

Neuropsychological and Emotional Correlates of Marital Status and Ability to Live Independently in Individuals with Epilepsy

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Summary: Studies from several countries have reported that fewer people with epilepsy marry, but the reasons for this are not clear. In the present investigation, 178 adults with epilepsy were divided into married, separated/divorced, and never married groups. The never married group was subdivided into persons living in dependent versus independent settings. The groups did not differ with respect to seizure type, age at onset of seizures, and related variables. All were administered a complete battery of neuropsychological tests and the Minnesota Multiphasic Personality Inventory. On all tests of abilities,

the married and the never married independent groups had the best scores, the separated/divorced group was intermediate, and the never married dependent group had by far the lowest scores. In the emotional area, however, the separated/divorced group had the poorest scores and the other groups were indistinguishable from each other. It appears that marital status is more related to emotional adjustment than to mental abilities, and that independent living skills are more related to mental abilities than to emotional adjustment. **Key Words:** Marriage—Impairment—Intelligence—Emotional—Epilepsy.

Reduced rates of marriage among people with epilepsy have been reported in a number of countries for many years (Davidson and Thomas, 1949; Alström, 1950; Lennox and Markham, 1953; Pond et al., 1960; Gudmundsson, 1966; Edwards, 1974; Dansky et al., 1980). The reasons for this phenomenon are less well established, however. Pond et al. (1960), Gudmundsson (1966), and Dansky et al. (1980) found that decreased marriage rates occur more commonly in males than in females. In addition, Dansky et al. (1980) observed that decreased marriage rates were not found when the onset of epilepsy was after age 20, but that they were especially evident when epilepsy appeared in the first decade of life. These findings suggest that sex role expectations and perceived abilities to meet the demands of marriage may be relevant to the decision to marry. Epilepsy itself may also be relevant, since it may disrupt or prevent courtship. Other investigators refer to "mental change" or "personality changes" that they see as responsible for the de-

creased marriage rates, but test data to document the presence and nature of such changes have not been presented.

This study was directed toward a better understanding of the possible reasons for decreased rates of marriage in epilepsy. Mental and emotional factors were evaluated by formal psychological and neuropsychological testing across contrasting groups. In addition, demonstrated ability to live independently appeared to be an important factor, since marriage typically involves leaving the sheltered environment of the parental home. This factor, as yet not investigated by others, was therefore included.

METHODS

Subjects

One hundred seventy-eight adults with epilepsy (92 males, 86 females) were included in this study. The sample was restricted so that all persons 25 years of age and younger were excluded. Basic biodata information and certain information pertaining to seizures are presented in Table 1. The only significant difference across the groups was with respect to education, where the never married

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TABLE 1. Biodata and seizure-related information concerning all subject groups

Variable	Group								F
	Never married, independent		Married		Separated/ divorced		Never married, dependent		
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Age (years)	32.43	5.92	34.23	7.50	35.36	7.51	32.48	7.44	1.59
Education	12.67 ^a	3.38	12.30 ^b	2.52	11.64	2.67	10.00 ^{ab}	3.15	6.76 ^c
Age at onset of seizures (years)	8.72	5.57	9.29	4.78	9.27	5.12	7.81	5.21	0.81
No. attacks (all types) in last 30 days	12.92	45.60	23.88	63.34	2.57	3.22	19.16	53.81	0.84
Years with seizures	18.59	8.25	19.33	9.93	21.00	10.62	23.54	9.61	1.23
Years without seizures	2.85	3.48	3.36	5.05	2.04	4.08	0.60	1.59	2.92
Total no. anticonvulsants administered	1.92	0.94	1.93	0.78	1.90	0.55	2.19	0.82	1.21
Total mg/kg administered	13.45	11.96	14.82	11.27	10.27	6.13	16.39	11.24	2.23

^{ab} Identical superscripts across groups within each test variable indicate significant differences between groups of $p < 0.01$ or better.

^c $p < 0.001$.

dependent group had significantly fewer years than the never married independent group and the married group. With respect to likely cause of seizures, in 95 instances events were found in the histories that were presumed to be related etiologically to the appearance of the seizure disorders, whereas in the remaining cases no such factors could be detected. Primary seizure diagnoses were as follows: elementary partial 17; complex partial 101; generalized nonconvulsive 10; atonic, myoclonic 6; generalized convulsive 25; combinations of these 19. In addition, 117 of these patients had also experienced tonic-clonic (generalized convulsive) seizures at one time or another.

Procedure

The subjects were divided into three groups according to marital status. The married group consisted of 61 persons (28 males, 33 females) who were living with a spouse. This group included persons who had remarried or were living in common-law relationships. The separated/divorced group consisted of 45 individuals (20 males, 25 females). All individuals who had never been married and who had never lived in a common-law relationship made up the unmarried group (44 males, 28 females). The never married group was divided according to living situation into an independent group (21 males, 9 females) and a dependent group (23 males, 19 females). Those individuals in the independent group were living either on their own or in unstructured voluntary group settings such as with roommates or housemates of their own choosing. Persons in the dependent group were living with parents, siblings, relatives, or in sheltered/structured situations where others were responsible for their day-to-day living. There was no

instance in this study where an individual appeared to be functioning as an independent, never married adult who was living with parents, siblings, or relatives.

Tests administered

Intelligence was evaluated by means of the Wechsler Adult Intelligence Scale (WAIS). Neuropsychological functioning was examined by means of the Neuropsychological Battery for Epilepsy (Dodrill, 1978). This battery consists of a series of 16 neuropsychological test measures, each of which has been shown to be sensitive to problems in brain function in epilepsy. These tests permit the evaluation of a broad range of functions, including sensory-perceptual abilities, motor performance, memory, ability to attend to tasks, language-related skills, visual spatial functions, and problem solving. Emotional functioning was assessed using the Minnesota Multiphasic Personality Inventory (MMPI), which provides an objective index of the various types of emotional concerns.

Analyses

The variables of the WAIS, the Neuropsychological Battery for Epilepsy, and the MMPI were individually analyzed across the four groups by one-way analysis of variance, utilizing the Neumann-Keuls procedure (Winer, 1971) to determine statistically significant differences between groups where overall differences were found. Owing to the large number of statistical tests run, no difference was considered significant unless it reached the 0.01 level of confidence.

RESULTS

The findings on the WAIS for the four groups are presented in Table 2. Highly statistically significant

TABLE 2. Comparison of marital groups on the Wechsler Adult Intelligence Scale

Test variable	Group								F
	Never married, independent		Married		Separated/ divorced		Never married, dependent		
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Verbal IQ	101.87 ^a	16.23	99.08 ^b	15.85	93.89 ^c	15.39	82.74	17.68 ^{abc}	11.02 ^d
Performance IQ	97.87 ^a	14.35	95.13 ^b	13.31	93.87 ^c	14.48	79.55	13.03 ^{abc}	14.64 ^d
Full-scale IQ	100.30 ^a	14.69	97.25 ^b	14.76	93.62 ^c	14.37	80.24	15.47 ^{abc}	14.49 ^d

IQ, intelligence quotient.

^{abc} Identical superscripts across groups within each test variable indicate significant differences between groups of $p < 0.01$ or better.^d $p < 0.001$.

differences were found for all three intelligence measures. The never married independent group had the highest scores, the married group was next highest, and the never married dependent group had the poorest. A similar pattern was found on 7 of the 11 WAIS subtests, the individual results of which are not detailed here owing to space considerations.

Table 3 presents results from the Neuropsychological Battery for Epilepsy. Statistically significant differences were found on all 16 of the measures, as well as the overall indicator of scores outside normal limits. The never married independent

group had the best scores on 12 of the 16 subtests, with the married group next, and the never married dependent group having the poorest scores. On all 16 discriminative measures and on the summary score of the percentage of scores outside normal limits, the never married dependent group had lower scores than all the other groups, and in 12 cases the differences were statistically significant.

Table 4 presents the results of the MMPI. Even though there were not as many differences as there were on the WAIS or on the Neuropsychological Battery for Epilepsy, several statistically significant

TABLE 3. Comparison of performances across marital groups on the 16 test measures from the Neuropsychological Battery for Epilepsy

Test variable	Group								F
	Never married, independent		Married		Separated/ divorced		Never married, dependent		
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Stroop, part I	109.00 ^a	49.16	116.36 ^b	45.13	127.87 ^c	43.97	152.40 ^{ab}	64.80	5.64 ^d
Stroop, part II-I	166.20 ^a	61.69	182.37	66.20	184.11 ^b	67.73	223.52 ^{ab}	72.89	5.07 ^e
Wechsler Memory Scale									
Verbal	17.76 ^a	6.47	19.95	6.16	18.49 ^b	6.45	13.29 ^{ab}	6.47	9.19 ^d
Visual Spatial	8.76 ^a	3.67	8.85 ^b	3.04	7.91 ^c	3.40	5.34 ^{abc}	3.56	9.93 ^d
Perceptual examination									
total errors	8.73 ^a	12.56	9.24 ^b	13.26	13.09 ^c	17.17	25.33 ^{abc}	23.66	8.68 ^d
Name Writing, total									
(letters/s)	0.76 ^a	0.28	0.85 ^b	0.37	0.80 ^c	0.32	0.56 ^{abc}	0.28	7.08 ^d
Category	50.43 ^a	31.37	54.38 ^b	30.54	65.75 ^c	30.91	87.95 ^{abc}	30.98	12.36 ^d
Tactual Performance									
Total Time	22.23 ^a	14.79	22.30 ^b	13.20	26.96 ^c	16.73	38.80 ^{abc}	18.90	10.41 ^d
Memory	7.20 ^a	1.69	6.97 ^b	1.82	6.84 ^c	1.76	5.24 ^{abc}	2.27	9.18 ^d
Localization	3.70 ^a	2.51	3.26 ^b	2.03	2.91	2.37	1.76 ^{ab}	1.86	5.78 ^d
Seashore Rhythm	24.10 ^a	4.22	23.49 ^b	4.11	22.11 ^c	3.69	19.21 ^{abc}	6.25	9.08 ^d
Seashore Tonal Memory	19.53 ^a	7.00	18.59	7.29	16.22	6.35	14.07 ^a	8.57	4.48 ^e
Finger Tapping, total	88.53 ^a	19.13	89.26 ^b	14.48	84.22	20.89	74.21 ^{ab}	23.11	5.70 ^d
Trail Making, part B	111.13 ^a	82.15	114.25 ^b	68.64	124.49 ^c	75.27	197.81 ^{abc}	99.65	10.93 ^d
Aphasia Test, errors	3.13 ^a	3.26	3.36 ^b	3.84	4.73 ^c	4.41	7.95 ^{abc}	6.56	9.54 ^d
Constructional dyspraxia									
(rating)	1.20 ^a	0.89	1.44	0.81	1.73	1.03	2.05 ^a	1.67	5.45 ^e
Summary: % total tests									
outside normal limits	50.93 ^a	28.53	56.16 ^b	26.40	65.56 ^c	26.93	81.24 ^{abc}	22.65	10.50 ^d

^{abc} Identical superscripts across groups within each test variable indicate significant differences between groups of $p < 0.01$ or better.^d $p < 0.001$.^e $p < 0.01$.

TABLE 4. Comparison of scores across marital groups on the scales of the Minnesota Multiphasic Personality Inventory

Scale	Group								F
	Never married, independent		Married		Separated/ divorced		Never married, dependent		
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
L Lic	51.89	7.88	51.21	7.20	52.50	8.15	55.82	10.31	2.33
F	64.18	13.13	61.38 ^a	11.09	70.48 ^a	12.69	67.44	12.82	4.89 ^c
K	50.21	8.75	50.22	9.08	48.38	7.66	50.50	9.53	0.50
Hs (hypochondriasis)	57.75 ^a	13.43	62.91	13.11	69.05 ^a	14.16	61.50	11.96	4.52 ^c
D (depression)	70.43	16.60	67.79	15.10	73.29	12.53	65.53	14.01	2.08
Hy (hysteria)	59.46 ^a	12.44	65.52	9.76	69.00 ^{ab}	10.86	59.29 ^b	9.77	7.52 ^d
Pd (psychopathic deviate)	62.00 ^a	12.76	62.71 ^b	12.70	71.50 ^{ab}	14.53	61.88	13.17	4.99 ^c
Mf (masculinity–femininity)	59.79	15.15	55.20	11.47	53.93	10.04	54.77	9.95	1.60
Pa (paranoia)	62.54	12.09	63.95	10.60	67.79	12.41	63.82	11.79	1.46
Pt (psychasthenic)	69.00	14.39	64.76	12.96	70.91	12.11	62.35	10.96	3.67
Sc (schizophrenia)	73.54	17.46	69.60	16.07	79.55	15.50	72.97	15.44	3.14
Ma (mania)	67.00	7.96	62.33	9.85	66.88	12.05	63.38	11.91	2.15
Si (social introversion)	61.89	10.52	61.09	11.27	61.71	11.21	58.21	9.12	0.88
Ego strength (Barron)	40.71	7.04	39.11	7.53	36.39	7.30	38.56	6.35	2.22
Epilepsy (Richards)	24.57 ^a	6.48	27.53	7.06	30.24 ^{ab}	6.28	24.00 ^b	4.44	7.83
Manifest anxiety (Taylor)	20.29	8.95	22.47	9.35	25.15 ^a	8.45	18.18 ^a	8.31	4.23 ^c

^{ab} Identical superscripts across groups within each test variable indicate significant differences between groups of $p < 0.01$ or better.

^c $p < 0.01$.

^d $p < 0.001$.

differences were found. The separated/divorced group had the poorest scores on 10 of 13 regular scales and on 2 of 3 special scales, whereas there were no differences among the remaining groups.

DISCUSSION

The results are interesting from a number of perspectives. First, we were able to confirm that a greater proportion of males were among those individuals that never married (61%) than among persons who had been married or who were currently married (45%). Although the difference is not great, it is in the expected direction. We were not, however, able to find a relationship between age at onset and marital status, either from the data in Table 1 or from the more detailed analyses that we performed. We conclude that although age at onset is probably of importance in some groups, it is most likely not as important as the variables yet to be discussed. A similar analysis of primary seizure diagnoses also provided no relationships with marital status and living situation.

The neuropsychological and intellectual factors were clearly associated with living situation for the never married groups in our patient population. Individuals who were never married and who were living in dependent settings performed at significantly lower levels on all tests of abilities than those who had never married and were living independently. Similarly, those individuals living independently had the least neuropsychological impair-

ments and the highest scores on measures evaluating levels of intellectual functioning. It is, of course, likely that single people living independently must in fact be able to perform at a higher level than persons in most of the other groups, since they may have no one to whom they can turn to help solve the variety of problems that must be dealt with in everyday life. In connection with the question of problem solving, it is of interest to note that those neuropsychological tests associated with the larger F statistics in Table 3 are those that are typically identified as tests of problem solving (Category Test, Tactual Performance Test, Trail-Making Test). In each case, the person is required to formulate an approach to a situation and to work it through, modifying responses as required. The never married dependent group likely has difficulty in problem solving. Those tests reported in Table 3 as having the lowest F score values had few problem-solving elements and tended to emphasize other functions instead.

Additional review of Tables 2 and 3 reveals that although statistically significant differences were found on all 20 test variables, in each case these differences pertained to comparison of the never married dependent group with the other groups. In no instance did the other groups differ from each other on any test of abilities. Furthermore, in every instance, the never married independent group performed significantly better than the never married dependent group. Thus, it is clear that it is not marital status per se that is to be related to the nu-

merous differences found on tests of abilities, but rather other factors, at least one of which is the ability to live independently.

The results on the emotional and psychosocial measures presented a different pattern than those on the tests of abilities. Emotionally, the separated/divorced group demonstrated the greatest number of problems. This likely reflects the turmoil these people have experienced. The MMPI suggests that they are more neurotic and pessimistic individuals who utilize repression and denial in an effort to cope with stresses and difficulties. In such persons, physical symptoms may appear in response to unresolved emotional conflicts. Manipulative tendencies may also be found. The never married dependent group in the present study had some of the lowest scores on the MMPI of all four groups. This suggests that the members of this group were able to accept their living situations and experienced less emotional upset. This may also be related to their neuropsychological impairments and lower intellectual scores, in that such persons may be less aware of deficiencies in their lives and less responsive emotionally.

In conclusion, this study demonstrated a series of differences in mental abilities and emotional adjustment across groups divided according to marital status and independence in living. In general, it appears that marital status is more related to emotional adjustment than to mental abilities, and that independent living skills are more related to mental abilities than to emotional adjustment. Replicative studies of epileptic populations in other geographic areas would be of interest to allow generalizations concerning these findings and to assist in providing directions for future research.

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RESUMEN

Estudios realizados en diversos países muestran que un número menor de epilépticos se casan pero las razones permanecen oscuras. En esta investigación, 178 adultos epilépticos se dividieron en casados, separados/divorciados, y solteros. El grupo de solteros fue subdividido en personas que vivían en ambiente dependiente o ambiente independiente. Los grupos no se diferenciaban con respecto al tipo de ataques, edad de comienzo de los ataques y variables relacionadas. A todos se les administró una batería completa de tests neuropsicológicos y el MMPI. Los grupos de casados y solteros independientes obtuvieron mejores puntuaciones en todos los tests de habilidades; el grupo de separados/divorciados consiguió resultados intermedios y el de solteros dependientes obtuvieron, sin duda las puntuaciones más bajas. Sin embargo, en el área emocional el grupo de separados/divorciados consiguió las peores puntuaciones, y los otros grupos no se distinguieron entre sí. Parece ser que la situación matrimonial está más relacionada con la adaptación emocional que con la capacidad mental y que las habilidades derivadas de la vida independiente guardan una mayor relación con la capacidad mental que con la adaptación emocional.

(A. Portera Sanchez, Madrid)

ZUSAMMENFASSUNG

Untersuchungen aus verschiedenen Ländern haben berichtet, daß eine geringe Anzahl von Menschen mit Epilepsie verheiratet sind; die Gründe hierfür sind nicht klar. In dieser Untersuchung wurden 178 Erwachsene mit Epilepsie einer der folgenden Gruppen zugeordnet: verheiratet, getrennt/geschieden, niemals verheiratet gewesen. Die letzte Gruppe wurde weiter unterteilt in Personen, die in Abhängigkeit von ihrer Umgebung und solche, die unabhängig von ihr leben. Die Gruppen unterschieden sich nicht hinsichtlich des Anfallstyps, des Alters beim Beginn der Anfälle und darauf zu beziehende Variablen. Alle wurden mit einer kompletten neuropsychologischen Testbatterie und dem MMPI untersucht. In allen den Tests zeigte die verheiratete Gruppe und die niemals verheiratet gewesene, unabhängig lebende Gruppe die besten Ergebnisse. Die getrennt/geschieden lebende Gruppe lag in der Mitte und die niemals verheiratet gewesene Gruppe hatte bei weitem die niedrigsten Scores. Auf emotionalem Gebiet jedoch schnitt die getrennt/geschiedene Gruppe am schlechtesten ab und die anderen Gruppen unterschieden sich nicht voneinander. Es scheint, daß der Status, verheiratet zu sein, mehr Beziehung zum Emotionellem als zu den geistigen Fähigkeiten besitzt und daß die Fähigkeit, unabhängig zu leben mehr Beziehung zur mentalen Fähigkeiten als zu der emotionalen Stabilität besitzt.

(D. Scheffner, Heidelberg)