Psychological Assessment
1998, Vol. 10, No. 2, 97-106

1040-3590/98/$3.00

Toward a Comprehensive Assessment of Fundamental Motivation: Factor Structure of the Reiss Profiles

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Two instruments were developed to provide a comprehensive assessment of the strength of a person's fundamental end goals and motivational sensitivities. One instrument was a self-report inventory for adolescents and adults in general, and the other was an informant-rating scale for adolescents and adults with mental retardation and development disabilities. Exploratory and confirmatory factor analyses and test–retest reliabilities are reported in 7 studies, with independent samples of participants from diverse geographical areas, occupations, and social groups, N = 2,548. Each instrument was found to have a 15-factor solution, and the 2 solutions were similar to one another. Because the factors assess universal motives that are also seen in animals, a genetics–behavior–cognitive model of fundamental motivation is suggested.

According to Reiss and Havercamp's (1996, 1997) sensitivity theory, individual differences in motivational needs are the key to predicting human behavior. If you want to predict what people will do, find out what they fundamentally desire and predict that they will try to get it. It is surprising that this idea has not been given greater emphasis in psychology. For example, psychologists have not developed standardized instruments suitable for a comprehensive assessment of a person's motivational needs. Although there are thousands of standardized instruments, none purports to tell us what a person wants from life so we might then try to predict what he or she will seek. Instead, psychologists try to predict behavior on the basis of personality theories, although the link between personality and behavior often is much less direct than that between motive and behavior.

Human motives can be divided into two categories called *means* and *end* (Reiss, in press). The distinction is based on the purposes of the behavior. Means are indicated when a person performs an act for instrumental purposes. Examples include a professional athlete who is playing ball for a salary and a person who is avoiding the dentist to save money. In these examples, the acts of playing ball and avoiding the dentist are sought as means of obtaining or saving money. In contrast, end purposes are indicated when a person performs a behavior for no apparent reason other than its own sake. Examples include a child who is playing ball for the fun of it and a person who is taking aspirin to reduce pain. In these examples, physical exercise and pain reduction are sought for no purpose other than as ends in themselves.

A motivational analysis of many actions may reveal chains of instrumental behavior, but eventually there must be an intrinsically reinforcing stimulus (a noninstrumental goal) at the end of each chain.[1] For example, a person may take a second job for extra income (instrumental motive), desire the extra salary to purchase health care (instrumental motive), and desire the health care to prolong personal or family survival (end goal). In this example, the person's aim is to help his or her family, not to gain or hoard money.

End motives vary in their psychological significance. Some end motives, such as thirst, account for relatively little behavior. Except for polydipsia, the behavior motivated by thirst shows little variance. Furthermore, thirst is not an important motive in

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We thank the following people and agencies for their assistance in collection of data: Ray Anderson (VOCA Corporation), Stephen Becker (Arc of Greater Hartford), Nicholas Bouras, Sharon Davis (Arc of the United States), Henry Deutsch (Keystone Residences), Arthur Dykstra (Trinity Services), Steven Fast (Day, Berry, & Howard), Madalyn Fotovich, W. I. Fraser, Nancy Guriati (Argo Community High School), Alan Havercamp (Davenport Kiwanis Club), Margo Izzo (Ohio State University), Porter Laird, Gregory Mathews, Terrence McNelis (National Association on Dual Diagnosis), Barry Mitnick (University of Pittsburgh), Estelle Musico (owner–operator with McDonald's Corporation), Paul E. Panek (Ohio State University Newark Campus), Martha Owens, Rolf A. Peterson (George Washington University), Susan Sherwood (Franklin County Board of Mental Retardation and Developmental Disabilities), Van Silka (Project Start), Scott Spreat, Edward Sterling (Ohio State University), Henry Svec, Joseph Szyszko (ISDD Mental Health Program), Denise Valenti-Hein, Mandy Williams (Argo Community High School), and David Wehmeyer (Arc of the United States).

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[1] There are significant similarities and dissimilarities between the concepts of fundamental and intrinsic motivation. On the one hand, both concepts express the idea of engaging in an activity for its own sake. On the other hand, many researchers also use the term *intrinsic motivation* to express the idea of locus of control and to refer to the stimulus novelty motives. For example, intrinsic motivation has been used to refer to exploration, learning, play, and personal freedom (Deci, 1975). In contrast, the concept of fundamental motivation gives emphasis to the idea of an end purpose rather than a locus of control. It implies a comprehensive list of end purposes, such as family, vengeance, power, honor, food, sex, and so on.

understanding alcohol and drinking problems. In contrast, hunger accounts for many more behaviors than does thirst. Many cultures have rules for the preparation and consumption of food. Furthermore, strong or unusual appetites are implicated in eating disorders.

We sought to limit our initial research to those ends that account for the most behavior. We defined the term *fundamental motive* as a universal end goal that accounts for psychologically significant behavior. The three criteria for fundamental motivation, then, were end goal, universal motivator, and psychological significance.

It is surprising that few researchers have attempted to assess comprehensively the fundamental end goals of human conduct (Ryff, 1989). The Thematic Apperception Test has been used (Murray, 1943), but basic questions about the validity of this measure are still unanswered (Zubin, Eron, & Schumer, 1965). The Personality Research Form (Jackson, 1984) has many motivational items, but it was not intended to assess end motivation, and it is too long (440 items) for use in many research studies. There are many excellent anxiety scales, anger scales, and self-concept scales, but these consider only one motive per instrument and do not permit a comprehensive assessment of what motivates a given individual. Researchers have developed various reinforcement checklists that have been found to be useful in applied behavior analysis (e.g., Bihm, Poindexter, Kienlen, & Smith, 1992). However, these instruments assess preferences for specific reinforcers (e.g., preference for M & M's candy) rather than preferences for specific reinforcement categories (e.g., desire to eat); moreover, few reinforcement surveys have been subjected to psychometric evaluation. Zigler (1997) developed a new instrument to assess personality and motivation in children with mental retardation and developmental disabilities (MR/DD). However, this promising instrument addresses significant motives seen in a targeted population and is not intended to provide a comprehensive assessment of end motivation.

The purpose of this investigation was to develop two new psychological instruments for use in assessing fundamental motivation. One instrument is a self-report measure intended for use with anybody who can read and understand the items. Because we have a long-standing interest in people with MR/DD, we also developed a ratings instrument to assess fundamental motivation in this population. Six factor analyses (four exploratory and two confirmatory), with six independent samples, are reported in this article. A seventh study evaluated test–retest reliabilities with a seventh independent sample. The primary reason for reporting both instruments in the same article is to permit an assessment of the robustness of factor solutions across methods (self-report vs. ratings) and populations (general vs. people with MR/DD).

The Reiss Profiles essentially ask people *how much* they like activities that are to some extent liked by virtually everybody and *how much* they dislike activities that are to some extent disliked by virtually everybody. When we first started this research (Reiss & McNally, 1985), some colleagues questioned its significance, wondering why we would ask people if they dislike anxiety or like sex. Doesn't everybody experience anxiety as a displeasure and sex as a pleasure? Our response was that individuals differ in the strength of these desires. Although everybody hates anxiety, some hate it more than others (Reiss & McNally, 1985; Taylor, 1995). Although nearly everybody likes sex, some people crave it, whereas others seek it only rarely. Sensitivity theory holds that individual variations in the strength of these motives are important for understanding a person's life goals and everyday behavior.

Study 1

We developed a self-report instrument for assessing individual differences in fundamental motivation. The first step was to generate a large list of items that refer to end purposes. We reviewed a variety of sources to generate ideas for items, including Murray's (1938) theory of needs, motivational studies, psychopathology articles and books, and the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; American Psychiatric Association, 1994). In total, 25 fundamental motives were identified; however, we subsequently deleted thirst, because this motive does not account for much everyday behavior.

Steven Reiss wrote between 8 and 18 items to assess the usual strength of an individual's desire for each of 24 motivational domains. For a period of 2 months, colleagues, relatives, and friends were solicited to review the list and suggest additional items.[2] As a consequence, the initial list of items was broader than the 24 motivational domains with which we started. Redundant items were deleted, and miscellaneous items were added, so that the total list included every significant end purpose that was suggested by our colleagues. The initial 328-item instrument was named the Reiss Profile of Fundamental Goals and Motivational Sensitivities (Reiss Profile).

Every item on the instrument was designed to measure the strength of an individual's fundamental desire or fundamental aversion for a specific end purpose. The item stems consisted of the phrases "I like," "I enjoy," "I am happiest when," "I love," "I try," "I must have," "I hate," "I am proud of," "I want," and "is important to me." Examples of items included "I love to eat," "Sex is very important to me," "I am happiest when I am physically active," and "I love parties." None of the items assessed instrumental motives. For example, the scale did not include items such as "Sex is a great way to get to know somebody," or "Becoming famous is a great way of gaining acceptance." The intent of including only items that refer to end purposes was to assess individual differences in the strength of various fundamental motives.

Method

Participants. The participants were 401 adolescents and adults sampled from six sources (three universities, a high school, a seminar for MR/DD professionals, and a church group) in Ohio and Pennsylvania. The demographic data for this Sample 1 are shown in Table 1. Participants were solicited through friends, relatives, and colleagues, who offered no inducements. However, the college students completed the instrument in exchange for an educational lecture on the underlying theory, which was given immediately after they completed the instrument.

[2] We express our gratitude to Ellen Langer and Rolf A. Peterson for their suggestions.

Table 1
Demographic Data for Six Independent Research Samples

	Self-report instrument				Ratings instrument	
%	1 $N = 401$	2 $N = 380$	3 $N = 341$	4 $N = 398$	5 $N = 515$	6 $N = 438$
Gender						
Male	29.4	29.7	37.0	32.7	59.0	56.7
Diagnosis						
MR/DD	0.0	0.0	0.0	0.0	100	100
Behavior disorder	—	—	—	—	67.6	41.7
Age						
0–21 years old	20.0	59.2	38.7	15.8	14.6	10.2
22–55 years old	74.6	38.9	37.0	36.4	75.6	78.2
55+ years old	3.7	0.8	23.8	46.2	20.8	25.0
Racial–ethnic background						
African American	7.0	1.3	5.0	7.8	20.8	25.0
Asian American	2.5	3.9	1.2	1.3	1.2	0.0
Caucasian	84.0	87.1	80.6	78.1	75.2	75.0
Hispanic	1.0	1.1	5.0	6.3	2.8	0.0

Note. MR/DD = mental retardation and developmental disabilities; — = behavior disorder data is unavailable for people completing the self-report instrument.

Procedure. The participants completed the instrument individually, anonymously, and without consultation from others. In an effort to minimize social desirability and the other biasing effects, the participants were instructed not to write any identifying information on the response sheets and to return completed response sheets in closed envelopes. They were told that research assistants would enter their responses into a computer data bank so that nobody could ever trace a particular set of responses to a particular individual.

Results and Discussion

We conducted a series of factor analyses using maximum likelihood extraction method with oblique direct oblimin rotations.[3] Oblique rotations were used because sensitivity theory implies that some fundamental motives are intercorrelated, functioning both as end goals and as instrumental means for other end goals (e.g., seeking power both for its own sake and as a means of obtaining social status.) Twenty-four factors were expected theoretically, and the scree plot suggested a 12-factor solution. In accordance with Tucker, Koopman, and Linn's (1969) discussion of how to proceed under such circumstances, we did not use the eigenvalue > 1 rule. (For eigenvalues, see *Results and Discussion* sections of Studies 3 and 5.) The first factor analysis extracted a 10-factor solution, the second extracted an 11-factor solution, and so on up to 20 factors. Because the factor loadings for the 20-factor solution were very small, we did not do further analyses to extract more than 20 factors. The 15-factor solution was easiest to interpret, with few items loading on multiple factors. The 15 factors were labeled as follows: Power, Social Conflict, Food, Physical Activity, Order, Pain, Anxiety, Frustration, Sex, Rejection, Social Contact, Vengeance, Curiosity, Independence, and Nurturance.

One hundred and ten items were retained, all having a .3 or higher loading on one of the 15 factors and none having a loading of .3 or higher on more than one factor. Key items intended to measure mastery loaded on the factor for Curiosity; those intended to measure romantic love loaded on the factor for Sex; those intended to measure positive mood loaded on the Social Contact factor; those intended to assess desire for attention loaded with desire for Power and with items assessing desire for money. Factors were not found for help others, positive self-regard, or self-control.

Study 2

This study was intended to provide a preliminary exploration of the factor structure of the revised instrument. Two types of revisions were made in the Reiss Profile on the basis of the results of Study 1. First, we added 110 new items in order to support 15 emerging factors by increasing to eight the number of items on each factor. Second, 42 of the 110 retained items were modified. The main purpose of the modifications was to increase item variance. Because the items ask people how much they like something that is to some extent liked by virtually everybody, or dislike something that is to some extent disliked by nearly everybody, there was a tendency for universal endorsement and little variance. One purpose of this investigation was to find item wordings that maximize variance. For example, the item "My personal honor is very important to me" was reworded as "My personal honor is foremost in guiding my behavior." The reworded item is less likely to be strongly endorsed by an overwhelming majority of people.

Method

Participants. The participants were 380 adolescents and adults sampled from nine sources in mostly Nebraska, Ohio, and Pennsylvania (see

[3] All exploratory factor analyses reported herein were performed using Statistical Package for the Social Sciences (SPSS; 1995) for Windows version 7.0. Confirmatory factor analyses were performed using the RAMONA program available in Systat 7.0 for Windows (SPSS, 1997).

Table 1). None of the people served as participants in Study 1. The participants represented students from two colleges, members of a military reserve unit, direct care staff attending an MR/DD workshop, and employees of a McDonald's restaurant. The method of recruitment was the same as that described for Study 1.

Procedure. The procedure was the same as that described for Study 1.

Results and Discussion

The data were submitted to a series of factor analyses using the maximum likelihood method of extraction with oblique, direct oblimin rotations. Factor solutions were examined extracting 12 to 20 factors. The 17-factor solution was easiest to interpret. We labeled the factors as follows: Social Status, Vengeance, Physical Exercise, Sex, Order, Family (nurturance), Rejection, Independence, Anxiety, Social Contact, Food, Pain, Curiosity, Citizenship, Power, Frustration, and Honor. It was interesting that family, not nurturance, emerged as a factor. Because animals have instincts to take care of their own, as opposed to general desires to nurture plants and animals, perhaps family (not nurturance) is the more fundamental motive. Using the same retention rules used in Study 1, we kept a total of 113 items. In total, 107 items were deleted.

Study 3

The purpose of this study was to provide an exploratory factor investigation of the second revision of the Reiss Profile instrument. The second revision added 74 items, bringing the new total to 187. One purpose of the revisions was to support an emergent Family factor. The other purposes were to support the factors that had emerged in the results of Study 2, so that each factor would have at least eight items with a .30 loading or higher. In addition, 24 of the 113 retained items were reworded in an effort to increase item variance.

Method

Participants. The participants were 341 adolescents and adults sampled from 14 sources in mostly Canada, Connecticut, Illinois, Ohio, Pennsylvania, and Wisconsin (see Table 1). The sources included students from required high school English classes in a racially mixed school and from two undergraduate colleges, members of a church group, mental health professionals employed at a rural community health center, legal secretaries working for a large firm, graduate students in either dentistry or business, and residents of an urban nursing home. The methods of recruitment were the same as those described for Studies 1 and 2, except that a $100 contribution was paid to the nursing home resident association for its assistance in collecting data. None of the people had served as participants in either of the previous two studies.

Procedure. The procedures were the same as those described for Studies 1 and 2.

Results and Discussion

The data were submitted to a series of exploratory factor analyses using the maximum likelihood extraction method with oblique direct oblimin rotations. On the basis of the scree plot and the results of Studies 1 and 2, 14 to 17 factors were extracted. The 15-factor solution was the easiest to interpret; this solution accounted for 53% of the variance. The factor labels, eigenvalues, percentage variance, and item loadings for this analysis are shown in Table 2. The factor correlation matrix revealed largely unrelated factors: Of 105 correlations, only 15 exceeded .20 and none exceeded .29.

In an effort to reduce the length of the instrument, we combined the factors for anxiety sensitivity and pain sensitivity into a single scale for sensitivity to aversive sensations. This decision was consistent with the factor results and with previous findings that the two sensitivities are significantly correlated (e.g., Asmundson & Taylor, 1996). The effort to develop a frustration sensitivity factor distinct from sensation sensitivity was abandoned. Items were deleted if their factor loading was less than .30. Items that loaded .30 or higher on some of the factors were deleted if the factor already had eight items that loaded highly. In total, 118 items were retained and 69 deleted.

Study 4

The purpose of this study was to confirm the factor results obtained in Study 3 with a different sample of research participants. Only three new items were added, bringing the total to 121 items. All of the new items were intended to load on the Independence factor. No items were reworded. Thus, 118 of the 121 items used in Study 4 also were used in Study 3.

Method

Participants. The participants were 398 adolescents and adults sampled from six sources in Iowa, Ohio, and Illinois (see Table 1). The sources included high school students, students at an undergraduate college, residents of a suburban nursing home, members of a church group, professionals attending a seminar on mental retardation, and volunteers in a community service organization (Kiwanis Club). The methods of recruitment were the same as those described for Study 3. None of the people had served as participants in any of the previous three studies.

Procedure. The procedures were the same as those described for Studies 1, 2, and 3.

Results and Discussion

We performed a confirmatory factor analysis on the interitem correlation matrix to test the fit of the 15-factor model using a generalized least squared discrepancy function. When the factors were allowed to correlate, the 15-factor solution yielded a close fit to the data, root-mean-square error of approximation (RMSEA) = .047. This finding provided evidence of a robust factor structure and was obtained despite the fact that Sample 4 had a lower percentage of young adults (12% vs. 25%) and a higher percentage of people 55 and older (46% vs. 24%) than Sample 3. The Cronbach's alpha coefficients ranged from .74 to .92, with a median of .82. The alpha values for male and female participants on each factor were similar to one another. However, future research is needed to explore more completely the possibility of gender effects. For the Independence scale, the alpha coefficients were used to delete one of the three new items. The remaining two new items were added to the six previously retained items, bringing the total for this scale to

Table 2
Factor Structure of Reiss Profile (N = 341)

Factor	Eigenvalues	% variance	α	Factor loadings (item no.)
Vengeance	23.21	12.4	.92	.87 (183), .79 (26), .79 (167), .78 (137), .77 (45), .76 (82), .75 (63), .51 (115)
Family	13.95	7.5	.92	.87 (43), .86 (138), .84 (65), .79 (181), .75 (117), .65 (27), .64 (40), .64 (83)
Order	9.69	5.2	.87	.82 (68), .78 (99), .74 (28), .70 (88), .69 (129), .67 (149), .42 (109), .39 (48)
Curiosity	8.00	4.3	.82	.74 (31), .70 (51), .68 (101), .67 (91), .52 (2), .52 (178), .50 (172), .38 (131)
Sex	6.82	3.6	.89	.90 (170), .83 (30), .81 (79), .73 (150), .67 (50), .65 (20), .56 (130), .52 (120)
Physical Exercise	5.73	3.1	.89	.83 (73), .81 (153), .76 (33), .74 (13), .71 (53), .69 (6), .65 (93), .61 (143)
Social Contact	4.67	2.5	.86	.79 (114), .77 (144), .76 (34), .73 (74), .71 (54), .69 (14), .56 (7), .51 (154)
Social Prestige	4.20	2.2	.88	.76 (148), .73 (18), .72 (58), .66 (38), .65 (78), .64 (70), .56 (108), .47 (98)
Aversive Sensations	3.96	2.1	.82	.70 (164), .66 (136), .63 (86), .61 (36), .58 (66), .56 (25), .55 (146), .54 (56)
Rejection	3.76	2.0	.83	.70 (162), .66 (161), .66 (125), .65 (152), .61 (169), .60 (141), .56 (21), .44 (110)
Food	3.38	1.8	.80	.72 (10), .70 (17), .67 (57), .62 (77), .56 (37), .46 (107), .44 (97), .36 (147)
Honor	3.21	1.7	.82	.76 (142), .72 (179), .70 (122), .57 (32), .57 (52), .52 (72), .51 (92), .45 (102)
Citizenship	2.97	1.6	.84	.71 (81), .70 (90), .69 (139), .66 (23), .66 (23), .62 (61), .50 (112), .44 (157)
Power	2.79	1.5	.86	.74 (105), .73 (135), .62 (15), .62 (95), .61 (47), .55 (155), .53 (35), .45 (29)
Independence	2.67	1.4	.71	.58 (64), .54 (24), .52 (44), .48 (180), .47 (133), .42 (4)

eight items. Thus, the final instrument has 15 scales, each with eight items (see Table 2).

Study 5

Many people with MR/DD cannot validly self-report their emotions and desires (see Reiss, 1990). Because of our long-standing interest in this population, we developed an instrument for rating people with MR/DD, called the Reiss Profile of Fundamental Goals and Motivation Sensitivities for Persons With Mental Retardation and Developmental Disabilities (Reiss Profile—MR/DD). The instrument is intended to be completed by caregivers, teachers, or parents and used with anyone whose cognitive ability precludes the use of our self-report instrument. The instrument was developed concurrently with the self-report instrument.

Steven Reiss wrote a 157-item inventory intended to assess the following 10 fundamental motives: Anxiety Sensitivity, Attention, Food, Frustration Sensitivity, Help Others, Independence, Order, Physical Exercise, Positive Mood, and Social Contact. About two thirds of the items directly referred to motives, such as "more than most people, seeks attention," "has a strong sex drive," "enjoys learning," "always wants to win," "strong desire for autonomy," and "more than most people, enjoys working independently." Some items were written to refer to behaviors that strongly implied, but did not explicitly state, motives. For example, anxiety sensitivity is indicated by beliefs that anxiety has harmful personal consequences (Reiss & McNally, 1985). Because raters cannot be expected to know the anxiety sensitivity beliefs of the people they are rating, items were selected that are known to be correlated with anxiety sensitivity beliefs, such as the presence of many fears (Reiss, Peterson, Gursky, & McNally, 1986).

At a national MR/DD conference, we collected ratings on 199 people from the professionals and parents attending the conference. Steven Reiss used the interitem correlation matrix to develop a 162-item revised instrument. The revised instrument included items intended to assess 15 factors (9 of the 10 fundamental motives assessed by the initial instrument [the positive mood items were deleted] plus Curiosity, Morality, Pain, Rejection, Social Contact, and Vengeance). The purpose of Study 5 was to explore the revised instrument's factor structure with a large heterogenous sample of people with MR/DD.

Method

Participants and raters. The participants were 515 adults (304 men and 211 women) with MR/DD (see Table 1). They were recruited from eight community-based service and residential agencies located in Massachusetts, Connecticut, Pennsylvania, Ontario, Illinois, Texas, Ohio, and the United Kingdom. None of the people served as participants in any of our previous studies. The research was conducted in full compliance with each agency's ethics committee.

Table 3
Factor Structure of Reiss Profile (MR/DD; N = 515)

Factor	Eigenvalue	% variance	α	Factor loadings (item no.)
Vengeance	19.72	12.2	.90	.76 (157), .76 (129), .73 (125), .62 (152), .57 (116), .54 (115), .52 (161), .50 (45)
Help Others	18.66	11.5	.89	.84 (19), .81 (38), .76 (51), .71 (10), .68 (123), .51 (82), .38 (65), .37 (78)
Food	7.97	4.9	.90	.93 (72), .88 (23), .86 (48), .83 (4), .83 (59), .54 (134), .50 (134)
Rejection	6.72	4.1	.86	.68 (35), .59 (17), .56 (104), .55 (18), .54 (16), .54 (36), .52 (58), .52 (87)
Pain	5.11	3.2	.85	.82 (79), .80 (50), .82 (79), .73 (64), .63 (30), .58 (127), .57 (156)
Sex	4.01	2.5	.88	.89 (31), .86 (80), .80 (12), .50 (160)
Physical Exercise	3.98	2.5	.83	.80 (24), .72 (57), .65 (5), .62 (73), .54 (99), .49 (109)
Frustration	3.30	2.0	.88	.70 (93), .63 (75), .42 (44), .41 (148), .39 (25), .34 (6), .29 (89)
Order	2.72	1.7	.81	.75 (22), .75 (40), .70 (110), .68 (56), .51 (68), .31 (71)
Independence	2.46	1.5	.83	.54 (61), .54 (119), .52 (46), .52 (9), .50 (77), .36 (85), .36 (28)
Curiosity	2.36	1.5	.82	.49 (32), .45 (158), .42 (97), .41 (162), .40 (142), .38 (66), .37 (13), .35 (81)
Attention	1.99	1.2	.84	.68 (145), .63 (70), .59 (107), .56 (2), .54 (21), .48 (47), .38 (69)
Anxiety	1.90	1.2	.77	.55 (26), .49 (39), .40 (7), .36 (90), .35 (96), .34 (124)
Morality	1.67	1.0	.69	.44 (122), .36 (83), .33 (154), .30 (105)

Note. Added and confirmed: Social Contact, α = .80 (N = 953). MR/DD = mental retardation and developmental disabilities.

The instrument was completed by parents, siblings, agency supervisors, and direct care workers. All raters reported that they had known the participants for at least 4 months. In order to limit the extent to which the results might be influenced by any one rater, no person rated more than five individuals. As shown in Table 1, the agencies indicated whether or not participants had a behavior disorder. In people with MR/DD, these behavior disorders are mostly conduct problems, aggression, and severe behavior symptoms, such as self-injurious behavior, although the full range of psychiatric disorders is seen in this population (see Reiss, 1994). Local psychiatrists and clinical psychologists provided the diagnostic information.

Procedure. The data collection at each agency was supervised by a program director or by his or her assistant. All data collected were completely anonymous in that no names or identifying participant codes were used.

Results and Discussion

We submitted the data to a series of factor analyses using the maximum likelihood extraction method with oblique direct oblimin rotations. On the basis of the scree plot that suggested a 12-factor solution and a theoretical expectation of 14 factors (see Reiss & Havercamp, 1997), a series of factor analyses were conducted extracting 10 to 20 factors. The 14-factor solution was the easiest to interpret; this solution accounted for 52% of the variance. The factor labels, eigenvalues, percentage variance, and item loadings for this analysis are shown in Table 3. The factor correlation matrix revealed largely unrelated factors. Of 91 correlations, only 13 exceeded .20 and none exceeded .40.

A scale for social contact did not emerge from the exploratory factor analysis. Because of the significance of the desire for social contact, the eight items that were intended to measure this desire were retained. Cronbach's alpha coefficient for this scale was .79 for Sample 5. Of the 162-items on the instrument, 62 were deleted because they did meet the item retention rules used for Studies 1 and 2.

Study 6

The purpose of this study was to confirm the factor results obtained in Study 5 with a different sample of research participants. No new items were added to the instrument. However, we reworded 10 of the 100 retained items to increase item variance, and we reworded six items so that all 100 items could be scored in the same numerical direction.

Method

Participants. Sample 6 consisted of 438 people (248 men, 189 women, 1 unreported) who either were receiving services from one of the following agencies: a large national residential agency with headquarters in Ohio, a large residential provider of group homes in suburban Chicago, or a residential dual diagnosis program near Philadelphia; or whose parents, siblings, or county board support staff attended a research presentation at the 1996 national meeting of the Arc of the United States.

In total, the data came from 24 states. Demographic information is summarized in Table 1. None of the people had served previously as participants or raters in any of the other studies on fundamental motivation.

Procedure. The procedures were the same as those used in Study 5.

Results and Discussion

We performed a confirmatory factor analysis on this sample and the 15-factor model obtained from Study 5 (14 empirically derived factors plus Social Contact). A generalized least squared discrepancy function was applied to the interitem correlation matrix. When the factors were allowed to correlate, the 15-factor solution provided a reasonable fit to the data (RMSEA = .078). This finding provided evidence of a robust factor structure. As shown in Table 3, the Cronbach's alpha coefficients for each of the scales varied between .70 and .92, with a median of .83. The alpha values for male and female participants on each factor were similar to one another. However, future research is needed to explore more completely the possibility of gender effects.

These factor results are similar to those obtained for the self-report instrument. As many as 13 of the 15 factors on the self-report instrument have corresponding factors on the MR/DD (ratings) instrument. The main differences are these: The self-report instrument has a scale for Power (dominance) not found on the MR/DD instrument. The self-report instrument has a scale for Citizenship (desire for social justice) not found on the MR/DD instrument. The MR/DD instrument has separate scales for Anxiety, Frustration, and Pain Sensitivity, whereas the self-report instrument has a single (combined) scale. The interpreted factors and factor definitions for the MR/DD and self-report instruments are shown in Table 4.

Study 7

Because fundamental motives are purported to be stable individual differences, it is important to assess the stability of this construct over time. The purpose of this study was to establish the test–retest reliability of the two instruments.

Method

Participants. Sample A consisted of 31 undergraduate students enrolled in an introductory psychology course. Their ages ranged from 19 to 44 years (M = 21.9), where 90% were between the ages of 19 and 21. The sample consisted of 28 women (90%); racial composition was 73% Caucasian, 10% African American, 13% Asian American, and 3% Other. Sample B consisted of 44 individuals (23 women) who were receiving services from a large not-for-profit mental retardation service agency with headquarters in New York. Participants' ages ranged from 22 to 79 years (M = 43.9 years); racial composition was 86% Caucasian and 14% African American. Seventy percent of the sample were reported to have a behavior disorder or psychiatric diagnosis. The instrument was completed by agency psychology staff and direct care workers. All raters reported that they had known the participants for at least 8 months (M = 28 months). In order to limit the extent to which the results might be influenced by any one rater, no person rated more than five individuals. None of the people had served previously as participants or raters in any of the other studies on fundamental motivation.

Procedure. Sample A participants were invited to complete the Reiss Profile during class on two occasions with a time interval of 2 weeks. Data collection for Sample B was supervised by the agency director of psychology. Raters completed the Reiss Profile—MR/DD for the same individual twice, at initial assessment and again 3 months later. All data collected were completely anonymous in that no names or identifying participant codes were used.

Results and Discussion

For the self-report instrument, the test–retest Pearson product-moment r values for the 15 scales ranged from .80 to .96 (M = .83). For the MR/DD instrument, r values for the 15 scales ranged from .72 to .89 (M = .81). All of these correlations were significant at the $p < .01$ level. These findings provided evidence of the stability of the scale scores over time.

General Discussion

The results of the various factor analyses of the Reiss Profiles were consistent across diverse samples and assessment methods. Similar 15-factor solutions were obtained for the two instruments and confirmed on independent samples varying significantly in age, IQ, and the presence of behavior disorders. Most items had high factor loadings. The finding that the factor solutions were consistent across methods (self-report vs. ratings by others) suggests that the results were not significantly biased by the method of assessment. For example, the results were not easily explained in terms of social desirability, which is primarily associated with self-report instruments and usually not considered with ratings instruments. Furthermore, the fact that the MR/DD instrument has some items in which motivational preferences are implied, rather than directly stated, was not a problem because the same factor structure was obtained with the self-report instrument.

These results are consistent with what used to be called the instinct model of human motivation. This model was developed by James (1890/1950) and McDougall (1926) after Darwin (1872/1965) showed an instinctual basis to some human emotions. According to instinct theory, the human desire for social contact is an expression of the herd instinct, and the tendency for revenge is an expression of an aggression instinct. Both James (1890/1950) and McDougall (1926) emphasized that human instincts are not automatic behaviors but are modified considerably by cognition and experience. Their idea of an instinct was essentially what today would be called a genetic disposition.[4]

James (1890/1950) and McDougall (1926) used three criteria to infer an instinct. They inferred an instinct when a motive

[4] Murray's (1938) influential list of human needs was essentially a psychodynamic reinterpretation of lists previously generated by instinct theorists. As Murray (1938) himself stated, "This classification of needs is not very different from lists constructed by McDougall, Garnett, and a number of other writers" (p. 84). The results of this investigation match more closely the details of prior lists than the one published by Murray (1938).

Table 4
Scale Definitions for Reiss Profile: Self-Report and MR/DD Informant Version

Scales	Definition[a]
Common to both versions	
Curiosity	desire to learn (explore novel stimuli)
Food	desire to eat
Honor (morality)	desire to behave in accordance with code of conduct
Rejection	fear of social rejection
Sex	desire for sexual behavior and fantasies
Physical Exercise	desire for physical activity
Order	desired amount of organization in daily life
Independence	desire to make own decisions
Vengeance	desire to retaliate when offended
Social Contact	desire to be in the company of others
Exclusive to self-report	
Family	desire to spend time with own family
Social Prestige	desire for prestige and positive attention
Aversive Sensations	aversion to pain and anxiety
Citizenship	desire for public service and social justice
Power	desire to influence people
Exclusive to MR/DD version	
Anxiety Sensitivity	fear of anxiety sensations
Attention	desire to be noticed by adults
Pain	fear of pain sensations
Help Others	desire to help friends
Frustration	aversion of irritation (irritability)

Note. MR/DD = mental retardation and developmental disabilities.
[a] Add the following text before each definition: Usual strength of the individual's . . .

was (a) seen in all humans, (b) seen in some animals, and (c) thought to have survival value. Nearly all of the factors on the Reiss Profiles, with the possible exceptions of Citizenship and Independence, meet these criteria. That is, these factors refer to universal end motives that are seen in many animals and have been thought to have survival value.

We suggest a cognitive–behavior–genetics model of end motivation. Because of genetic variations, individuals may differ in how much they enjoy each end goal. For example, variations in genetic variables may cause some people to experience sex as more pleasurable than do others. Beliefs about the personal consequences of sex, as well as other learning experiences, may add or subtract from the individual's total enjoyment. For example, the belief that sex is a sin and past punishment of sexual behavior should subtract from the person's overall enjoyment of sex. The net effect is the extent to which the individual enjoys sex relative to other people, which we call the person's "sensitivity" to sex. People who enjoy sex more than others should have high libido.

Anxiety sensitivity is another case in point. All humans inherit genes that cause anxiety to be experienced as aversive and motivate flight from feared objects. Beliefs about the personal consequences of experiencing anxiety, however, vary from one person to the next, causing significant net differences in an individual's sensitivity to anxiety (McNally, 1994; Reiss, 1997; Taylor, 1995). Researchers have recently found that anxiety sensitivity (a cognitive modification of the instinct to flee) is an early risk factor for spontaneous panic attacks (Schmidt, Lerew, & Jackson, 1997).

Similar assumptions can be made for each of the 15 fundamental motives identified by the results of these studies. Because power has survival value and leadership is seen in animals, there may be a genetic basis to how much a person enjoys power. Beliefs about the consequences of power, as well as conditioning experiences, may combine to modify the person's enjoyment of power. The net effect is the person's sensitivity to power, which is one motive that the Reiss Profiles purport to measure.

One of the many potential applications of these scales for future research is to study the relative contribution of genetics and environment to end motivation. Using established research designs in behavior genetics, it should be possible to conduct research designed to estimate the extent to which fundamental goals and sensitivities have genetic components.

Why should clinical psychologists care about any of this? They should care because the potential implications are significant for early diagnosis, prevention, and treatment of mental illness. Look at the emerging implications of the concept of anxiety sensitivity, for example. Clinical psychologists soon may predict spontaneous panic attacks years before they occur (Maller & Reiss, 1992; Schmidt et al., 1997) and soon may be able to predict panic attacks in adulthood on the basis of data

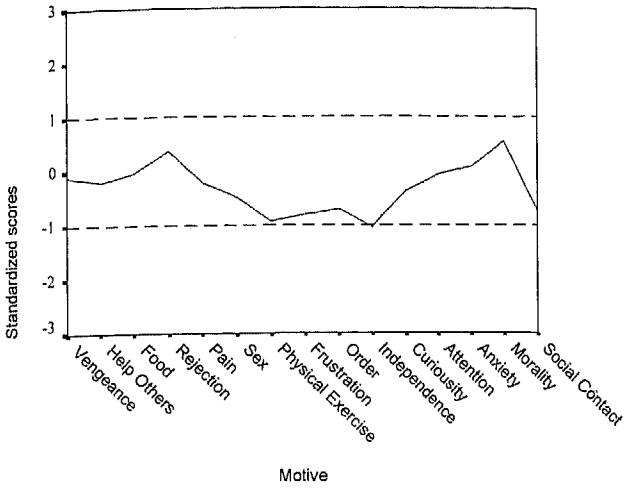

Figure 1. Motivational profile of an individual diagnosed with mental retardation and major depression.

obtained in childhood (see Silverman, Fleisig, Rabian, & Peterson, 1991). Early identification of mental illness is an important first step in the prevention of a disorder.

In order to exemplify the type of information these instruments generate, a profile obtained using the MR/DD instrument is shown in Figure 1. This profile is shown for illustrative purposes only and should not be considered as evidence for the validity of the instrument, because we do not yet know how typical the profile is of the indicated diagnostic condition. This profile for a person with both MR/DD and major depression reveals little desire for most fundamental motivators, which is consistent with clinical descriptions of depressed people as being disinterested in enjoyable activities. Motivational profiles such as this one cannot be obtained from any prior instrument, partially because few prior instruments assess more than one motivational trait.

Clinicians should be able to use these scales for purposes as diverse as selecting reinforcers in applied behavior analysis to planning intervention strategies in cognitive–behavioral therapy and counseling. According to sensitivity theory, the people who are called mentally ill often behave in unusual ways because they do not care about the same things as everybody else, at least not to the same degree. They may not care about anything (e.g., as with depression), they may care too much about something (e.g., as with compulsive behavior or phobias), or they may care about unusual things (e.g., as with schizophrenia). As Ellis (1987) has emphasized, mental illness often is associated with a disturbance in caring, and these scales are the first to assess caring comprehensively. People with low scores on the Social Prestige factor should present as indifferent to what others think about them; people with high scores for Power should be highly ambitious; people with high scores for Citizenship should be social idealists, perhaps easily depressed over the injustices in the world. Using cognitive–behavioral therapy and other techniques, psychologists may effectively treat disturbances in caring, leading to significant improvements in the person's adjustment.

After these scales are validated, researchers will be able to obtain the first ever profiles of end motives of various diagnostic groups. By definition, motives precede behavior. If the fundamental end motives underlying aberrant behavior could be measured objectively, it may be possible to identify risk for aberrant behavior much earlier than has previously been possible.

This investigation provided evidence of 15 psychometrically distinct end motives. This number is 12 to 14 more than is recognized in social psychological theories of intrinsic motivation. For example, Deci (1975) defined intrinsic motivation as engaging in behavior for its own sake; reviewed the literature on intrinsic motivation in terms of stimulus novelty motives, such as exploration, curiosity, and play; and proposed that all intrinsic motivation is self-determination. Deci's (1975) position implies that the concept of engaging in an activity for its own sake defines a single unitary phenomenon. However, the factor results of the present investigation provide evidence of 15 distinguishable fundamental (intrinsic) motives. Future researchers should study this discrepancy and determine the extent to which Deci's viewpoint can be substantiated by psychometric science.

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Received July 18, 1997
Revision received December 15, 1997
Accepted January 20, 1998 ■