-.19	.12				
zITC @ T1	-.24+	.14	-.35*	.17				
zPR T2-T1	-.09	.11	-.12	.12				
zITC T2-T1	-.14	.13	-.14	.15				
zRFC @ T1					-.16	.15	-.25	.17
zRFC T2_T1					-.13	.15	-.09	.16
SD bias (zdenybad)	.03	.11	.19	.12	.04	.11	.19	.14
Single parent	.48*	.22	.31	.27	.40+	.21	.20	.25
Caregiver age	-.05***	.01	-.05**	.02	-.04**	.01	-.04*	.02
Prior subst. reports	.24*	.11	.36**	.13	.22*	.10	.36**	.13
Prior placement	.25+	.13	.04	.13	.21+	.12	.02	.13
constant	.52	.47	-.12	.5	.38	.47	-.27	.65
anthrho	11.54***	1.77			10.19	138.90		
Rho	1	<.001			1	<.001		
Log-likelihood	-125.53				-130.33			
Wald X <sup>2</sup> (df)	70.32***	(18)			55.81***	(df=14)		
Wald test of rho=0 X <sup>2</sup>	42.49***	(df=1)			<.01			

+ = p<.1, \* = p<.05, \*\* = p<.01, \*\*\* = p<.001 (valid N=164)



Table 5: Seemingly Unrelated Bivariate Probit Regressions of Substantiated Reports of Maltreatment and Out-of-home Placement

	Model 1 (with PR and ITC)				Model 2 (with Overall RFC)			
	Substantiated Reports		Placement		Substantiated Reports		Placement	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
zPR @ T1	-.16	.13	.08	.12				
zITC @ T1	-.31*	.15	-.13	.14				
zPR T2-T1	-.05	.12	.05	.14				
zITC T2-T1	-.11	.15	-.11	.16				
zRFC @ T1					-.21	.16	-.27+	.15
zRFC T2_T1					-.11	.16	-.32*	.16
SD bias (zdenybad)	.21	.14	-.15	.14	.20	.14	-.18	.14
Caregiver age	-.04*	.02	<.01	.01	-.04+	.02	<.01	.01
CG substance abuse	.18	.28	.58*	.26	.15	.28	.61*	.27
Prior subst. reports	.29*	.12	.09	.12	.29*	.12	.08	.12
Prior placement	.06	.14	.54+	.28	.07	.14	.52+	.28
constant	-.24	.56	-1.60***	.45	-.38	.60	-1.51**	.45
anthrho	.31	.19			.26	.18		
rho	.29	.17			.25	.17		
Log-likelihood	-131.52				-131.69			
Wald X <sup>2</sup>	35.91** (df=18)				31.43** (df=14)			
Wald test of rho=0 X <sup>2</sup>	2.59 (df=1, p=.11)				2.04 (df=1, p=.15)			

+ = p<.1, \* = p<.05, \*\* = p<.01, \*\*\* = p<.001 (valid N=164)