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Psychological characteristics of aggressive drivers with and without intermittent explosive disorder

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Abstract

We compared two groups of aggressive drivers, those who met criteria for Intermittent Explosive Disorder (IED) (n=10) and comparable aggressive drivers who did not meet IED criteria (n=20), to a group of non-aggressive driving controls (n=20) on measures of psychological distress, anger, hostility, and Type A behavior as well as measures of aggressive driving and driving anger and their driving records. There were few differences between the aggressive drivers with IED and those without IED. The IED positive aggressive drivers endorsed more assaultiveness and resentment as well as more impatience and showed trends to have more hostility and angry temperament. When all aggressive drivers were compared to controls, differences emerged on anxiety, hostility, and anger as well as on measure specific to aggressive driving (competitiveness) and driving anger (at slow drivers and traffic obstructions).

Intermittent Explosive Disorder (IED), is an understudied Axis I disorder (Monopolis & Lion, 1983; Felthous, Bryant, Wingerter, & Barratt, 1991; McElroy, Hudson, Pope, Keck, & Aizley, 1992) among the broader category termed, Impulse Control Disorders. This point is echoed by authors of the few recent studies of IED such as McElroy, Soutullo, Beckman, Taylor, and Keck (1998), Mattes and Fink (1987) and Coccaro, Kavoussi, Berman, and Lish (1998). The reasons for this relative inattention could be its relative rarity (Felthous et al., 1991) or that individuals with this problem are more likely to be found in the criminal justice system than in the mental health system; that is, in the words of Lion (1992), they are ‘bad’, not ‘mad’.

Through recent work with aggressive drivers, we have found that about one-third of aggressive drivers, both those who are court-referred and those who are self-referred, meet DSM-IV (APA,

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1994) criteria for IED. This paper compares aggressive drivers with IED to aggressive drivers without IED and to a non-aggressive driving control group along a number of psychological dimensions we thought might be relevant to understanding IED.

Intermittent Explosive Disorder. Patients (a) who periodically act very aggressively, resulting in serious assaultive acts or property damage; (b) whose degree of aggression is grossly out of proportion to any provocation or precipitating stressor; (c) and whose behavior cannot be better accounted for by other disorders, are diagnosed according to DSM-IV (APA, 1994, p. 612) with Intermittent Explosive Disorder.

In one of the best studies of IED diagnosed by DSM-IV criteria, McElroy et al. (1998), studied 27 individuals with IED, most of whom were convicted felons or referred by mental health practitioners. Data on co-morbid Axis I disorders showed high prevalence of current (89%) and lifetime (93%) mood disorders and relatively high prevalence of current (37%) and lifetime (48%) anxiety disorders. Ninety-two percent acknowledged irritability or rage accompanying impulses to act and 79% acknowledged these same affective states during their worst act. Despite the very informative nature of the study, there were certain deficits in it: (i) there were no patient controls nor (ii) normal controls included and (iii) no dimensional assessment with psychological tests were performed.

In a study, which partially corrected these deficits, Coccaro et al. (1998) studied 188 individuals with personality disorders (diagnosed with the SIDP-R, Pfohl & Zimmerman, 1989). Coccaro et al. (1998) have advocated not excluding from the diagnosis of IED individuals with Axis II disorders such as anti-social personality disorder (ASPD) or borderline personality disorder (BPD). They compared their two groups of Axis II disordered patients, those with IED (based on new IED diagnostic criteria proposed by Coccaro et al. (1998) (n=76) and those with personality disorders who did not meet the proposed criteria for IED, (n=112). Those with IED had greater prevalence of current mood disorder (39.5% vs 22.3%) and lifetime mood disorder (72.4% vs 44.6%). The two groups did not differ on current or lifetime anxiety disorder. Those with IED were significantly higher on impulsiveness, as measured on the Eysenck and Eysenck (1978) impulsivity scale and on hostility, as measured on the Buss–Durkee Hostility Inventory (Buss & Durkee, 1957), and on state anxiety as measured by the State–Trait Anxiety Inventory (Spielberger, 1983).

While this study has provided some information on the psychological characteristics of patients with IED, and included a patient control group, it lacked a normal control group. It also defined IED in an idiosyncratic manner and deliberately ignored the possibility that the aggressive acts might be a part of the Axis II condition. This seems possible since 33% of the IED group met the criteria for BPD versus only 6% of the non-IED group.

Aggressive Driving. Although aggressive driving, and its extreme form, popularly known as ‘road rage’, is not a mental disorder, it does represent a major societal problem. Authorities dealing with automobile travel and traffic safety (Martinez, 1997; Snyder, 1997) have identified aggressive driving as a *risk factor* for motor vehicle accident (MVA) morbidity and mortality on a par with alcohol impaired driving. For instance, Martinez (1997) estimated that one-third of all personal injury MVAs and two-thirds of MVA fatalities were due to aggressive driving; Snyder (1997) estimated that 50% of all MVA crashes involved aggressive driving.

There is a small literature on the psychological characteristics of aggressive drivers. Larson (1996) notes a fair proportion of aggressive drivers who sought help in his treatment program

were Type A individuals. Deffenbacher and colleagues (Deffenbacher, Oetting, & Lynch, 1994) have developed a *Driving Anger Scale* which has very good psychometric properties and contains six relatively independent subscales. College students who score in the upper quartile of the DAS report more MVAs and near misses, more frequent involvement in personal injury MVAs, and much more anger and aggressive driving behavior than those scoring in the lower quartile. The high driving anger students also scored higher on trait anger and anger out of the STAXI (State–Trait Anger Expression Inventory, Spielberger, 1988) and trait–anxiety (on the STAI [Spielberger, 1983]). No effort was made in any of this work to identify individuals with possible IED.

1. Methods

1.1. Overview

This exploratory study had two purposes that dictated the measures used and the form of the analyses. First of all we were interested in comparing aggressive drivers, both those who were court-referred and those who were self-referred, to a group of non-aggressive drivers matched on age and gender. Second, and most importantly, we sought to compare two groups of aggressive drivers, those who met criteria for IED and those who did not meet criteria for IED. In this way our psychopathological control matched the aggressive drivers with IED on an important conceptual dimension: both were groups identified (either by themselves or by the courts) as behaving aggressively when they drove. With the matching on this important factor of behaving aggressively behind the wheel, any differences were more likely to be a part of IED, rather than a part of being aggressive at some time. We were also interested to learn if any of the differences observed were more likely to be quantitative, a matter of degree, or qualitative, indicated by a sharp difference.

1.2. Participants

There are 30 aggressive drivers included in this study; 20 were referred by the courts in a nearby county, whereas 10 were self-referred based on advertising and local media coverage. Twenty other individuals who were not aggressive drivers participated as normal controls.

The court-referred (C-R) group, after conviction in the local courts, were given an option of their regular sentence for the offense or diversion to our treatment program for aggressive drivers. The latter involved extensive pre-treatment, post-treatment and 2 month follow-up assessments as well as participation in 4-weekly group treatment sessions. Participation thus extended over several months. All participants gave written informed consent for use of their data in this program. Results of the treatment program will be reported elsewhere.

The self-referred (S-R) group underwent the same assessment and treatment procedures as the court-referred groups. The non-aggressive driving controls were paid and completed only the psychological tests and driving history.

1.2.1. Psychiatric diagnoses

All of the aggressive drivers underwent structured psychiatric interviews for DSM-IV Axis I and Axis II disorders, the SCID (Structured Clinical Interview for DSM-IV Axis I Disorders, First, Spitzer, Gibbon, Williams, & Benjamin, 1996a) and SCID-II (Structured Clinical Interview for DSM-IV Axis II Personality Disorders, First, Spitzer, Gibbon, Williams, & Benjamin, 1996b). The assessor had 3 years of experience with these instruments. (Results of those assessments have been reported elsewhere, (Galovski, Blanchard, & Veazey, in press).

1.2.2. Diagnosis of IED

All participants were asked a series of questions with a structured interview modeled after that of McElroy et al. (1998) for diagnosing IED according to DSM-IV criteria. Care was taken to see that the aggressive acts were not a part of a personality disorder or some other disorder. No aggressive driving behaviors, including the aggressive driving offense that led to court referral to the program, were counted in seeking 'repeated aggressive acts'.

This diagnostic interview identified 10 individuals who met criteria for IED, 7 were court-referred (35%) and 3 self-referred (30%). Since the percentage in the two subgroups was comparable, they were combined and compared to the 20 non-IED aggressive drivers.

In order to provide a flavor of the activities of the two groups, the aggressive driving offenses of the seven court-referred IED participants and the 13 non-IED court-referred participants are tallied in Table 1. Other identifying information (age, gender, driving record) is not matched to offense to protect the confidentiality of the participants who were all arrested in a predominantly rural, and somewhat sparsely populated, county.

Table 1
Driving offenses of court-referred aggressive drivers with and without Intermittent Explosive Disorder

Offense	Frequency With IED	Without IED
Assault		2
Menacing		1
with a gun	1	
with a hammer	1	
Menacing and assault	1	
Disorderly conduct		
plus speeding (100 in 55 mph)		2
plus DWI		1
plus run stop sign		1
plus speeding	1	
Harassment	2	
plus disorderly conduct		1
Reckless endangerment plus reckless driving		2
Reckless driving plus speeding		2
Speeding		1
plus trying to outrun police	1	
Total	7	13

Inspection of the data in Table 1 reveals no apparent differences in presenting offense for court-referred aggressive drivers with IED and the other court-referred non-IED group.

Other demographic information on the three groups is contained in Table 2.

Comparisons of the two aggressive driving samples to the controls revealed no significant differences on gender, age, or ethnicity. Comparisons between the two aggressive driving groups (IED and non-IED) revealed a significant difference on gender ($\chi^2[1,N=30]=6.43$, $P<0.01$) in that all of those with IED were male as compared to 55% of the non-IED aggressive drivers. The two groups did not differ on age or ethnicity.

1.3. Measures

A locally constructed driving history interview was given to all participants. In addition they answered the following questionnaires:

1.3.1. Measures of aggressive driving and driving anger

We used Larson (1996) *Driver's Stress Profile*, a 40-item inventory of driving behaviors with 4 subscales labeled by Larson as (Anger, Impatience, Competing, Punishing). We (Blanchard, Barton, & Malta, 2000) have shown it to have good reliability. We also used Deffenbacher's Driving Anger Scale (Deffenbacher et al., 1994), which has adequate reliability. It has six subscales identified by factor analysis.

1.3.2. Measures of psychological distress

As noted in the introduction, individuals with IED have been found to be at high risk for mood disorder and anxiety disorder. We therefore used the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) to measure depressed mood and the State–Trait Anxiety Inventory (Spielberger, 1983) to measure anxious mood and current level of anxiety.

1.3.3. Measures of anger and hostility

To measure the various possible dimensions of anger, we used the STAXI (Spielberger, 1988) scored for state–anger, trait–anger, angry temperament, anger control, anger in, anger out, and anger expression. To measure hostility and aggression we used the Buss–Durkee Hostility Inventory (Buss & Durkee, 1957) scored for overall hostility and for assault, indirect hostility, irritability, negativism, resentment, suspicion, verbal hostility and guilt.

Table 2
Demographic information on sub-samples

Sub-Sample	Gender M/F	Age Mean	Range	Ethnicity Caucasian	Afr-Amer.
IED	10/0	36	18–55	9	1
Non-IED	11/9	30.6	17–65	18	2
Controls	15/5	37.5	23–54	20	0

1.3.4. Other measures

Given Larson (1996) report on the association of Type A behavior and aggressive driving, and Coccaro et al. (1998) association of impulsivity and impatience with IED, we administered the Jenkins Activity Survey, Form C, (Jenkins, Zysanski, & Rosenman, 1965) scored for Speed and Impatience, Job Involvement, Hard Driving and Competitive, and overall Type A.

2. Results

2.1. Plan for analyses and protection for multiple comparison

In all instances our first analysis is a comparison of the three subgroups. If it is significant, we then compared the aggressive driving groups combined to the normal controls and finally compared the aggressive drivers with IED to the aggressive drivers without IED. Since this is an exploratory study in an understudied population (IED), we have tried to balance the interest of discovering possible differences with the interest in controlling experimentwise error. We have applied a modified Bonferroni correction, at the 0.05 level, (Holland & Copenhauer, 1988) to analyses of each family of variables rather than across the entire study. Significant differences as well as trends toward differences which reach the 0.10 level are described.

2.2. Driving record and behaviors

In Table 3 are listed the individual driving data on both sets of aggressive drivers and the controls.

Comparisons of the groups revealed a trend (P=0.06) for a difference among the groups in years driving. Follow-up analyses (LSD) revealed a difference (P=0.04) between the two aggressive driving groups. There was also a trend (P=0.08) for a difference among the groups on frequency of citations for moving violations. Follow-up analyses revealed a greater frequency (P=0.04) for the aggressive drivers than the controls. Although the number of accidents and number of DWI's were greater for the aggressive drivers, there were no other significant differences. Interestingly, there were no differences on driving problems between the aggressive drivers with IED and those without IED.

In Table 4 are the mean scores of the three subgroups on the measures of psychological distress (BDI and STAI).

The aggressive drivers combined had higher state anxiety scores ($P<0.001$) and a trend for higher trait anxiety scores ($P<0.06$) than the controls. The three groups did not differ on depression. The IED group did not differ from the non-IED aggressive drivers on measures of general psychological distress.

In Table 5 are the mean scores of the three subgroups on the measures of aggressive driving and driving anger.

On the Driver's Stress Profile, although the means for the aggressive drivers were consistently higher than the controls, only on the Competing subscale did the aggressive drivers score higher than the controls. There were no differences between the two aggressive driver groups. On the Driving Anger Scale, the aggressive drivers scored higher than the controls on anger at slow

Table 3
Driving data on sub-samples[a]

Sub-sample		Years driving	Frequency of MVAs	Moving violation	DWI convictions
IED	1	2	2	4	0
	2	55	2	6	0
	3	24	6	25	0
	4	25	5	5	5
	5	28	3	2	1
	6	14	3	1	0
	7	4	1	1	0
S-R	8	33	2	1	1
S-R	9	13	0	9	1
S-R	10	34	5	1	1
Average		23.3 (15.8)	2.9 (1.91)	6.0 (7.8)	0.9 (1.5)
Non-IED	1	4	0	2	0
	2	3	6	4	0
	3	2	2	35	0
	4	25	4	7	1
	5	3	2	10	2
	6	10	4	10	4
	7	16	2	4	0
	8	4	2	2	1
	9	14	2	1	0
	10	12	0	1	0
	11	4	1	2	0
	12	17	1	50	1
	13	9	0	4	0
S-R	14	34	5	1	0
S-R	15	27	1	0	0
S-R	16	24	5	6	0
S-R	17	11	5	10	0
S-R	18	40	7	6	1
S-R	19	6	1	3	0
S-R	20	8	0	2	1
Average		13.65 (11.0)	2.5 (2.2)	9.6 (13.6)	0.45 (0.9)
Controls average		20.75 (9.0)	1.74 (1.3)	2.6 (3.1)	0.1 (0.4)

[a] S-R: self-referred, other cases are court-referred.

drivers and traffic obstructions. Again, the two aggressive driving groups did not differ on any measure.

In Table 6 are the mean scores for anger and hostility, and their sub-components, as measured by the STAXI and Buss–Durkee Hostility Inventory.

On the STAXI the aggressive drivers had higher scores than the controls on trait anger, angry temperament, and expressing anger outwardly. There was a non-significant trend for the aggressive drivers with IED to score higher on angry temperament than the non-IED aggressive drivers.

On the Buss–Durkee, the aggressive drivers scored higher than the controls on suspiciousness,

Table 4
Measures of psychological distress for the three subgroups

Measure	Subgroup means and SDs			Overall F	AgD vs C		IED vs Non-IED
	IED-AgD	Non-IED AgD	Control		t	P	
Beck Depression Inventory	6.2 (6.1)	5.2 (5.7)	3.7 (3.1)	0.98	1.31	<0.2	ns
STAI–State	50.6 (24.3)	44.0 (17.1)	26.5 (5.2)	10.24	4.38	<0.001[a]	ns
STAI–Trait	38.3 (14.0)	34.8 (11.5)	30.2 (6.0)	2.31	1.97	<0.06[a]	ns

[a] Significant at $P<0.10$ after modified Bonferroni correction.

Table 5
Measures of aggressive driving and driving anger

Measure	Subgroup means and SDs			Overall F	AgD vs C		IED vs Non-IED
	IED-AgD	Non-IED AgD	Control		t	P	
Driver's stress profile							
Total	32.3 (33.4)	29.8 (25.7)	19.0 (8.7)	1.64	1.8	<0.08	ns
Anger	9.7 (9.6)	10.1 (7.3)	7.8 (2.9)	0.71	1.19	<0.24	ns
Impatience	9.3 (9.2)	7.6 (7.6)	5.0 (3.7)	1.56	1.65	<0.11	ns
Competing	5.5 (7.0)	6.3 (7.9)	2.5 (2.7)	2.07	2.02	<0.05[a]	ns
Punishing	7.8 (8.5)	5.8 (5.7)	3.6 (2.5)	2.13	1.82	<0.08	ns
Driving anger scale							
Total	84.4 (40.6)	78.9 (32.7)	68.8 (10.7)	1.21	1.48	<0.15	ns
Hostile gesture	8.0 (4.9)	6.2 (3.1)	6.6 (1.9)	1.10	0.22	<0.83	ns
Illegal driving	7.9 (5.4)	9.7 (4.9)	9.1 (2.4)	0.61	0.03	<0.98	ns
Police presence	8.4 (5.4)	7.0 (3.4)	5.8 (2.1)	2.0	1.71	<0.09	ns
Slow driving	15.0 (7.2)	14.7 (6.8)	11.1 (2.9)	2.63	2.32	<0.03[a]	ns
Discourtesy	28.0 (11.6)	25.1 (11.0)	23.9 (4.1)	0.69	0.84	<0.41	ns
Traffic obstruction	17.1 (9.3)	16.7 (7.5)	12.4 (2.7)	2.88	2.42	<0.02[a]	ns

[a] Significant at $P<0.10$ after modified Bonferroni correction.

assault, overall hostility, as well as on verbal hostility. Those aggressive drivers with IED scored higher than the non-IED aggressive drivers on assault and resentment, and showed a non-significant trend to be higher in overall hostility.

Finally, in Table 7 are the scores on the measure of Type A behavior (JAS, Form C). Whereas, there are no differences between the aggressive drivers and the controls, the aggressive drivers with IED show a greater level of speed and impatience than the non-IED aggressive drivers.

3. Discussion

Even with our very liberal criterion for calling an observed difference significant or reliable ($P<0.10$), we are struck by how few differences there were between aggressive drivers who met

Table 6
Measures of general anger and hostility

Measure	Subgroup means and SDs			Overall *F*	AgD vs C		IED vs Non-IED
	IED-AgD	Non-IED AgD	Control		*t*	*p*	
STAXI							
State anger	12.6 (7.5)	11.3 (3.7)	10.1 (3.1)	1.31	1.37	<0.18	ns
Trait anger	20.8 (9.9)	17.3 (6.5)	14.1 (2.8)	4.04[a] <0.02	2.42	<0.02[a]	ns
Anger temperament	8.6 (4.2)	6.2 (2.9)	5.2 (1.3)	5.38[a] <0.008	2.22	<0.03[a]	0.07
Anger in	15.1 (5.5)	13.1 (3.3)	15.2 (5.0)	1.34	1.13	<0.27	ns
Anger out	18.2 (5.2)	15.9 (4.5)	14.3 (2.8)	3.07	1.96	<0.06[a]	ns
Anger control	21.4 (5.5)	22.9 (6.3)	25.0 (3.4)	1.76	1.73	<0.09	ns
Buss-Durkee							
Total	35.8 (18.9)	25.9 (11.6)	21.0 (7.7)	4.99[a] <.01	2.28	<0.03[a]	.09
Assault	5.4 (2.6)	3.4 (2.1)	2.3 (1.6)	7.05[a] <.002	2.78	<0.008[a]	.05*
Indirect hostil.	4.5 (3.1)	3.3 (2.1)	3.9 (2.2)	0.84	−.25	<0.8	ns
Irritability	4.9 (3.9)	3.3 (2.4)	3.3 (1.7)	1.6	.81	<0.42	ns
Negativism	1.8 (1.8)	2.2 (1.6)	1.5 (1.6)	0.89	1.2	<0.24	ns
Resentment	3.0 (2.2)	1.6 (1.5)	1.4 (1.6)	3.29 <.05	1.39	<0.17	0.05[a]
Suspicion	4.2 (2.6)	3.0 (1.5)	1.3 (1.0)	12.03 <.001	4.36	<0.001	ns
Verbal hostil.	8.3 (3.1)	7.0 (2.6)	5.5 (2.3)	4.16 <.02	2.53	<0.02[a]	ns
Guilt	3.7 (3.0)	2.2 (1.7)	2.0 (1.5)	2.79	1.32	<0.2	0.09

[a] Significant at $P<0.10$ after modified Bonferroni correction.

Table 7

Measure	Subgroup Means and SDs			Overall *F*	AgD vs C		IED vs Non-IED
	IED-AgD	Non-IED AgD	Control		*t*	*p*	
Overall							
Type A behavior	242.3 (81.6)	207.6 (82.7)	203.3 (72.4)	0.67	0.58	ns	ns
Speed and impatience	196.1 (79.0)	138.8 (61.9)	144.1 (43.6)	2.93	0.64	ns	$P<0.05$[a]
Job involvement	182.6 (49.2)	188.8 (46.8)	213.8 (60.7)	1.27	1.59	0.12	ns
Hard driving and competitive	130.0 (20.2)	120.3 (24.9)	109.5 (23.8)	2.17	1.88	0.07	ns

[a] Significant at $P<0.10$ after modified Bonferroni correction.

criteria for IED and comparable aggressive drivers who do not meet criteria for IED. A major difference is gender; those with IED were significantly more likely to be male (100%) than those without IED (55%). The differences which did emerge make sense, or are consistent with the usual clinical view of individuals with IED (McElroy, 1999): they are more likely to endorse assaultiveness and resentment on the Buss–Durkee Hostility Inventory and to describe themselves

as having higher levels of impatience on the Jenkins Activity Survey. They also show trends for higher levels of angry temperament and overall hostility. Thus, they emerge as an angry and hostile group who are impatient, resentful, and possibly assaultive. The hostility differences have been noted earlier by Coccaro et al. (1998) in their study. The potential for assaultiveness is obvious in Table 1. All of these differences seem to be a matter of degree, or quantitative differences with respect to the non-IED aggressive driving controls, rather than qualitative differences.

The two groups showed no difference in the measures of driving anger or aggressive driving, perhaps because the questions are very obvious and related to their reason for being in the research. Likewise, there is no difference in level of psychological distress, either depression or anxiety, unlike the results reported by Coccaro et al. (1998) who found higher levels of state anxiety. The absences are notable given previous reports of high levels of mood disorders and anxiety disorders in patients with IED (McElroy et al., 1998; Coccaro et al., 1998). However, there was no comparison group in McElroy et al. and the patient comparison group in Coccaro et al. was non-aggressive.

The lack of differences between the aggressive driver groups may well be related to sample size and lack of statistical power. Future research should certainly use larger sample sizes. The lack of differences may also be the result of using a tightly matched patient control group, aggressive drivers who do not meet criteria for IED. By having matched the two patient groups on a key variable, notable problems with aggressive driving, we may have obscured much of what is different about individuals with IED. Certainly, both groups contain drivers one would want to avoid on the highways and byways.

3.1. Aggressive drivers

In contrast to the relatively low number of differences between the two aggressive driving groups, there are many differences between the aggressive drivers and the controls.

The aggressive drivers, not surprisingly, have more moving violations and a trend (P=0.08) toward more DWI convictions than the controls. They admit to being more competitive in their driving and to being more likely to become angry at slow drivers and traffic obstructions on the DAS.

In fact, they are noticeably more angry and hostile than the controls with higher scores on trait anger, angry temperament and outwardly showing anger as well as having higher levels of hostility, assaultiveness, verbal hostility and suspiciousness. Clearly, as a group, these are angry, hostile folk who want others out of their way. They present a picture of usually being angry and hostile and ready to explode with an aggressive act when minimally provoked.

Interestingly, they also endorse higher levels of state and trait anxiety than the non-aggressive driving comparison group. These results are consistent with Coccaro et al.'s (1998) findings for his sample, those IED and a personality disorder. This could also be a function of the setting for the assessment, a treatment program for aggressive drivers.

Our results are consistent with Deffenbacher et al's (1994) findings on high driving anger college students. They found relatively high levels of trait anger and trait anxiety in their population. Replication with these more seriously affected aggressive drivers, both those who are court-referred and self-identified adults, lends credence to the Deffenbacher et al. (1994) findings.

When comparing aggressive drivers to non-aggressive drivers, there are many targets for inter-

vention: the higher levels of anger, hostility and anxiety. We are currently conducting treatment groups to see what impact we can make in this problem population.

A last point that needs to be mentioned again is the relative lack of differences between the two aggressive driving groups in comparison to the relatively large number of differences between the aggressive drivers and non-aggressive drivers. This could speak to the need to include an 'anger spectrum' of disorders in future editions of the DSM as advocated by DiGiuseppi (personal communication, October 1999). Such individuals might share symptoms of anger, hostility and aggressiveness while not necessarily having the same manner of presentation, etiology or prognosis. More refined diagnostic work with such 'anger spectrum' individuals could improve our understanding and treatment of this population.

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