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Head Injury and the MMPI-2: Paradoxical Severity Effects and the Influence of Litigation

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Minnesota Multiphasic Personality Inventory–2 (MMPI-2) profiles of 30 consecutive patients with moderate/severe head injury were compared with those of 30 consecutive symptomatic minor/mild head injury patients. Of the severely injured, 18 had ongoing litigation and 12 did not. All 30 minor/mild patients were in litigation. The severe litigating group had significant elevations on Hypochondriasis (*Hs*), Hysteria (*Hy*), Schizophrenia (*Sc*), and Health Concerns relative to the severe nonlitigating group. The minor/mild group had significant elevations on *Hs*, Depression (*D*), *Hy*, and Psychasthenia (*Pt*) over both the litigating and nonlitigating severe groups and additional elevations on *Sc* and Health Concerns over the severe nonlitigating group. Results are discussed in terms of the influence of litigation and injury severity on symptom endorsement on the MMPI-2. A model explaining persisting claims of disability after minor/mild head injury is proposed.

The Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1951) and its revision, the MMPI-2 (Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989), are the most widely used measures of personality and psychopathology in assessing head injury. Indeed, these tests are standard components of many neuropsychological test batteries (Lezak, 1995; Reitan & Wolfson, 1985; Spreen & Strauss, 1991). Their great popularity among neuropsychologists is a function of the valuable and comprehensive information that they provide regarding patients' behavior, personality, and emotional adjustment. Additionally, they are perhaps the best validated and most widely investigated personality tests available. The MMPI and the MMPI-2 have been demonstrated to be comparable in assessing neurological populations (Sellers, Burton, & Mittenberg, 1992). Consequently, many neuropsychologists have switched from using the MMPI in favor of the MMPI-2, given the recency and national representativeness of the revision's norms.

A number of items describe neurologic symptoms that could reasonably be associated with head injuries. Investigators have repeatedly shown that head injuries are associated with elevated MMPI and MMPI-2 profiles. The greatest elevations in samples of severe head injury patients on the basic scales have fairly consistently been seen on Depression (*D*) and Schizophrenia (*Sc*), with elevations also frequently being observed on Hypochondriasis (*Hs*), Hysteria (*Hy*), Psychasthenia (*Pt*), and Psychopathic Deviance (*Pd;* Burke, Imhoff, & Kerrigan, 1990; Gass, 1991; Gass & Russell, 1991; Leininger, Kreutzer, & Hill, 1991; Novack, Daniel, & Long, 1984). Some investigators have recommended the application of corrections to the profiles of head injured patients so that psychopathology will not be overdiagnosed (see Gass & Russell, 1991 for MMPI; Gass, 1991 for MMPI-2).

Few investigators have examined how severity of head injury affects MMPI scores. Of interest is that those who did investigate it have consistently found the opposite pattern of what might be expected (i.e., less severe head injuries have been associated with greater MMPI basic scale elevations). Novack et al. (1984) found significantly greater elevations on MMPI scales *Hs, Hy,* and *Pd* in their mild head injury group, as defined by a period of posttraumatic amnesia (PTA) of less than 24 hr, with significantly fewer of their severely head injured patients (PTA $>$ 24 hr) having *T* scores of 70 or above. Leininger et al. (1991) found that their minor head injury group, defined by Glasgow Coma Scale (GCS; Teasdale & Jennett, 1974) scores of 13 to 15, had elevations on MMPI scales *Hs, Hy,* and *Pt* that were significantly greater than their severely head injured patients (GCS scores $<$ 13). Both groups of investigators noted that their MMPI results corresponded to the paradoxically greater complaints of symptom frequency, intensity, and disability in their less severely injured patients.

Another reason for the widespread use of the MMPI and MMPI-2 in assessing head injury stems from the fact that these patients are often seen in a forensic context. These tests are probably among the most frequently used psychological assessment instruments in the U.S. jurisprudence system (Pope, Butcher, & Seelen, 1993). Their popularity and utility are in part the result of the validation studies that are available specifically for the forensic population. Also useful are the presence of scales that help to determine the presence of response bias.

One recent study examined the issue of litigation and the pursuit of compensation on MMPI-2 responding in head injured patients. Berry et al. (1995) found that head injured patients involved in litigation scored higher on scales *Hs, D, Hy, Pt, Sc,*

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and Social Introversion (*Si*) than did head injured patients who were not pursuing financial compensation for their disabilities. They also found that the validity scales were sensitive to overreporting in their analogue malingering group but were less so in their clinical litigation group. Although no attempt was made to control for head injury severity, they found that the clinical litigation group paradoxically tended to have less severe head injuries, as measured by duration of loss of conciousness (LOC), than the head injured patients who were not pursuing compensation.

This investigation was conducted to further elucidate the impact of head injury severity on responding to the MMPI-2, as well as to better understand the influence that litigation may have in this context.

Method

Participants

Thirty consecutively referred patients with documented moderate/severe head injuries who were capable of completing the MMPI-2 were compared with 30 consecutively referred patients with symptomatic minor/mild head injuries. Motor vehicle accidents were the most common mechanism of injury, accounting for slightly more than half of all injuries in the combined groups ($n = 32$). Fifteen patients had been injured in falls, 2 had been assaulted, and the remaining 11 patients had been in miscellaneous accidents.

Moderate/severe head injury was defined by an emergency room GCS of less than 13, an estimated length of LOC of greater than 30 min, positive computerized tomography (CT) or magnetic resonance brain images (MRI), and/or a length of posttraumatic amnesia (PTA) of greater than 24 hr. Emergency room GCS scores were available for 17 members of the group with moderate/severe head injury. All GCS scores were less than 13, except for 1 patient who had an initial GCS score of 13 but subsequently developed intracerebral hemorrhaging and then lapsed into coma. The mean length of LOC in this group was more than 3 weeks. The mean length of PTA was more than a month. CT images were available for 29 of the 30 patients with moderate/severe head injury, and MRI scans were available for 7 patients. All scans were positive for intracerebral damage.

Minor/mild head injury was defined by an emergency room GCS score of 13 to 15; an estimated length of LOC of 30 min or less; an estimated PTA of less than 24 hr; and negative CT and MRI scans, when available. Emergency room GCS scores were available for only 3 of our 30 patients with minor/mild head injury in part because many of them did not go to the hospital immediately after injury but began complaining of symptoms only days, weeks, or months later. The mean length of LOC was less than 1 min. The mean length of PTA was approximately 3 hr. CT scans were available on one half ($n = 15$) of the minor/mild group, and MRI scans were available for 11 patients. All were negative for intracranial damage.

All patients in both the minor/mild and moderate/severe head injury groups were assessed for the presence of litigation and/or the pursuit of financial compensation. The various forms of litigation included personal injury lawsuits, workers' compensation claims, private insurance disability claims, social security disability claims, criminal responsibility issues, and competency to stand trial. Eighteen patients with moderate/severe head injury (60% of the group) were involved in ongoing litigation. It is noteworthy that all 30 symptomatic patients with minor/mild head injury (100%) were actively pursuing litigation claims.

Consequently, we assigned all our participants to one of three groups: severely head injured nonlitigators, severely head injured litigators, and mildly head injured litigators. In dividing the samples in this way, we sacrificed some statistical power and increased the risk of Type II error (i.e., that we would underestimate differences between our groups or not find differences when they were in fact present). Table 1 presents the breakdown of the demographic variables of age, gender, and years of education. The mildly injured litigators were significantly older ($p < .05$) than either of the two severely injured groups. Men were disproportionately represented in the two severely injured groups, with the genders being more equitably distributed in the mildly injured group. All three groups were equivalent on years of education. Table 2 presents the injury characteristics of the three groups. The mildly injured group was significantly different from both severely injured groups ($p < .05$) on all five injury severity characteristics. No significant differences were found between either of the severely injured groups on any of the injury severity characteristics.

Procedure

The MMPI-2 was administered to all participants according to the standard instructions. All participants completed the 370 basic scale items. Nine of the severely injured nonlitigators (75%), 12 of the severely injured litigators (67%), and 26 members of the mildly injured group (87%) completed the entire test, including the content scales. All answer sheets were scored by computer.

Results

Figure 1 presents the profiles for the three groups on the basic scales. Table 3 presents the results of the one-way univariate analyses of variance (ANOVAs), using the Bonferroni correction for multiple parametric statistical tests. In this case, significance was defined as $p < .003$. Also presented in Table 3 are results from the post hoc assessments for group differences when statistical significance was reached, using the Tukey B procedure.

Significant differences were found on the basic scales *Hs, D, Hy, Pt,* and *Sc.* On scale *Hs,* all three groups were significantly different from one another. The severely injured litigators' elevations were significantly greater than those of the severely injured nonlitigators. The mildly injured litigators in turn had *Hs* elevations significantly greater than those of both severely injured groups. Scale *D* revealed a severity effect, with the mildly injured litigators having greater elevations than both of the severely injured groups, which in turn were not significantly different from one another. On scale *Hy,* differences were again

Table 1
Demographic Characteristics of the Three Sample Groups

Variable	Group 1 ($n = 12$)	Group 2 ($n = 18$)	Group 3 ($n = 30$)
Age			
M	33.6	28.5	37.8
SD	9.2	12.3	10.7
Education			
M	12.8	12.1	12.5
SD	2.1	1.9	3.3
Gender (male/female)	10/2	14/4	18/12

Note. Group 1 = nonlitigating severely head injured patients; Group 2 = litigating severely head injured patients; Group 3 = litigating mildly head injured patients.

Table 2
Injury Characteristics of the Three Sample Groups

Variable	Group 1 (n = 12)	Group 2 (n = 18)	Group 3 (n = 30)
LOC			
M	653	470	.01
SD	717	516	.02
GCS			
M	6.90	7.27	15.00
SD	3.05	2.97	0.00
PTA			
M	1,238	774	2
SD	1,073	652	6
CT (+/−/not available)	11/0/1	18/0/0	0/15/15
MRI (+/−/not available)	1/0/11	6/0/12	0/11/19

Note. Group 1 = nonlitigating severely head injured patients; Group 2 = litigating severely head injured patients; Group 3 = litigating mildly head injured patients. LOC = hours of loss of consciousness; GCS = Glasgow Coma Scale score; PTA = hours of posttraumatic amnesia; CT = computerized tomography scan; MRI = magnetic resonance imaging; + = positive finding of injury; − = negative finding of injury; not available = CT scan or MRI not available.

demonstrated between all three groups. The severely injured litigators' elevations were significantly greater than those of the severely injured nonlitigators, and the mildly injured litigators had *Hs* elevations significantly greater than those of both severely injured groups. Scale *Pt* revealed another severity effect (i.e., the mildly injured litigators' elevations were greater than those of both of the severely injured groups, which were not significantly different from one another). Scale *Sc* revealed a significant litigation effect, with both the mildly and severely injured litigators having significantly greater elevations than the nonlitigating severely injured group. Of interest is that no significant differences were found on any of the basic validity scales.

A large subset of our patients also completed the MMPI-2 content and 13 supplementary scales, including F Back (*Fb*), Variable Response Inconsistencies (*VRIN*), and True Response Inconsistencies (*TRIN*). The mean group content scale profiles are presented in Figure 2. Table 4 presents the one-way ANOVAs for the content scales. The Bonferroni correction required a significance level of $p < .003$. The Health Concerns scale had the only significant group differences, revealing a litigation effect (i.e., both the mildly and severely injured litigators had

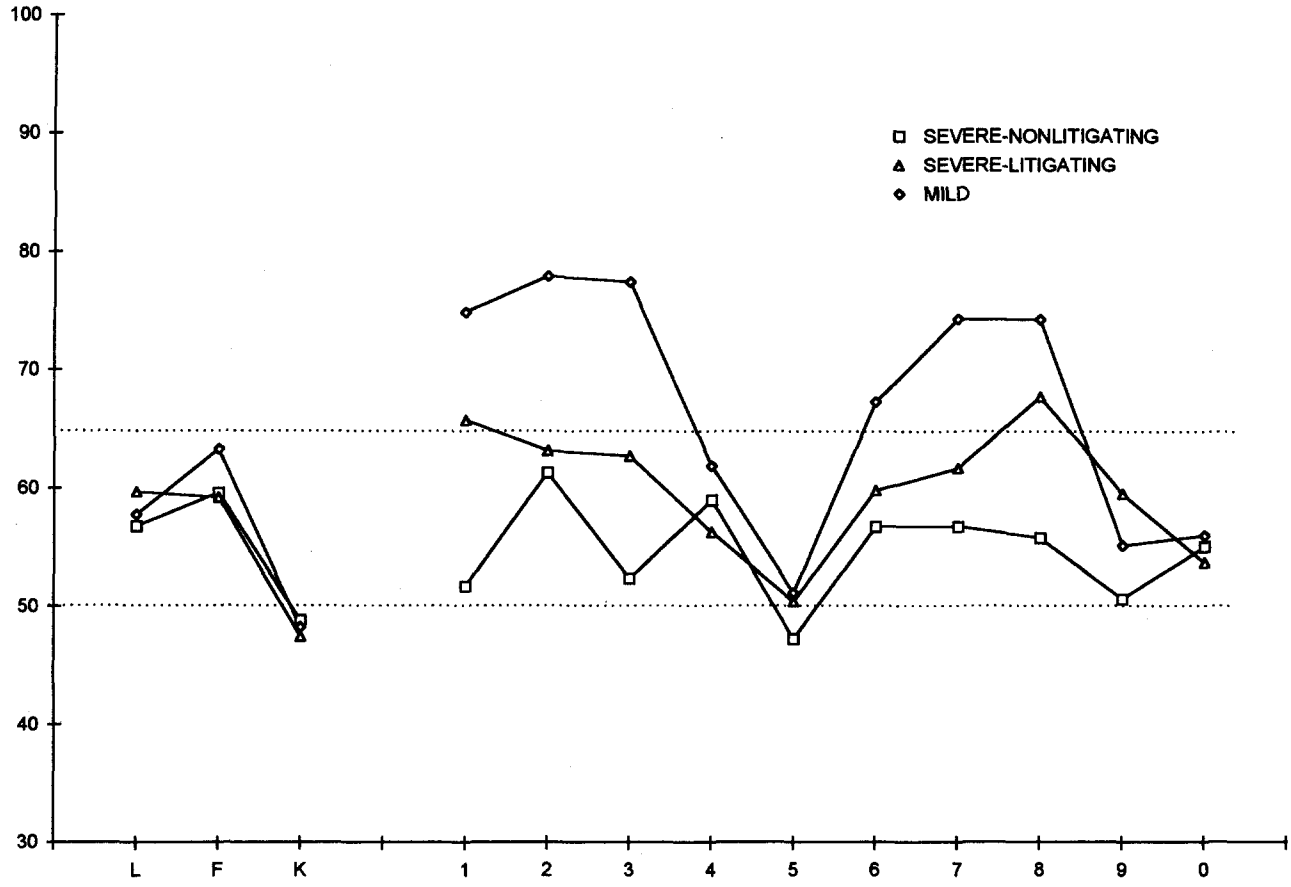

Figure 1. Minnesota Multiphasic Personality Inventory–2 basic scale profiles of nonlitigating severe, litigating severe, and litigating mild head injury patients. *L* = Lie; *F* = Frequency; *K* = Correction; 1 = Hypochondriasis; 2 = Depression; 3 = Hysteria; 4 = Psychopathic Deviate; 5 = Masculinity–Femininity; 6 = Paranoia; 7 = Psychasthenia; 8 = Schizophrenia; 9 = Hypomania; 0 = Social Introversion.

Table 3
Basic Scale T Scores for the Three Sample Groups

MMPI–2 scale	Group 1 (n = 12)	Group 2 (n = 18)	Group 3 (n = 30)	$F(2, 57)$	p
L				0.24	.7874
M	56.75	59.67	57.77		
SD	11.80	11.10	12.60		
F				0.49	.6130
M	59.59	59.22	63.30		
SD	15.80	12.24	16.77		
K				0.06	.9434
M	48.83	47.44	48.23		
SD	9.88	9.76	12.44		
Hs				19.67	.0000*
M	51.75_a	65.72_b	74.90		
SD	7.42	10.39	12.23		
D				8.06	.0008*
M	61.33_a	63.17_a	77.97		
SD	17.26	10.91	16.17		
Hy				20.00	.0000*
M	52.42_a	62.72_b	77.47		
SD	8.18	11.63	13.97		
Pd				1.49	.2330
M	59.00	56.28	61.93		
SD	10.85	8.74	12.30		
Mf				0.64	.5318
M	47.25	50.44	51.17		
SD	8.72	11.40	10.02		
Pa				2.69	.0767
M	56.75	59.83	67.33		
SD	17.79	10.58	16.06		
Pt				11.35	.0001*
M	56.75_a	61.72_a	74.37		
SD	10.58	9.86	13.94		
Sc				7.44	.0013*
M	55.83	67.78_a	74.33_a		
SD	13.97	12.50	14.99		
Ma				2.74	.0730
M	50.67	59.56	55.20		
SD	9.55	10.22	10.56		
Si				0.22	.8054
M	55.08	53.72	56.03		
SD	13.85	9.45	12.13		

Note. Means with the same subscript do not differ significantly ($p < .05$) according to Tukey's B test of significant differences. Group 1 = nonlitigating severely head injured patients; Group 2 = litigating severely head injured patients; Group 3 = litigating mildly head injured patients. MMPI–2 = Minnesota Multiphasic Personality Inventory–2; *L* = Lie; *F* = Frequency; *K* = Correction; *Hs* = Hypochondriasis; *D* = Depression; *Hy* = Hysteria; *Pd* = Psychopathic Deviate; *Mf* = Masculinity–Femininity; *Pa* = Paranoia; *Pt* = Psychasthenia; *Sc* = Schizophrenia; *Ma* = Hypomania; *Si* = Social Introversion.
* Significant univariate analysis of variance with Bonferroni correction (Bonferroni critical value $p < .003$).

significantly greater elevations than the severely injured nonlitigators). None of the supplementary scales were significantly different among the three groups ($p < .003$), falling short of the alpha levels required by the Bonferroni correction for multiple parametric tests.

Discussion

Our MMPI-2 findings in groups of rigorously defined minor/mild and moderate/severe head injury demonstrated significant effects for both severity level and the presence of litigation. The average profiles of our rigorously defined nonlitigating severely head injured patients on the basic scales are quite similar in configuration and overall elevation levels to the characteristic head injury MMPI and MMPI-2 profiles previously reported in the literature (Berry et al., 1995; Burke et al., 1990; Gass, 1991; Gass & Russell, 1991). Specifically, subclinical elevations were seen on *D, Pd, Pa, Pt,* and *Sc.* This configuration suggests the presence of depression, anxiety, hostility, poor impulse control, and disordered thinking. As noted by Gass (1991), these elevations may represent neurobehavioral sequelae of organic brain damage.

The profiles of our severely head injured litigating patients revealed additional increased elevations on *Hs, Hy, Sc,* and Health Concerns, in spite of the equivalence of head injury

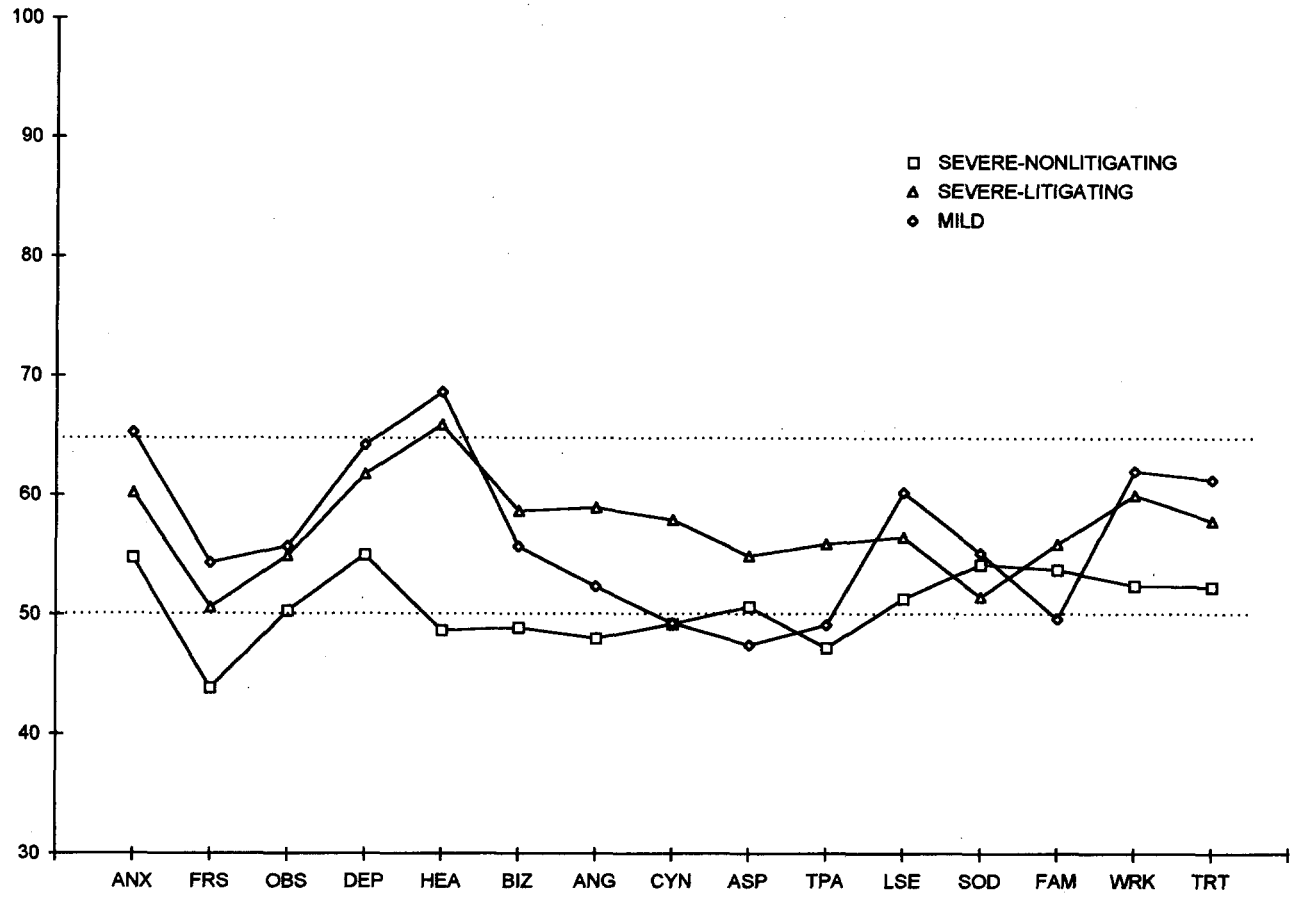

Figure 2. Minnesota Multiphasic Personality Inventory–2 content scale profiles of nonlitigating severe, litigating severe, and litigating mild head injury patients. ANX = Anxiety; FRS = Fears; OBS = Obsessiveness; DEP = Depression; HEA = Health Concerns; BIZ = Bizarre Mentation; ANG = Anger; CYN = Cynicism; ASP = Antisocial Practices; TPA = Type A; LSE = Low Self-Esteem; SOD = Social Discomfort; FAM = Family Problems; WRK = Work Interference; TRT = Negative Treatment Indicators.

severity indicators between the litigating and nonlitigating severe groups. Similar litigation effects in head injury have been found in previous investigations of the MMPI-2 (Berry et al., 1995), as well as neuropsychological test performance (e.g., Fox, 1994; Millis, 1992). Indeed, Binder and Rohling's (1996) meta-analytic investigation of studies examining litigation effects on neuropsychological complaints and test performance demonstrated consistent, significant litigation effects leading to increased symptom reporting and decreased test performance across virtually all studies examined.

It is conceivable that some of our litigation effects might be explained by a model whereby only those patients who perceived themselves as significantly injured, disabled, or damaged were the ones who chose to pursue financial compensation. Arguing against this hypothesis is the fact that there were no significant differences in any of the established head injury severity indicators between our litigating and nonlitigating severely head injured groups. Additionally, the most common reasons for the absence of litigation in our nonlitigating patients were no external liability (e.g., that the patients themselves were at fault in the accident), lack of resources in the responsible party (i.e., no "deep pockets"), and having had all litigation issues already resolved by the time of evaluation.

An interpretation that seems to fit the data more closely than the one just outlined is that the very act of pursuing financial compensation for one's injuries may cause increased focus on disability and reporting of symptoms, particularly those associated with physical health, bodily function, and severe psychiatric disturbance. Rogers, Sewell, and Goldstein (1994) have proposed a model to explain the increased intensity and frequency of complaints in litigating patients. Specifically, litigants have financial incentives to remain in a sick role and report relatively more severe disabilities. We would like to emphasize that we are not suggesting that our litigating severely head injured group did not suffer from genuine disability. The initial severity of head injury according to the established neurosurgical criteria, with positive neuroimaging results in all 18 patients, is undisputed. Additionally, although it is possible that the absence of differences on the validity scales represents Type II error due to the restricted power of our study, the lack of validity scale differences argues against frank malingering on the MMPI-2 in any of our groups. With those cautions in mind, our data do

Table 4
Content Scale T Scores for the Three Sample Groups

MMPI–2 scale	Group 1 (n = 9)	Group 2 (n = 12)	Group 3 (n = 26)	$F(2, 44)$	p
ANX				2.32	.1102
M	54.78	60.17	65.31		
SD	10.05	8.34	15.44		
FRS				1.82	.1745
M	43.78	50.58	54.35		
SD	4.58	8.46	18.12		
OBS				.69	.5068
M	50.33	54.92	55.69		
SD	6.82	11.90	13.10		
DEP				1.49	.2374
M	55.00	61.75	64.23		
SD	15.78	8.04	15.14		
HEA				8.78	.0006*
M	48.67	65.92_a	68.65_a		
SD	7.35	10.58	14.36		
BIZ				1.59	.2160
M	48.89	58.67	55.69		
SD	5.37	12.89	14.13		
ANG				2.01	.1464
M	48.00	58.92	52.35		
SD	8.25	10.72	14.65		
CYN				2.74	.0758
M	49.22	57.92	49.31		
SD	4.58	12.89	11.59		
ASP				2.35	.1068
M	50.67	54.92	47.46		
SD	5.48	13.33	9.21		
TPA				2.07	.1380
M	47.22	55.92	49.15		
SD	6.69	10.00	12.31		
LSE				1.73	.1898
M	51.33	56.50	60.23		
SD	12.55	11.56	13.04		
SOD				.30	.7452
M	54.22	51.50	55.15		
SD	16.38	13.80	12.53		
FAM				1.55	.2232
M	53.78	55.92	49.65		
SD	6.94	11.21	11.44		
WRK				1.98	.1506
M	52.44	60.00	62.04		
SD	10.09	9.48	14.23		
TRT				1.33	.2752
M	52.33	57.83	61.27		
SD	9.18	12.59	16.26		

Note. Means with the same subscript do not differ significantly ($p < .05$) according to Tukey's B test of significant differences. Group 1 = nonlitigating severely head injured patients; Group 2 = litigating severely head injured patients; Group 3 = litigating mildly head injured patients. MMPI–2 = Minnesota Multiphasic Personality Inventory–2: ANX = Anxiety; FRS = Fears; OBS = Obsessiveness; DEP = Depression; HEA = Health Concerns; BIZ = Bizarre Mentation; ANG = Anger; CYN = Cynicism; ASP = Antisocial Practices; TPA = Type A; LSE = Low Self-Esteem; SOD = Social Discomfort; FAM = Family Problems; WRK = Work Interference; TRT = Negative Treatment Indicators.
*Significant univariate analysis of variance with Bonferroni correction (Bonferroni critical value $p < .003$).

suggest that psychosocial contexts as they relate to litigation appear to have a subtle influence on symptom endorsement and may result in increased symptom reporting in litigating patients.

Of particular interest are the paradoxically highly elevated profiles of our more mildly injured patients. It is noteworthy that the severity effects were the opposite of what might reasonably be expected (i.e., the mildly head injured patients consistently demonstrated greater psychopathology on *Hs, D, Hy,* and *Pt* than did the much more severely head injured patients). These paradoxical results replicate those of previous investigators (Leininger et al., 1991; Novack et al., 1983).

It should be noted that only patients with minor/mild head injury who were symptomatic, and therefore referred for evaluation or treatment, were investigated in the present study. The

literature suggests that patients complaining of persisting symptoms and disability after minor/mild head injury are quite rare, with the vast majority making complete recoveries within several days, weeks, or at most months following injury (Alves, Macciocchi, & Barth, 1993; Barth et al., 1989; Dikmen, Ross, Machammer, & Temkin, 1995; Hugenholtz, Stuss, Stethem, & Richard, 1988; Levin et al., 1987). Consequently, these results do not apply to the large majority of victims of minor/mild head injury who make full recoveries. Rather, these findings are restricted to the minor/mild head injury patients with persisting symptoms and complaints (i.e., the ones who present in clinical settings for evaluation and treatment).

It might be argued that our paradoxical severity effects could in part be accounted for by a relative lack of awareness of impairment, or *anosognosia,* in our severely head injured patients (Youngjohn & Altman, 1989). Specifically, symptom reporting on the MMPI-2 may have been attenuated in the severely head injured groups as a consequence of this phenomenon, which would lead to underestimations of actual neurobehavioral disturbance. Although anosognosia might indeed have resulted in some underreporting of neurobehavioral disturbance in severe head injury, such a model would not account for the overly high symptom reporting in the group with minor/mild head injury. If these results were due to neuropathological factors associated with severity of brain damage, it would be expected that mild head injury patients would show neurobehavioral disturbances of a lower level than but in the same direction as those seen in severe head injury, including anosognosia. However, rather than having the anticipated presence, albeit at reduced levels, of anosognosia in association with the decreased severity of injury, the patients with minor/mild head injury were, if anything, hyperaware of their illness, with exaggerated symptoms, as reflected in their highly elevated MMPI-2 profiles.

A more parsimonious explanation of the paradoxical severity effects may be that symptomatic patients with minor/mild head injury exhibit the personalities and psychopathology suggested by their elevated MMPI-2 profiles. Putnam and Millis (1994) have observed that many symptomatic patients with minor/mild head injury have concomitant psychosocial factors, such as having grown up in aversive school and/or family environments, that may lead to illness behavior and susceptibility to secondary gain. Consequently, Putnam and Millis have proposed that persisting complaints after minor/mild head injury can best be conceptualized as a type of somatoform disorder. The standard interpretation of our average MMPI-2 profile for patients with minor/mild head injury would be congruent with this conceptualization.

The 100% prevalence rate of litigation and/or pursuit of financial compensation among our 30 consecutively referred symptomatic patients with minor/mild head injury also warrants comment. This rate replicates that for a previous series of 72 consecutive symptomatic patients with minor/mild head injury from the same lab (Youngjohn, Burrows, & Erdal, 1995). A number of investigators in other settings have similarly found a virtual 100% prevalence of litigation in symptomatic patients with minor/mild head injury (Binder, 1993; Binder & Willis, 1991; Cicerone & Kalmar, 1995; Greiffenstein, Baker, & Gola, 1994; Greiffenstein, Gola, & Baker, 1995; Millis, 1992). By contrast, the present results and those of previous investigators (Binder & Willis, 1991) suggest that it is relatively common for patients not involved in litigation to be referred for evaluation and treatment for persisting symptoms and disability after moderate/severe head injury.

The virtually 100% prevalence of litigation in symptomatic minor/mild head injury gives rise to the obvious hypothesis that persisting symptoms and disability in this population are entirely determined by involvement in litigation. A prospective study of mild head injury by Fee and Rutherford (1988) provided some support for this model. They found that in patients with equally mild head injuries, those who went on to enter litigation or pursue financial compensation reported more than twice as many symptoms at follow-up than those who did not. They interpreted their findings as suggesting a causative role for litigation in persisting disability after mild head injury.

However, the process appears to be somewhat more complex than this. Specifically, there were significant severity effects between our two groups equated for litigation, with the patients with minor/mild head injury having significant elevations over and above the litigating severely injured patients on *Hs, D, Hy,* and *Pt.* Consequently, the presence of litigation cannot in and of itself fully account for our paradoxical severity effects. Rather, we believe that our results can be explained by a model in which patients with significant emotional difficulties, psychopathology, or personality disturbances, of the types suggested by their averaged MMPI-2 profiles, are more likely to choose to pursue financial compensation for minor/mild head injury. This proposal is similar to the model suggested by Putnam and Millis (1994).

The next logical step in validating this model of head injury severity and litigation effects on the MMPI-2 would be to obtain profiles on a group of nonlitigating patients with minor/mild head injury. Unfortunately, it has been our experience that these persons are almost never referred for clinical evaluation or treatment, presumably because they are asymptomatic. As an alternative approach to using self-selected clinical participants, groups of asymptomatic, nonlitigating patients with minor/mild head injury could be identified prospectively in the emergency room, as in the Fee and Rutherford (1988) study, or retrospectively through emergency room records.

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