

## Factor Structure of Maladaptive Behavior Across the Lifespan of Persons with Mental Retardation

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*Data obtained on a sample of persons with mild to profound degrees of mental retardation (N = 8255) and ranging from birth to 98 years of age were factor analyzed to provide information on the structure of maladaptive behavior relative to age and degree of mental retardation. Using the Problem Behavior scales of the Inventory for Client and Agency Planning, two principal factors emerged for children with mild to profound degrees of retardation: Internalized Maladaptive and Externalized Maladaptive. For adolescents and young adults, a three-factor solution which varied by degree of retardation was most appropriate. For middle and older adults, three- and four-factor solutions were identified across all ages and degrees of retardation. Across all samples as many as six different types of dimensions were identified, indicating that the structure of maladaptive behavior may well be influenced by age and level of mental retardation.*

The assessment of adaptive behavior has experienced great growth over the past several decades (Horn & Fuchs, 1987; Reschley, 1985). From the

institutional programs of the 1880s to the community integration programs of the 1980s, adaptive behavior assessment has been transformed from a system of gross physical and behavioral observations to one demanding greater psychometric accuracy and integrity. Assessment of adaptive functioning implies much more than simply measuring the acquisition of age-appropriate living skills; in addition, it implies the reduction and elimination of behaviors that interfere with effective functioning in typical living, work, and learning environments (Bruininks, Thurlow, & Gilman, 1987).

According to the American Association on Mental Retardation (Grossman, 1973, 1977, 1983), adaptive behavior is defined as "the effectiveness or degree with which individuals meet the standards of personal independence and social responsibility expected for age and cultural group" (Grossman, 1983, p. 1). Maladaptive behaviors are behaviors which interfere with a person's execution of such tasks — for example, behaviors which are socially unpleasant, interfere with one's ability to cope, or are repetitious or unusual (Morreau, 1985). The importance of accurately assessing maladaptive behavior is based on evidence which suggests a link between problem behaviors and decreased opportunities for personal development and social or community integration (Bruininks, Hill, & Morreau, 1988; Hill & Bruininks, 1981, 1984). Further, socially inappropriate behaviors are believed to be highly instrumental in the occurrences of institutionalization (Hill & Bruininks, 1984; Keyes, Spencer, 1976), reinstitutionalization (Maney, Pace, & Morrison, 1964; Boroskin, & Ross, 1973; Pagel & Whitting, 1978; Sutter, Mayeda, Call, Yanagi, & Yee, 1980), and lowered job status (McCarver & Craig, 1974; Schalock, Harper, & Carver, 1981).

Since introducing the assessment of maladaptive behavior with the AAMD Adaptive Behavior Scales (Nihira, Foster, Shellhaas, & Leland, 1969), three standardized and nationally normed instruments have been published which include a measure of maladaptive behavior: the Scales of Independent Behavior (SIB; Bruininks, Woodcock, Weatherman, & Hill, 1984), its paper and pencil analog, the Inventory for Client and Agency Planning (ICAP; Bruininks, Hill, Weatherman, & Woodcock, 1986a), and the Vineland Adaptive Behavior Scales (Sparrow, Balla, & Cicchetti, 1984a, 1984b, 1985). The previous dearth of good measurement instruments has greatly limited applied and theoretical progress in this area. Although the structure of adaptive behavior and its relationships with other abilities (e.g., intelligence, school achievement, social skills) have recently received considerable attention (Bruininks & McGrew, 1987; Gresham & Elliot, 1987; Gresham & Reschley, 1987; Harrison, 1987; Keith, Fehrman, Harrison, & Pottebaum, 1987; Keith, Harrison, & Ehly, 1987; McGrew &

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Bruininks, 1989, in press), much less attention has been focused on researching aspects of maladaptive behavior. The relationship between adaptive and maladaptive behavior remains unclear (Roszkowski, Spret, & Waldman, 1983) with several analyses reporting correlations ranging from slight to moderate (Aman, Singh, Stewart, & Field, 1985; Pawlarczyk & Schumacher, 1983; Sparrow, Balla, & Cicchetti, 1984a, 1984b). However, relatively recent multivariate studies have provided evidence to suggest that the two are, for all practical purposes, separate and distinct constructs (Bruininks & McGrew, 1987; McGrew & Bruininks, in press; Roszkowski, Spret, & Waldman, 1983).

Investigations into the structure of adaptive behavior indicate that most adaptive behavior scales measure one or two general dimensions with as many as five different types of factors (personal independence, personal/social responsibility, academic/cognitive, vocational/community, and physical/developmental) identified across scales (McGrew & Bruininks, 1989). In contrast, only a handful of studies have reported on the structure of maladaptive behavior. Most frequently, these studies have converged on a two-dimensional internal/external maladaptive structure (McGrew & Bruininks, 1989; Meyers, Nihira, & Zetlin, 1979). Early studies using the Adaptive Behavior Checklist (Leland, Shellhaus, Nihira, & Foster, 1967) reported two maladaptive dimensions (social maladaptation and personal maladaptation) for a sample of children and adolescents with developmental disabilities ( $n = 313$ ; Nihira, 1969a), and two dimensions (social maladaptation and intra-maladaptation) for a sample of adults with developmental disabilities ( $n = 919$ ; Nihira, 1969b). An investigation using Part II of the AAMD Adaptive Behavior Scale, Public School Revision (Nihira, Foster, Shellhaas, & Leland, 1974), yielded two dimensions (interpersonal adjustment and intrapersonal adjustment) for a sample of elementary school children ( $n = 2618$ ; Lambert & Nicoll, 1976). Additionally, two maladaptive dimensions (social maladaptation and personal maladaptation) were reported by Widaman, Gibbs, and Gearty (1987) using the Client Development Evaluation Report (California State Department of Developmental Services, 1978) across 14 different samples ( $M$  sample size = 676) of persons with developmental disabilities.

Although the internal/external maladaptive dichotomy has been observed most frequently in the literature, not all research has supported this interpretation. For example, Harrison, O'Neal, and Ittenbach (1987) reported four dimensions (social maladjustment, personal maladjustment, hyperactivity, and avoidance) in the nonhandicapped portion ( $n = 2000$ ) of the standardization sample of the Vineland Adaptive Behavior Scales, four dimensions for samples of children with emotional ( $n = 134$ ), visual ( $n = 185$ ), and hearing ( $n = 323$ ) disabilities, and four dimensions for two sam-

ples of adults with developmental disabilities (ambulatory [ $n = 787$ ] and nonambulatory [ $n = 269$ ]). Further, Aman and his colleagues (Aman, Richmond, Stewart, Bell, & Kissell, 1987; Aman, Singh, Stewart, & Field, 1985) have reported five factors with the Aberrant Behavior Checklist in a sample of individuals with moderate to severe levels of retardation. The factors were reported as follows: (a) irritability, (b) lethargy and social withdrawal, (c) stereotypic behavior, (d) hyperactivity, and (e) inappropriate speech.

Therefore, while most factor analytic research has typically been interpreted to suggest a two-dimensional internal (self-injury or other asocial or withdrawal behaviors which primarily affect the actor) versus external (outwardly directed toward people or objects) maladaptive behavior structure (Bruininks et al., 1988; Meyers et al., 1979; Schaefer, 1975), this interpretation must be viewed cautiously since (a) it is not supported by all research and (b) the studies on which these findings are based have used a variety of different samples, instruments, and research methods. Moreover, the samples employed in previous studies have often been limited in the diversity of living circumstances, ages, and handicapping conditions. There is a need for continued and systematic research into the nature of the maladaptive behavior construct. Similar to the adaptive behavior literature (McGrew & Bruininks, 1989), differences in the interpretation of the maladaptive behavior factor research may be confounded by research studies using variables at different levels of the maladaptive behavior domain (e.g., specific items versus broad subscales).

The purpose of the present study was two-fold: (a) to analyze the factor structure of maladaptive behavior as defined by the Problem Behavior scales of the Inventory for Client and Agency Planning relative to age and degree of mental retardation, and (b) to interpret the data from a logical as well as a clinical standpoint by providing additional insight into the larger and more general construct of maladaptive behavior.

## METHOD

### Participants

The sample consisted of 8255 children and adults with mental retardation who ranged from birth to 98 years of age ( $M = 31.14$  years,  $SD = 14.22$  years). The sample is a composite of data obtained from 10 states, including approximately 2000 people each from Montana, South Dakota, and Utah. The sample was fairly evenly divided according to gender (55% male, 45% female); 7% reported to be Black, 4% Hispanic, 8% White, and 2% other. The sample was divided into 12 smaller samples based on

TABLE 1.  
Characteristics of Twelve Samples of Individuals with Mild to Profound Degrees of Retardation

Age Range	N	Chronological Age		Gender		Level	Adaptive Behavior		Maladaptive Behavior	
		M	SD	Male	Female		M	SD	M	SD
0-5	180	41.0	18.1	61.7	37.8	MM	402.9	34.2	-1.8	9.5
	128	43.3	17.4	56.2	43.8	SP	347.2	31.2	-1.4	8.6
6-12	157	112.3	23.8	63.7	36.3	MM	440.8	34.9	-9.5	12.9
	234	116.2	24.4	57.3	42.7	SP	371.2	43.0	-10.2	13.2
13-19	278	208.1	23.2	60.1	39.9	MM	476.9	31.6	-13.3	12.6
	391	201.7	24.5	61.4	38.6	SP	393.5	43.9	-13.5	12.6
20-39	2922	349.8	65.2	53.1	46.9	MM	489.2	30.3	-8.6	9.5
	1988	349.1	65.6	55.5	44.1	SP	418.1	46.4	-14.8	2.9
40-59	957	579.1	69.6	54.4	45.6	MM	485.2	28.3	-7.4	8.3
	680	568.7	66.0	55.6	44.3	SP	430.1	39.6	-13.2	11.3
60≤	200	797.0	71.3	47.0	52.5	MM	482.8	27.0	-6.5	7.4
	140	797.3	68.7	47.1	52.9	SP	434.0	35.0	-10.8	10.4

Note. Not all percentages sum to 100% due to missing data or rounding error. Level indicates two categories of retardation as indicated on the ICAP: MM = mild/moderate; SP = severe/profound. Adaptive Behavior is the ICAP Broad Independence cluster which is reported on the W scale, a special transformation of the Rasch ability scale (W score of 500 equals performance of average person of fifth grade age). Maladaptive Behavior is the ICAP General Maladaptive Index (M = 0.0, SD = 10.0).

six distinct age groups: early childhood (0 to 5 years), childhood (6 to 12 years), adolescence (13 to 19 years), young adult (20 to 39 years), adult (40 to 59 years), and older adult (60 years or older), and two categories of retardation (mild/moderate and severe/profound) as reported on the ICAP (see description in next section). Table 1 provides a breakdown of sample characteristics.

**Instrument**

The Problem Behavior scales of the Inventory for Client and Agency Planning (ICAP) were used as the norm-referenced and nationally standardized measure of maladaptive behavior. The ICAP is a 16-page client assessment instrument designed to gather planning and evaluation information relevant to the needs of individuals with disabilities (Bruininks, Hill, Weatherman, & Woodcock, 1986b). The ICAP provides assessment information in areas such as adaptive and maladaptive behavior, functional limi-

tations and health status, current service delivery, future service needs, and family/leisure/social activities. The adaptive and maladaptive scales are identical to and share a common normative base with the Scales of Independent Behavior (SIB). Thus, the results of the current study should generalize to the Problem Behavior scales of the SIB.

The problem behavior portion of the ICAP provides for four general and eight specific measures of maladaptive behavior. Information on each Problem Behavior scale is obtained by using a rating-scale format for both frequency: never (0) to hourly (5) and severity: not serious (0) to extremely serious (4). The eight problem behavior scales can be transformed into four broader maladaptive indexes (see Table 2 for a list of behavioral characteristics representing each scale): Internalized Maladaptive, Asocial Maladaptive, Externalized Maladaptive, and General Maladaptive. The Problem Behavior scale was standardized on nearly 1800 children and adults from throughout the U.S. to approximate 1980 census statistics. Test-retest reliabilities for the indexes were generally in the .80s with the General Index between .83 and .88 (Bruininks et al., 1986b). Measures of reliability for samples of persons with mental retardation were consistently higher than those reported for the normative sample. Frequency and severity ratings for each of the eight Problem

TABLE 2.  
Description of Inventory for Client and Agency Planning Problem Behavior Scales

Scales	Description
Hurtful to Self	Injures own body (hitting self, banging head, scratching, cutting or puncturing, biting, picking or rubbing skin)
Hurtful to Others	Causes physical pain to other people or animals (hitting, kicking, biting, pinching, or striking with an object)
Destructive to Property	Deliberately breaks, defaces, or destroys things (hitting, tearing or cutting, throwing, burning or scratching things)
Disruptive Behavior	Interferes with activities of others clinging, pestering or teasing, arguing, complaining, picking fights, interrupting)
Unusual or Repetitive Habits	Unusual behaviors that may be done repeatedly (pacing, rocking, twirling fingers, twitching, talking to self, staring at an object or into space)
Socially Offensive Behavior	Behavior that is offensive to others (talking too loud, swearing, lying, talking nonsense, picking nose, belching)
Withdrawal or Inattentive Behavior	Difficulty being around others or paying attention expressing unusual fears, a motivation, lethargy)
Uncooperative Behavior	Behavior that is uncooperative (refusing to obey, acting defiant or pouting, cheating, stealing, or breaking the law)

Note. Individuals receive a rating of never (0) to one or more times an hour (5) for frequency; and, not serious (0) to extremely serious (4) for severity.

Behavior scales were used in this investigation resulting in 16 variables available for data analysis.

#### Procedures

Twelve Pearson intercorrelation matrices (one for each subsample) computed from the frequency and severity scales of the 8 ICAP Problem Behavior Scales were factor analyzed using SYSTAT (Version 4.0) statistical software (Wilkinson, 1988). Although the inclusion of both frequency and severity ratings may introduce correlated error into the analyses, supplemental analyses based only on the severity and frequency ratings, individually, produced very similar results. Thus, analyses using both frequency and severity ratings are reported in order to provide the most comprehensive summary of results.

Two procedures were used to analyze the data: First, eigenvalues were obtained from a principal-components analysis to assist with the determination of the number of retainable factors for each group. The number of factors to retain was based on a review of multiple factor extraction criteria (viz., eigenvalues-greater-than-one rule, inspection of scree plot, interpretability of factors) with primary emphasis on the interpretability of factors. Because the investigation was designed to be exploratory in nature, a principal-factor analysis (with  $R^2$  as initial communality estimates) was conducted (rotated to varimax). The multiple factor extraction criteria suggested that two-, three-, and four-factor solutions should be examined in each sample. The most logically and empirically defensible solution for each sample was identified and then compared with the final factor structures for each of the other samples to determine if any trends related to age or degree of retardation were present.

#### RESULTS

A review of all possible factor structures using the multiple factor extraction criteria suggested two or three factors for all but two samples for which four-factor solutions were deemed most interpretable. As expected, the relationship between a Problem Behavior scale's level of frequency and severity was so strong as to make the pair of factor loadings inseparable, resulting in a pattern of double-loadings on each of the respective factors. Although the frequency and severity scales of a given Problem Behavior scale share much common variance, a response to one is not completely dependent upon a response to the other. For example, a person may display a high frequency behavior not judged to be severe (e.g., nail biting); conversely, a behavior described as severe may occur with low frequency (e.g., breaking a plate glass window). Although two to three interpretable factors

were found in most samples, across all samples as many as six different types of factors were identified. The six factors and the Problem Behavior scales which most consistently defined those factors are as follows:

**Internal Maladaptive** — Primarily defined by Unusual and Repetitive Habits (stereotyped behavior), Withdrawal and Inattentive Behavior, and occasionally Hurtful to Self. This factor was the most consistent across all samples and appears to measure inwardly directed behavior which is manifested in a stereotypic, autistic-like, or self-abusive manner (Bruininks et al., 1987). This factor is consistent with the internal or personal maladaptive factor identified in previous research (McGrew & Bruininks, 1989; Meyers et al., 1979).

**External Maladaptive** — Primarily defined by Hurtful to Others, Destructive to Property, Disruptive Behavior, Socially Offensive Behavior, and Uncooperative Behavior. This large factor appears to represent primarily aggressive, antisocial, or destructive behaviors which are directed toward people or the environment (Bruininks et al., 1987). This factor is consistent with the external or social maladaptive factor identified in prior research reviews (McGrew & Bruininks, 1989; Meyers et al., 1979). In contrast to the consistent internal maladaptive factor, this broad external factor split into as many as four different factors: (a) Socially Disruptive — Defined by Disruptive Behavior, Socially Offensive Behavior, and Uncooperative Behavior. This factor appears to represent parts of Morreau's (1985) "maladaptive" and "disruptive" categories as it represents socially unpleasant or intrusive behaviors which demand the attention of others, negatively affect the environment, or interfere with an individual's ability to cope with environmental demands. (b) Destructive: General — This factor is defined by Hurtful to Self, Hurtful to Others, and Destructive to Property, and represents "behaviors that pose a threat to the individual, to those around him or her, or to property" (Morreau, 1985, p. 113). This factor occasionally split into two additional factors: (i) Destructive: External — Defined by Hurtful to Others and Destructive to Property. This factor appears to measure destructiveness directed toward others or the environment; and (ii) Destructive: Internal — Although only defined by the frequency and severity scales of one problem behavior scale (viz., Hurtful to Self), the extraction of such a "singlet" factor has been found to be necessary in certain samples to identify other more readily interpretable factors. This unidentified factor appears to represent self-directed destructive behavior.

A review of all solutions suggested that for each sample the type and number of ICAP factors varied as a function of age and degree of retardation.

TABLE 3.  
Type of Maladaptive Factors by Age and Degree of Retardation for Early Childhood (0 to 5) and Childhood (6 to 12) Samples

Age	Factor											
	Internal Maladaptive						External Maladaptive					
	0-5		6-12		6-12		0-5		6-12		6-12	
Scale	MM	SP	MM	SP	MM	SP	MM	SP	MM	SP	MM	SP
Hrtfl to Self-F	84**	39	32	40*	10	39	40*	30				
Hrtfl to Self-S	78**	33	29	29	11	30	43*	28				
Hrtfl to Othrs-F	49*	04	17	13	48*	65**	66**	77**				
Hrtfl to Othrs-S	42*	01	21	07	60**	74**	65**	82**				
Dsct to Prop-F	26	01	17	26	69**	68**	78**	58**				
Dsct to Prop-S	27	16	16	25	71**	68**	80**	63**				
Disruptive Beh-F	33	21	14	52**	61**	56**	61**	51**				
Disruptive Beh-S	36	28	19	46*	72**	56**	72**	51**				
Unsl/Rpt Habis-F	61**	55**	66**	63**	22	30	22*	27				
Unsl/Rpt Habis-S	72**	60**	62**	65**	26	37	21	21				
Wdrwn/Inat Beh-F	49*	90**	69**	72**	41*	00	10	15				
Wdrwn/Inat Beh-S	54**	92**	80**	80**	47*	05	15	14				
Soc Offnsv Beh-F	06	33	13	44*	80**	71**	63**	44*				
Soc Offnsv Beh-S	10	36	12	40*	81**	60**	68**	54**				
Uncoopt Behav-F	21	43*	35	36	62**	48*	51**	48*				
Uncoopt Behav-S	20	53**	37	39	68**	51**	60**	50**				

Note. MM = mild/moderate degree of retardation; SP = severe/profound degree of retardation. \*Denotes loadings of .40 to .49; \*\*denotes loadings of .50 and above.

tion. The most interpretable solutions are presented for three broad age groups in Tables 3, 4, and 5. Although there were a number of individual samples for which the factors differed somewhat from the above summary, the focus of this investigation was to search for consistent findings across all samples. Thus, Tables 3, 4, and 5 are organized to facilitate the identification of consistent factors across samples.

At the early childhood (0 to 5 years) and childhood (6 to 12 years) ages a two-factor Internal/External Maladaptive factor structure was found to be most appropriate across both levels of retardation (see Table 3). A review of the salient factor loadings in Table 3 found a few which were inconsistent with the Internal/External structure described above. For example, the Withdrawal and Inattentive scales displayed moderate loadings on the External Maladaptive factor in the 0- to 5-year sample with mild/moderate retardation, and the Disruptive Behavior and Socially Offensive Behavior scales loaded moderately on the Internal Maladaptive factor for children 6 to 12 years of age classified as severely/profoundly retarded. These and

TABLE 4.  
Type of Maladaptive Factors by Age and Degree of Retardation for Adolescent (13 to 19) and Young Adult (20 to 39) Samples

Age	Factor															
	Internal Maladaptive				External Maladaptive				Socially Disruptive				Destructive Internal			
	13-19		20-39		13-19		20-39		13-19		20-39		13-19		20-39	
Scale	MM	SP	MM	SP	MM	SP	MM	SP	MM	SP	MM	SP	MM	SP	MM	SP
Hrtfl to Self-F	29	17	26	23	12	19	18	14	54**	42*	78**	82**				
Hrtfl to Self-S	22	21	25	19	18	24	17	13	54**	50**	78**	81**				
Hrtfl to Othrs-F	09	-01	07	00	58**	69**	28	32	69**	66**	37	25				
Hrtfl to Othrs-S	08	01	07	-02	66**	70**	30	30	77**	68**	36	25				
Dsct to Prop-F	14	04	11	12	46*	55**	28	19	74**	77**	37	32				
Dsct to Prop-S	10	05	09	10	51**	60**	28	19	78**	75**	37	29				
Disruptive Beh-F	12	24	18	21	60**	61**	71**	69**	22	22	09	09				
Disruptive Beh-S	00	21	16	21	65**	70**	74**	72**	30	34	14	08				
Unsl/Rpt Habis-F	33	62**	46*	54**	09	15	41*	30	21	16	20	20				
Unsl/Rpt Habis-S	30	64**	46*	52**	12	20	39	32	17	19	14	16				
Wdrwn/Inat Beh-F	94**	78**	83**	78**	22	11	16	14	15	10	03	09				
Wdrwn/Inat Beh-S	76**	73**	82**	78**	25	17	16	19	18	12	04	07				
Soc Offnsv Beh-F	24	28	20	34	50**	53**	72**	70**	20	14	21	04				
Soc Offnsv Beh-S	17	32	18	34	52**	57**	74**	74**	22	20	24	03				
Uncoopt Behav-F	14	26	28	36	70**	57**	57**	55**	29	30	-07	06				
Uncoopt Behav-S	06	26	25	34	74**	62**	58**	55**	40*	36	-03	04				

Note. MM = mild/moderate degree of retardation; SP = severe/profound degree of retardation. \*Denotes loadings of .40 to .49; \*\*denotes loadings of .50 and above.

other similarly inconsistent findings were interpreted as reflecting chance findings in certain samples.<sup>1</sup> Despite these minor discrepancies, the consistently high loadings for certain scales reinforced the External/Internal Maladaptive factor interpretation for very young children.

Three-factor solutions were found to be most interpretable for the adolescent (13 to 19 years) and young adult (20 to 39 years) samples (see Table 4). The same Internal Maladaptive factor identified in early childhood and childhood samples was also present in adolescent and young adult samples. In contrast, the second and third factors in each sample differed as to degree of retardation. For individuals with mild/moderate degrees of retardation, the External Maladaptive factor split into separate Socially Disruptive and Destructive-General factors across both age groups. For persons with severe/profound degrees of retardation second and third factors were External Maladaptive and Destructive-Internal (hurts self), respectively.

Results for the middle (40 to 59 years) and older adult (60 years or older) samples are presented in Table 5. Similar to early childhood, childhood, adolescent, and young adult samples, an Internal Maladaptive factor was present in both middle and older adult samples. At variance from the younger ages (see Tables 3 and 4) was the absence of a broad External Maladaptive factor in any of the samples; at the adult age levels this broad factor split into a Socially Disruptive factor and one of the three destructive factors (i.e., General, Internal, or External). With the exception of a few inconsistent loadings, a Socially Disruptive factor was present across both levels of retardation and both adult age groups. In contrast to the consistent Internal Maladaptive and Socially Disruptive factors in all samples of middle and older adults, persons with mild/moderate and severe/profound retardation differed in both the number and type of destructive factors. While adults classified as severe/profound displayed only one destructive factor (i.e., Destructive-General), for adults classified as mild/moderate the general dimension appeared to split into a Destructive-External and Destructive-Internal dichotomy. Although these trends were noted across all samples of adults, results obtained at these two age levels were less clear than those obtained at the younger ages levels. In particular, the three- and four-factor solutions for persons 60 years or older and in the mild/moderate sample were the most difficult to interpret. It is possible that the rela-

<sup>1</sup>This approach of ignoring minor inconsistent loadings was not meant to indicate that individual sample differences were not important. Space limitations did not allow an in-depth treatment of each factor solution in each sample. This ignoring of inconsistent loadings was used to try and "find the tree from the forest" when interpreting the results across samples. Although this rationale is not stated when other solutions are discussed, the reader can assume that this strategy was used throughout the presentation of the results.

TABLE 5. Type of Maladaptive Factors by Age and Degree of Retardation for Middle (40 to 59) and Older (60+) Adult Samples

Factor	Internal Maladaptive			Socially Disruptive			Destructive General			Destructive Internal			Destructive External		
	Age	Scale	SP	MM	MM	SP	MM	MM	SP	MM	MM	SP	MM	MM	MM
Hurtful to Self-F	14	34	07	38	16	-01	08	29	59**	26	81**	13	17	07	17
	14	21	13	36	13	02	11	34	59**	41*	85**	21	07	17	07
	10	06	17	10	26	42*	25	25	56**	44*	65**	26	00	02	26
	10	03	15	04	22	39	23	23	54**	57**	73**	02	40*	02	40*
	10	10	10	10	20	17	11	16	67**	72**	69**	05	05	02	05
	06	05	06	11	13	29	16	09	66**	95**	76**	20	-04	06	20
	06	05	06	11	13	29	16	09	66**	95**	76**	20	-04	06	20
	15	09	06	12	09	63**	58**	22	22	06	11	23	13	11	23
	15	09	06	12	09	63**	58**	22	22	06	11	23	13	11	23
	18	05	10	15	15	62**	58**	26	26	16	31	35	16	11	31
	18	05	10	15	15	62**	58**	26	26	16	31	35	16	11	31
	42*	48*	48*	43*	35	35	10	38	38	-05	21	02	-07	04	02
45*	46*	48*	43*	37	37	14	40*	38	22	09	09	-07	04	02	
86**	74**	77**	85**	16	16	22	00	05	06	16	08	08	11	14	
85**	76**	80**	80**	17	17	22	09	09	04	15	07	07	11	14	
12	38	13	23	75**	57**	76**	04	04	04	14	09	07	12	12	
12	38	13	23	75**	57**	76**	04	04	04	14	09	07	12	12	
35	19	50**	48*	56**	60**	31	31	55**	21	21	27	09	04	27	
36	20	51**	43*	53**	64**	35	35	54**	21	21	27	09	04	27	

Note. MM = mild/moderate degree of retardation; SP = severe/profound degree of retardation. \*Denotes Factor loadings of .40 to .49; \*\* denotes Factor loadings of .50 and above.

tively small sample sizes for this group and somewhat smaller variance accounted for these less stable findings.

## DISCUSSION

In contrast to the conclusions of research reviews which have typically converged on a two-dimensional internal/external maladaptive dichotomy (Meyers et al., 1979; McGrew & Bruininks, 1989), the current investigation identified up to six different types of maladaptive factors across all samples, with no single sample demonstrating more than 4 interpretable factors. Consistent with research cited previously, an Internal Maladaptive dimension was identified across all samples regardless of age or degree of retardation. Similarly, a broad External Maladaptive factor was also identified, although this factor split into two to four other factors in different age and level of ability samples. One of these additional factors was a Socially Disruptive dimension. The remaining three factors focused on destructive behavior, either broad in nature (Destructive-General), or more directly focused on the environment/others (Destructive-External) or oneself (Destructive-Internal). These findings suggest that the common internal/external dichotomy cited previously may be too broad a classification system for maladaptive behavior across levels of ability and the lifespan.

Inspection of the results across samples suggested that the dimensionality of maladaptive behavior as defined by the ICAP may well be influenced by age and degree of retardation. For children with mild to profound degrees of retardation younger than age 12, maladaptive behavior consisted of the familiar Internal/External Maladaptive behavior dichotomy. Beyond childhood, however, maladaptive behavior appeared to become more differentiated. For adolescents and young adults, three-factor structures which varied as a function of degree of retardation were found to be most interpretable. For adolescents and young adults with mild/moderate retardation the structure consisted of Internal Maladaptive, Socially Disruptive, and Destructive-General dimensions. For adolescents and young adults with severe/profound degrees of retardation the structure consisted of Internal Maladaptive, External Maladaptive, and Destructive-Internal dimensions. Finally, for middle and older adults the Internal Maladaptive and Socially Disruptive dimensions were present across degrees of retardation in both age groups. Destructively oriented factors were also identified at the adult age levels, although the broader Destructive-General factor was present in the severe/profound groups, and separate Destructive-External and Destructive-Internal factors were present in the mild/moderate groups.

The finding of increased differentiation in factor structure with age is common in behavioral research (Fleishman, 1964; McGrew & Bruininks,

1990). Greater specificity in the structure of maladaptive behavior with increasing age may be in part reflective of the increased opportunities and circumstances in which they are expressed. The lack of orderly differentiation of these factors with increasing levels of age and severity may also be reflective of a variety of different life history, physical, and environmental factors that can contribute to the expression of such behaviors (Bijou, 1966). Identifying such contributions to different patterns of maladaptive behavior is obviously an important area for continuing research.

The findings of age-group differences in factor structure may be related to the belief that incidence and perceived severity of maladaptive behavior increases with age (Bruininks et al., 1986a). For example, it is common for a young child to cry or scream and not be perceived as seriously disruptive, whereas the same behaviors in an adult may be considered both disruptive and serious. The three maladaptive indexes that may be computed from the ICAP include an age adjustment not used in the present study. Multiple and varied types of behaviors listed for each Problem Behavior scale may also contribute to age-group differences in factor structure. For example, the Uncooperative Behavior scale is defined by such dissimilar behaviors as pouting and breaking the law. Pouting may be observed more frequently with children while breaking the law would most likely occur with adolescents and adults. As a result, the Uncooperative Behavior scale may load on different factors at different ages due to raters focusing on different behaviors at different ages.

Level of mental retardation appears also to influence the factor structure of maladaptive behavior because of the incidence of handicaps related to mental retardation. In the present sample, for example, the vast majority of people with mild retardation could walk (95%, data not reported here) compared to people with profound retardation (67%). Within each level of retardation scores on the ICAP's Externalized Maladaptive scale indicated fewer aggressive behaviors from people who had mobility impairments. Likewise, it is also possible that the ability to talk may increase the likelihood of verbal behaviors (disruptive) relative to physical behaviors (hurt others). The type of a person's functional limitations in mobility and language obviously asserts some influence in the expression of problem behaviors. For persons with language and mobility impairments, consistent factors were found for Destructive-Internal dimensions of behavior. Expressions of such behavior in typical settings are obviously associated with many factors, including perhaps limited options in the environment to express oneself through meaningful activities or culturally normative tasks.

The finding of as many as six different types of maladaptive factors on the ICAP suggests that the Problem Behavior scales of the ICAP (and the related SIB) tap a number of important aspects of maladaptive or problem

behavior. Although not a perfect match, the correspondence between the ICAP and SIB's Internalized, Asocial, and Externalized Maladaptive Indexes and three of the identified factors (*viz.*, Internal Maladaptive, Socially Disruptive, External Maladaptive) offer some evidence for the validity of these broad ICAP and SIB indexes. The results also suggest that although the ICAP and SIB Maladaptive Indexes were created to be nonoverlapping measures, a number of the eight Problem Behavior scales are factorially complex and may tap more than one aspect of maladaptive behavior. The factor structures presented in Tables 3, 4, and 5 could be used as alternative interpretive frameworks for the ICAP and SIB Problem Behavior Scales. In addition, the factor structures reported here compare favorably with the early research of Achenbach (1966), Peterson (1961), and Quay and Quay (1965) using children and adolescents with normal intelligence, and with the more recent research synthesis by Quay (1979, 1986) across a number of different samples of children and adolescents with and without disabilities. In a review of 61 studies, Quay (1986) found strong empirical evidence for the existence of four maladaptive dimensions (Undersocialized Aggressive, Socialized Aggressive, Attention Deficit Disorder, Anxiety-Withdrawal-Dysphoria), dimensions that are also present in this analysis. The most obvious comparisons align Quay's dimensions of Undersocialized Aggressive and Socialized Aggressive with the Destructive-General and Socially Disruptive dimensions of the present study, respectively. The Internal Maladaptive dimension identified in this investigation contains characteristics of Quay's (1986) other two dimensions: Attention Deficit Disorder (inattentive, preoccupied, stares into space, fidgety) and Anxiety-Withdrawal-Dysphoria (anxious, tense, aloof, hypersensitive). Although the present study appears to have much in common with analyses just mentioned and those cited earlier in this article, it differs in two major respects: (a) The factor structures generated here are derived from data gathered over the lifespan (birth to 98 years of age) instead of from more narrowly defined segments of the population; and (b) the factors were generated from data obtained across levels of retardation (mild/moderate, severe/profound) instead of on persons with narrower score ranges on measures of intellectual performance and adaptive behavior.

There are a number of limitations to this investigation: (1) The sample is not random, consequently, results of this study cannot be used to generalize to all people with mental retardation. (2) Efforts to operationally define the dimensionality of maladaptive behavior are limited to information obtained on the ICAP (and perhaps the related SIB), and cannot be used to generalize, without reservation, to other standardized instruments, or to other samples of people also classified as mentally retarded. (3) The actual extent to which various factors emerge and disappear over the lifespan is, as yet,

unclear. (4) No attempt was made to interpret the data from alternative positions or using formal classification procedures such as the Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R) (American Psychiatric Association, 1987) or the International Classification of Diseases, 9th rev., Clinical Modification (ICD-9-CM; U.S. Department of Health and Human Services, 1989). (5) Although it did not significantly effect the results, the use of both frequency and severity ratings introduced correlated error into the analysis. A more appropriate strategy, and one which is planned for future analyses, would be the use of confirmatory factor analytic methods which would allow for the specification and estimation of correlated error in these analyses. Confirmatory factor methods would also allow for direct tests of the presence or absence of correlations among the factors. (6) The current results may generalize only to a second-order classification of maladaptive behavior. More differentiated maladaptive dimensions have been identified when working with more specific and narrowly defined behaviors and items at the first-order level (Achenbach & Edelbrock, 1978; Aman *et al.*, 1985; Aman *et al.*, 1987; Quay, 1979). Interpretation of the current findings as representing the second-order level of a hierarchical maladaptive domain is similar to the interpretation of much of the research in adaptive behavior (McGrew & Bruininks, 1989).

Future studies will need to further validate this structure, and, in addition, attempt to establish the relationship between such factors as socially maladaptive behavior, disruptive behavior, and destructive (internal and external) behavior. The costs and consequences of maladaptive behavior pose significant challenges for families, schools, service agencies and persons with mental retardation (Bruininks *et al.*, 1988; Thompson & Grabowski, 1977). These recognized challenges suggest the need for expanded research in this area, including studies that examine structured assessments in the context of age, level of mental retardation, type of setting, and the extent to which persons are constructively engaged in appropriate and meaningful activities. The patterns and structure of maladaptive behavior are likely influenced by important environmental influences and conditions (Bijou, 1966). Although subject to too little research, the consequences of maintaining positive, structured environments on rates and patterns of maladaptive behavior have important implications for understanding human behavior and the financing and management of behavior and management of service programs. Measurement strategies in future studies should employ multiple scale and observational strategies to expand the scope of data for further analyses. The expansion of research on the structure of maladaptive behavior may lead to improved definition of dimensions of personal competence and adaptation. It should also as-



improvement of assessment practices and services for persons with mental retardation, family members, and service providers.

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