Road Rage: Risk Factors, Assessment, and Intervention Strategies

Bruce S. Sharkin

Incidents of angry and aggressive driving, often referred to as "road rage," are becoming more and more commonplace in everyday driving. Many people might benefit from counseling interventions to help manage driving anger and aggression. This article provides a review of research on road rage risk factors, a description of inventories for assessing angry and aggressive driving tendencies, and a discussion of intervention strategies to reduce angry driving behavior.

Because she is running late for a meeting, a woman is driving in a hurry. When she gets behind another driver who she thinks is going too slow, she honks her horn and then passes the other driver, even though it is illegal to do so. As she passes, she glares at the other driver and calls him a "jerk."

While driving on a highway, two men exchange angry words and make obscene gestures toward one another after one of them made an abrupt lane switch cutting in front of the other. One of the drivers gestures for the other to pull over so that they can get out of their cars to fight.

A businessman on his way to work fumes with anger when he is held up in traffic due to road construction. He shakes his head in disgust at some of the road construction workers as he passes.

These are just a few examples of what is commonly referred to as "road rage." With more drivers on the road, but limited road capacity, there are bound to be moments of anger and frustration and discourteous behavior between drivers. Driving behaviors such as tailgating, cutting someone off, making obscene gestures, and flashing one's headlights are becoming more and more commonplace in everyday driving situations. Based on one estimate, there may be as many as 400 billion hostile exchanges between motorists in the United States in 1 year alone (James & Nahl, 2000). Because these incidents of road rage can result in serious injury or death, the phenomenon of road rage has been the subject of much attention in the national news and media (Ferguson, 1998; James & Nahl, 2000; Vest, Cohen, & Tharp, 1997). According to a report issued by the American Automobile Association Foundation for Traffic Safety (1997), incidents of aggression on the road were estimated to have increased more than 50% between 1990 and 1996, and they resulted in thousands of injuries and more than 200 deaths. Clearly, road rage has become a significant public health concern, and in many ways, a mental health concern as well.

The term *road rage* has become common vernacular to describe any displays of anger while driving, although such displays are also referred to as "angry or aggressive driving." Angry or aggressive driving may range from mild displays of anger, such as following too closely on another driver's bumper, to more serious forms of violence, such as physical assault and vehicular homicide. There is some evidence to suggest that milder forms of aggressive driving may escalate into more serious incidents (Novaco, 1991).

Whereas a considerable amount of attention in the counseling literature has been devoted to the assessment and treatment of maladaptive anger in general (see Sharkin, 1988), little attention has been paid to the specific case of driving anger. Driving anger may be in need of more attention, especially given that anger may be experienced more frequently while driving than during other activities (Parkinson, 2001). Consequences of road rage include negative outcomes associated with aggressive expression of anger (Deffenbacher, Oetting, Lynch, & Morris, 1996) as well as greater risk of hazardous driving, traffic violations, and accidents (Wells-Parker et al., 2002). In some cases, road rage can result in physical violence and death. Perhaps relatively few people seek counseling specifically for help with angry or aggressive driving. Based on the prevalence of anger exhibited on the roads, however, there may be many people who could benefit from some type of intervention to help manage driving anger and reduce the risk of being involved in a serious road rage incident.

The purpose of this article is to review research on angry and aggressive driving in order to provide some guidance for counselors who may want to assess driving anger and use treatment strategies to help clients who are at risk for road rage. This article is divided into three sections. In the first section, research on various factors that may contribute to road rage are reviewed. The second section provides a

Bruce S. Sharkin, *Department of Counseling and Psychological Services, Kutztown University.* *The author thanks Sandy Banks, Donna Knox, and Roger Phillips for their thoughtful comments on an earlier draft of this article.* *Correspondence concerning this article should be addressed to Bruce S. Sharkin, Department of Counseling and Psychological Services, Kutztown University, 205 Stratton Administration Center, Kutztown, PA 19530 (e-mail: sharkin@kutztown.edu).*

 pp. 191–198

description of measures that have been developed for assessing angry and aggressive driving. Finally, intervention strategies for reducing road rage are discussed in the third section. Although very little research has been done to date on treatment for driving anger, research on contributing factors provides some important directions and implications for counseling intervention strategies.

It should be pointed out that several of the studies that are cited were conducted in other countries, particularly in the United Kingdom and other European countries. Not only in the United States, but also in many other countries in Europe and elsewhere, researchers have reported significant increases in incidents of road rage (Parker, Lajunen, & Summala, 2002). Hence, road rage seems to be an international phenomenon.

FACTORS THAT CONTRIBUTE TO ROAD RAGE

Researchers have examined many factors that may contribute to road rage. These potential risk factors can be categorized into three domains: (a) situational and/or environmental conditions, (b) personality or dispositional factors, and (c) demographic variables. These categories are not mutually exclusive, however, for road rage may result from an interaction of all three variables.

Situational/Environmental Conditions

Several studies (Novaco, Stokols, Campbell, & Stokols, 1979; Novaco, Stokols, & Milanesi, 1990; Stokols, Novaco, Stokols, & Campbell, 1978) have demonstrated that traffic congestion and travel impedance can negatively affect mood, behavior, and health of commuters. Simply stated, daily driving, particularly in conditions of high traffic congestion, can be a source of annoyance and stress. But do the stress and irritation associated with traffic congestion lead to angry and aggressive driving? The findings have been mixed. Some researchers (Hennessy & Wiesenthal, 1999; Shinar, 1998) have found driver anger and aggression to be reported more often in high-congestion conditions than in low-congestion conditions, whereas others (Lajunen, Parker, & Summala, 1999; Underwood, Chapman, Wright, & Crundell, 1999) have not found any relationship between congestion and reports of driver anger and aggression. Perhaps there is an interaction effect such that some individuals are more predisposed to respond with anger under conditions of congestion or impedance while driving. For example, drivers who are generally prone to getting angry while driving may be particularly anger-prone and aggressive under high impedance conditions (Deffenbacher, Deffenbacher, Lynch, & Richards, 2003). There may also be different reactions of individuals depending on whether they perceive being impeded as a result of another driver (e.g., someone driving too slow) versus other situational conditions (e.g., road construction).

Similar to other forms of aggression, aggressive driving behavior is believed to occur under conditions of anonymity, that is, when drivers are less visible to other drivers. Ellison, Govern, Petri, and Figler (1995) conducted a field study of drivers in convertibles, half with their tops up (representing the anonymous condition) and half with their tops down (representing the identifiable condition). The procedure involved having a confederate driver pull in front of the vehicles at a stoplight and remain stationary when the light turned green. Drivers in the anonymous condition were observed to display longer durations of horn-honking and more frequent horn honks than were displayed by drivers in the identifiable condition. These findings suggest that an enclosed vehicle may provide a driver with a sense of anonymity, which in turn may increase the likelihood of aggressive behavior. In a more recent study, Ellison-Potter, Bell, and Deffenbacher (2001) randomly assigned college students to anonymous or identifiable driving conditions using a computer-based program that assesses simulated driving behavior. Participants in the anonymous condition were told to imagine driving in a convertible with the top up, while participants in the identifiable condition were instructed to imagine driving in a convertible with the top down. Participants in the anonymous condition displayed significantly greater average speeds, more running of red lights, more collisions, and more hitting of pedestrians than did the participants in the identifiable condition.

Another environmental factor that has been examined as a potential contributor to aggressive driving behavior is aggressive stimuli. In the Ellison-Potter et al. (2001) study, the presence of aggressive stimuli was manipulated as a variable in the computer driving simulation program. In the aggressive stimuli condition, participants were exposed to aggressive text displayed on the computer screen in the form of billboards and building signs, whereas neutral text was displayed in the no-aggressive-stimuli condition. The researchers observed more aggressive driving behavior in the participants who were exposed to the aggressive stimuli.

Personality/Dispositional Factors

Research has examined dispositional and personality factors that may contribute to aggressive driving. A high level of general stress while driving is one potential factor that may make individuals prone to driving anger and aggression. Hennessy and Wiesenthal (2001) found that drivers with a disposition to view driving as generally stressful tend to report engaging in more driving aggression than do drivers who consider driving to be less stressful. This may be the result, in part, of perceptions or appraisals of driving situations. For example, highly stressed drivers may be more likely to perceive other drivers as a source of frustration, thereby increasing their own aggressive behavior (Gulian, Matthews, Glendon, Davies, & Debney, 1989). Driving stress may also interact with other factors, such as conditions of high congestion, to produce aggressive driving (Hennessy & Wiesenthal, 1999).

Attribution theory has been used to explain aggressive driving behavior as a function of the attributions individuals make about their own behavior and that of other drivers.

For example, when committing a traffic violation, drivers tend to attribute their own behavior to situational factors, but when another driver commits the violation, the behavior is more likely to be attributed to dispositional factors (Baxter, Macrae, Manstead, Stradling, & Parker, 1990). This attribution bias may be a potential source of aggression because drivers may underestimate the extent to which their own aggressive driving behavior can cause anger in other drivers.

There may also be a tendency in some drivers to interpret the intent of other drivers (who drive aggressively) as hostile and personally vindictive, especially when there is an absence of cues to indicate clear intent. This factor, known as hostile attribution bias, was examined in the context of driving in a study conducted by Matthews and Norris (2002). A sample of drivers were assessed for trait aggression and then given scenarios depicting everyday driving situations that could be construed as benign, malign, or ambiguous in terms of perceived provocation. That is, the other driver's actions were portrayed as unintentional or unavoidable in the benign scenario but as unjustified and attributable to dispositional qualities in the malign scenario. Whether the behavior of the other driver was intentional or not was left unclear in the ambiguous scenario. No differences were observed between participants' attributions in the benign or malign conditions. However, under ambiguous driving conditions, individuals high in trait aggression attributed greater hostility to the other driver than did individuals who were low in trait aggression. Thus, when conditions are unclear (in terms of the other driver's intent), more aggressive individuals may be inclined to perceive the actions of other drivers as hostile, whereas less aggressive individuals may be more inclined to view the actions of others as justifiable or at least accidental.

The question of whether generally aggressive people are also aggressive drivers was examined in a study conducted by Lajunen and Parker (2001). A sample of drivers of varying ages and backgrounds were asked to complete measures of general aggressiveness (physical and verbal) and driving anger. Drivers who reported being verbally aggressive in general responded with more anger to other drivers' reckless driving behavior in comparison with individuals who reported being less verbally aggressive in general. It was also found that the tendency to be physically aggressive increased the likelihood of aggressive driving behavior. Fong, Frost, and Stansfeld (2001) reported similar findings.

There is evidence to suggest that some people may have a greater propensity to become angry frequently and intensely while driving, referred to as "trait driving anger." Deffenbacher, Huff, Lynch, Oetting, and Salvatore (2000) compared high- and low-anger drivers on (a) sources of anger; (b) anger in response to commonly occurring driving situations; (c) anger, aggression, and risky driving in normal everyday driving conditions; and (d) general reports of aggressive and risky driving habits and accidents. Results from several measures of anger and information taken from participant driving logs show that high-anger drivers report more frequent and intense anger in everyday driving, more aggressive and risky driving behavior, and more near and minor accidents. In addition, high-anger drivers were higher on general trait anger and anxiety; anger suppression; and outward, less controlled forms of anger expression.

In a similar study, Deffenbacher, Lynch, Oetting, and Yingling (2001) found driving anger to correlate positively with anger in common driving conditions, with frequency of verbal aggression toward passengers riding with the individual as well as other drivers, and with physical aggression directed toward other drivers and the vehicle. Moreover, driving anger was associated with risky driving behaviors, such as reckless driving, and with crash-related conditions, such as loss of concentration, loss of vehicular control, and close calls while driving. It is not likely that these obtained differences between high- and low-anger drivers are due to the amount or frequency of driving (Deffenbacher, Deffenbacher, et al., 2003).

Demographic Variables

Age and gender are the two demographic variables that have been examined the most with respect to aggressive driving. The relationship between age and driving behavior is well documented. Compared with older drivers, younger drivers (ages 16–25) tend to display a more risky driving style, drive faster, accept narrower gaps when pulling into traffic, leave shorter distances between cars, and are more likely to violate traffic lights (Summala, 1987). Violation of safe driving norms, misjudgments, slower recognition of potential road hazards, slower perception of risk, and more dangerous errors and violations are generally more common among younger drivers than older drivers (Elander, West, & French, 1993; Jonah, 1986; Jonah & Dawson, 1987; Parker, Reason, Manstead, & Stradling, 1995; Retting & Williams, 1996).

In addition to being prone to driving errors and traffic violations, there is also evidence to show that younger drivers are more prone to road rage. Younger drivers have been found to report more irritation and annoyance in traffic jams (Gulian, Glendon, Matthews, Davies, & Debney, 1988) and to display more aggressive driving behavior when faced with traffic and congestion (Gulian et al., 1988; Shinar, 1998). Conversely, older drivers have been found to be less likely to react to the inconsiderate and impatient driving of others (Parker et al., 2002).

Of course, age may be related to driving experience, thus many of the problematic driving behaviors observed among younger drivers could be attributed to inexperience. Factors other than inexperience, however, may contribute to younger drivers being prone to aggressive driving. For example, younger drivers may be more susceptible to experiencing stress while driving (Gulian, Glendon, Matthews, Davies, & Debney, 1990), and as noted earlier, high stress drivers may be prone to driving anger. Another potential yet unexplored factor that may play a role in younger drivers' proneness to aggressive driving behavior is their level of emotional maturity.

Several studies have found gender to be a significant factor in aggressive and risky driving. Men have been found to

commit more dangerous traffic violations and engage in more risky driving behavior than do women (Ellison-Potter et al., 2001; Lawton, Parker, Manstead, & Stradling, 1997; Parker, Manstead, Stradling, & Reason, 1992). Male drivers have been observed to react more aggressively than do women to congestion (Shinar, 1998) as well as to reckless, inconsiderate, and impatient driving of others (Parker et al., 2002). In addition, male drivers may be more prone than women to engage in revengeful and physically aggressive thinking (Deffenbacher, Petrilli, Lynch, Oetting, & Swaim, 2003) and physical and verbal aggression (Hennessy & Wiesenthal, 2001), particularly men who exhibit high trait driving anger (Deffenbacher et al., 2000).

Although gender differences were observed in numerous studies, some researchers failed to find any significant differences between men and women in terms of angry or aggressive driving (Deffenbacher, Deffenbacher, et al., 2003; Deffenbacher et al., 2000; Ellison et al., 1995; Hennessy & Wiesenthal, 1999; Lajunen, Parker, & Stradling, 1998). Indeed, the results of a national survey of self-reported aggressive driving behavior showed that of the drivers who admitted to aggressive driving behavior, 53% were women (Sarpolus, as cited in Matthews & Norris, 2002). According to Deffenbacher et al. (2000), despite the observed gender differences in several studies, men and women seem to be more similar than different in their tendencies toward angry and aggressive driving.

ASSESSMENT OF ROAD RAGE

Many measures have been developed in recent years that are designed to assess angry feelings and thoughts and aggressive behaviors while driving. In the following sections, I describe and evaluate three measures that may be particularly useful for counseling practitioners.

Driving Anger Scale

The Driving Anger Scale (DAS; Deffenbacher, Oetting, & Lynch, 1994) was the first instrument developed to assess driving-related anger. There are two versions of the DAS, a 33-item long form and a 14-item short form. Respondents are asked to imagine themselves in various situations and rate the amount of anger that would be provoked on a 5-point scale from 1 *(not at all)* to 5 *(very much)*. The DAS involves a variety of potentially anger-provoking driving situations. Examples of items are "Someone is driving right up on your back bumper," "Someone speeds up when you try to pass them," "You are stuck in a traffic jam," and "Someone in front of you does not start up when the light turns green." Based on a cluster analysis of over 1,500 college students who completed the DAS during their freshman orientation, six subscales emerged: (a) Hostile Gestures (i.e., another driver signals anger or displeasure with the driver), (b) Illegal Driving (i.e., another driver breaks common traffic laws), (c) Police Presence, (d) Slow Driving (i.e., another driver or pedestrian impedes traffic flow), (e) Discourtesy (i.e., others engage in discourteous behavior), and (f) Traffic Obstructions (i.e., events that frustrate or obstruct the driver, such as traffic jams and road construction).

Deffenbacher et al. (1994) reported internal consistency reliabilities of .90 and .80 for the long and short forms, respectively. In a subsequent study, Deffenbacher et al. (2000) obtained internal consistency reliabilities of .92 for the short form and .96 for the long form, and both forms were found to have satisfactory test–retest reliability based on a 10-week interval (.84 and .88 for the short and long forms, respectively). For the long form, subscale reliabilities were found to range from .78 to .87. Although the subscales tend to correlate positively with each other, cluster analyses have demonstrated that there is enough independence of the subscales to assess different reactions to different types of situations. The correlation between the long form and the short form was .95, suggesting that either form was appropriate to use if only a total driving anger score was needed. Gender differences were obtained on four of the subscales: Men reported more anger for Police Presence and Slow Driving, whereas women reported more anger for Traffic Obstructions and Illegal Driving. The DAS has been shown to correlate positively with general trait anger and trait anxiety and to differentiate high- from low-anger drivers (Deffenbacher et al., 2000; 2001; Ellison-Potter et al., 2001).

Driving Anger Expression Inventory

The Driving Anger Expression Inventory (DAX; Deffenbacher, Lynch, Oetting, & Swaim, 2002) is designed to measure the ways an individual expresses anger while driving. Sixty-two items were generated based on interviews with college students, faculty members, and community members. Items are rated on a 4-point scale from 1 *(almost never)* to 4 *(almost always)* in terms of how often the respondent expresses anger in the manner described (e.g., "I give the other driver the finger," "I try to cut in front of the other driver," and "I glare at the other driver"). Based on an administration of the DAX to 290 undergraduates, Deffenbacher, Lynch, et al. (2002) performed a factor analysis that produced four subscales: (1) Verbal Aggressive Expression (12 items), involving verbal behaviors such as name calling, cursing, and asking negative rhetorical questions, as well as nonverbal behaviors such as glaring, dirty looks, and shaking one's head; (2) Personal Physical Aggressive Expression (11 items), involving the use of physical means to intimidate others (e.g., hostile gestures); (3) Using the Vehicle To Express Anger (11 items), for example, speeding up or slowing down to frustrate another driver or flashing one's lights; and (4) Adaptive/Constructive Expression (15 items), which involves safe driving and effective coping techniques (e.g., think things through, relax). The first three subscales (34 items) can be summed for a Total Aggressive Expression score.

Each of the four subscales was found to possess satisfactory internal consistency, with alpha reliabilities of .88, .81, .86, and .90 for the four subscales, respectively. The alpha reliability coefficient for the Total Aggressive Expression index was .90. The three subscales of aggressive expression

correlated positively with each other, with reliabilities ranging from .39 to .48, but were uncorrelated or negatively correlated with Adaptive/Constructive Expression, with reliabilities ranging from –.02 to –.22. The three subscales of aggressive expression correlated positively with general trait anger, trait driving anger, anger in commonly occurring driving situations and everyday driving, and aggressive and risky driving behavior. The Adaptive/Constructive Expression subscale, on the other hand, tended to correlate negatively with these variables. Also, a gender effect was found, with men scoring higher than women on Personal Physical Aggressive Expression and the Total Aggressive Expression index.

Driver's Angry Thoughts Questionnaire

The Driver's Angry Thoughts Questionnaire (DATQ; Deffenbacher, Petrilli, et al., 2003) is a recently developed 65-item scale designed to assess angry thinking while driving. Each item is rated on a 5-point scale from 1 *(not at all)* to 5 *(all the time)* in terms of how often the respondent has the particular thought that is mentioned when he or she is angry at another driver or about something when driving. Five factors were identified based on the results of a factor analysis: (a) Judgmental/Disbelieving Thinking (21 items), (b) Pejorative Labeling/Verbally Aggressive Thinking (13 items), (c) Revenge/Retaliatory Thinking (14 items), (d) Physically Aggressive Thinking (8 items), and (e) Coping Self-Instruction (9 items).

The Judgmental/Disbelieving subscale consists of items that involve questioning the driving of others, derogation of another person's driving, and thoughts about others not being allowed to drive. Examples of items are "People like you ought to have to take a driver's test" and "Get people like them off the road." The Pejorative Labeling/Verbally Aggressive subscale involves harsh negative judgments, name calling, and thoughts about how the respondent would like to engage in verbally aggressive behavior. Sample items include "What an idiot" and "Get off my ass!" The Revenge/Retaliatory subscale includes thoughts of retaliation and revenge behavior (e.g., "I'm not going to let them do that to me" and "I'm going to slow down to spite them"). The Physically Aggressive subscale consists of thoughts of wanting to hurt others physically and about engaging in physically aggressive behaviors, for example, "I want to kick their ass" and "I want to run them off the road." The Coping Self-Instruction subscale consists of items that reflect positive and adaptive coping thoughts such as "Just back off and relax" and "Nothing I can do about it so take it easy."

Deffenbacher, Petrilli, et al. (2003) have reported preliminary reliability and validity data for the DATQ. Internal reliability coefficients for the subscales were all above .90, except for the Coping Self-Instruction (alpha = .83). The Pejorative Labeling/Verbally Aggressive Thinking, Physically Aggressive Thinking, and Revengeful/Retaliatory Thinking subscales correlated positively with each other and with driving anger, aggressive driving anger expression, aggression, and risky driving behavior, whereas the Coping Self-Instruction subscale correlated negatively with these variables. The Judgmental/Disbelieving subscale did not correlate as strongly with the other variables. Driving-related angry thoughts, except coping self-instruction, correlated with general angry thoughts.

Summary

All three of these measures seem to have good clinical utility. The DAS can be used as a quick and reliable means of assessing an individual's propensity to experience maladaptive levels of anger while driving. If an individual is assessed to be a high-anger driver based on his or her DAS score, the DAX can then be used to assess the ways in which anger is displayed in driving situations. The DATQ may be useful for specific assessment of angry thoughts associated with driving, although this scale is relatively new and has not been evaluated to the same extent as the other two instruments.

In addition to these standardized instruments, individuals can be asked to keep a driving anger journal, similar to the driving log used in studies by Deffenbacher and his colleagues (e.g., Deffenbacher et al., 2000). Individuals can be instructed to monitor and record anger experienced while driving and to look for patterns or provocation situations that are most problematic. For example, are there certain times of the day when anger is more easily provoked? Under what circumstances is anger provoked? Is there a difference when driving alone versus driving with passengers? In fact, it can be helpful to get the perspective of passengers, given the self-serving bias exhibited by most people in their self-assessment of driving habits (James & Nahl, 2000). Self-assessment can foster increased awareness and consciousness while driving, a first step in treatment for angry driving.

INTERVENTIONS FOR REDUCING ROAD RAGE

As the research reviewed earlier in this article suggests, some individuals may be more predisposed than others to experience maladaptive levels of anger while driving, which can place them at greater risk for involvement in road rage incidents and associated consequences (e.g., loss of concentration, near accidents, hostile interactions with other drivers). Because counseling has been demonstrated to be effective in helping people manage maladaptive anger in a general sense (Sharkin, 1988), counseling is likely to be effective in helping individuals manage driving anger and road rage tendencies. When choosing interventions, the counselor should take into account the unique aspects of the driving situation, for instance, the inability to communicate directly with other drivers and the risk of serious accident or injury if driving safety is compromised. Counseling interventions can be implemented with individuals who are at risk for road rage based on what is known about potential risk factors as well as adapting effective strategies for anger management to the context of driving. In addition, researchers have evaluated cognitive-behavioral interventions for treatment of high anger drivers.

Stress and Time Management

Numerous strategies can be implemented to help individuals cope more effectively with driver stress (Gulian, Debney, Glendon, Davies, & Matthews, 1989), which has been linked to driving anger and aggression. Relaxation techniques can be practiced while driving, especially when drivers are caught in slow moving traffic or when experiencing other forms of impeded travel. These techniques may include simple breathing and mild stretching exercises that can be done while seated in a motor vehicle. Prerecorded relaxation tapes may be particularly well suited for use while driving, and audiotapes are currently available that specifically target driving-related stress and anger. Listening to soothing music or audiobooks, drinking herbal tea (as opposed to beverages with caffeine), aromatherapy, and other ways to promote relaxation while driving could be encouraged for clients who are prone to driving stress. It may also be important to try to minimize any aggression-arousing stimuli such as loud music or talk radio programs that involve argumentative or hostile behavior. Of course, stress-reducing strategies must not inadvertently induce drowsiness or divert too much of the individual's attention from the task of driving. For some drivers, it may be necessary to practice relaxation techniques just before getting into the vehicle.

Time management strategies may be helpful in countering driver stress and anger in individuals who do not manage their time well. Some individuals may continually place themselves at risk because they typically feel rushed and pressured in their driving. Thus, for these individuals it may be necessary to work on allowing for more time when driving and perhaps reevaluate the amount of time spent driving to and from work and/or other reasons for driving. How much driving is really necessary? Can alternatives such as carpooling or public transportation be used, at least on some occasions?

Cognitive-Behavioral Interventions

Cognitive-behavioral interventions that have been shown to be effective for anger management in general have been applied to the problem of driving anger. Deffenbacher et al. (2000) evaluated two treatments for the reduction of driving anger: self-managed relaxation coping skills (RCS) and a combination of cognitive and relaxation coping skills (CRCS). The RCS intervention consisted of an eight-session treatment protocol for lowering driving anger through application of progressive relaxation, relaxation imagery, and breathing-cued relaxation. The eight-session CRCS intervention involved a combination of relaxation (similar to the RCS group) and cognitive restructuring to counter cognitive distortions and biases (e.g., overgeneralization and misattributions) while driving.

Deffenbacher et al. (2000) randomly assigned 57 high-anger drivers to the RCS, the CRCS, or a no treatment control condition. Compared with the no treatment control condition, both the RCS and CRCS interventions reduced driving anger, based on significantly lower DAS scores at posttreatment and 1-month follow-up. The researchers did note differential treatment effects, however, in that the RCS intervention resulted in greater driving anger reduction on three specific DAS subscales (Illegal Driving, Police Presence, and Traffic Obstruction), whereas the CRCS intervention resulted in greater reduction of risky driving behavior. Neither of the interventions had an influence on trait anger, anxiety, or general anger expression scores.

Deffenbacher and his coresearchers (Deffenbacher, Filetti, Lynch, Dahlen, & Oetting, 2002) recently conducted another study, similar to Deffenbacher et al. (2000), except that they slightly modified the CRCS condition by incorporating explorative, Socratic style questions and behavioral experiments and tryouts adapted from Beck's cognitive therapy. As part of the cognitive restructuring process, for example, participants would be asked questions such as "What's another way of thinking about that situation?" (Socratic question) and "Can we identify a situation in which you can check that out?" (behavioral experiment and tryout). As in the previous study, a no-treatment control condition was included as a comparison group. Based on the responses from a sample of 55 high-anger drivers, both the RCS and CRCS interventions were found to reduce indices of driving anger, aggressive forms of anger expression while driving, and trait anger scores. Both interventions also increased adaptive and constructive ways of expressing anger while driving. Similar to the previous study, the CRCS intervention resulted in lower risky driving behavior.

Although the findings of both of the Deffenbacher studies (Deffenbacher et al., 2000; Deffenbacher, Lynch, et al., 2002) are somewhat limited in their generalizability because they were done with college students and relied primarily on self-report data, they nonetheless demonstrate that relaxation and a combination of relaxation and cognitive restructuring interventions can be used to reduce driving anger. On a practical level, these interventions are fairly easy to learn and implement with individuals or small groups. Although the skills obtained may not necessarily generalize to sources of anger other than driving anger (Deffenbacher et al., 2000), cognitive-behavioral interventions can be effective in as few as four sessions, with court-referred as well as self-referred drivers, and can have relatively enduring effects (Galovski & Blanchard, 2002).

Modification of Anger-Inducing Beliefs

Larson (1996) has identified five common anger-inducing beliefs that he believes can and should be modified to reduce one's risk for road rage. The first belief, referred to as "Make good time," is that it is necessary to drive to one's destination as fast as possible within a certain self-prescribed amount of time. Other motorists may be perceived more as obstacles than as people. Anger results when the rate of speed or the time schedule cannot be accomplished. The second belief, "Be number one," is based on a sense of competition and conviction that self-esteem and status can be attained by beating another driver in some self-created contest, such as racing at a high speed. Anger results when it seems as if

the other driver is winning or actually does win the contest. "Try and make me" is a passive–aggressive type of belief in which an individual thinks that he or she will lose a sense of self-esteem or status by giving in and allowing a demanding driver to have his or her way. When the other driver persists or succeeds in achieving his or her objective (e.g., to pass, merge, drive faster, cut in front), anger is likely to result. The fourth belief, "They shouldn't allow it," is a narcissistic view that any driver or driving behavior that fails to measure up to one's self-created standards should be banned from the road. Anger results from any perceived violation of one's standards (e.g., speed, lane changing, age and/or gender of driver, make of car). Finally, "Teach them a lesson" is the belief that one needs to punish other drivers who threaten, annoy, inconvenience, or fail to measure up to one's self-created standards. Anger is already likely to be present in those who hold this belief, but the anger can escalate when an infraction occurs. Punishment of other drivers can take on many common forms of road rage, including swearing and making obscene gestures, scowling, blocking another vehicle, and running another vehicle off the road.

Larson (1996) proposed that these five beliefs should be changed and substituted with less anger-producing ones. For example, it might be helpful to think of driving as worthwhile and pleasurable rather than viewing it as wasted time until arriving at one's destination. Rather than thinking about driving as a form of competition with a winner and a loser, it might be less anger-arousing to think about driving as a shared experience in which everyone must try to cooperate with one another to keep the roads safe. Larson also suggested that it can be helpful for angry drivers to admit that they have no power to control other drivers and that they should not feel a sense of entitlement when driving. He also pointed out that anger can be aroused if an individual becomes too focused on, and hypervigilant about, the habits of other drivers. An alternative way of thinking is that it is not worth the time and energy to look for things that one does not like.

The last three beliefs that Larson (1996) proposed should be modified are all based to some extent on "hostile attribution bias" described earlier in this article. Problems may arise when individuals misinterpret a situation and assume that another driver does something to them intentionally. Larson believed that it is important for anger-prone drivers who have a tendency to attribute hostile intentions to other drivers to remind themselves that bad drivers are not necessarily bad people and that the motives for bad driving are not always malicious. He suggested that instead of thinking that another driver is purposely aggravating or threatening, it can help to consider other possibilities, for example, that they may have good reason to be in a hurry. In general, it may be best to assume that there is always a good reason for the behavior of other drivers and not to assume that the driving behaviors of others are personally hostile.

Much like Larson's (1996) notion of changing anger-arousing driving beliefs, James and Nahl (2000) proposed that angry and aggressive drivers should unlearn adversarial attitudes associated with driving and learn to adopt a philosophy of "supportive driving." In contrast to an oppositional or overly defensive driving attitude that engenders suspiciousness and negative expectations of other drivers, a supportive driving philosophy promotes tolerance, mutual support, accommodation, and acceptance of diversity in drivers and driving styles. In many respects, individuals may benefit from applying the principles of Eastern philosophy to the experience of daily driving, such as those described in Berger's (1998) book *Zen Driving*.

Targeting At-Risk Drivers

Given the risk factors associated with particular demographically identified groups, it may make sense to target certain drivers, particularly younger, inexperienced drivers, for road rage prevention efforts. Counselors can play a key role in such educational and prevention efforts by consulting with high schools and colleges, driving schools, and law enforcement and motor vehicle agencies about ways to influence younger drivers to avoid behaviors that might result in road rage. For example, counselors can be instrumental in helping to transform traditional driver education programs by incorporating emotional and psychological components. As James and Nahl (2000) have demonstrated, traditional driver education programs that primarily emphasize vehicle handling and safety skills may be inadequate. They proposed that programs should also focus on developing emotional self-control and fostering a sense of community, civility, altruism and social responsibility. Counselors have the knowledge and skills necessary to develop and to help implement such programs. Counselors can also be involved in prevention efforts by offering time-limited group interventions for individuals who are particularly at risk. This may include individuals who are cited for traffic violations that involve potentially aggressive driving behaviors (e.g., speeding or reckless driving) or individuals identified as being generally anger prone.

CONCLUSION

Given the evidence that angry and aggressive driving is becoming more commonplace in everyday driving situations and can have serious negative consequences, it is important that counselors gain an understanding of the potential risk factors and ways of assessing and helping individuals reduce their risk for road rage incidents. This article provided an overview of road rage and some guidance for counselors who may to wish to use their skills to conduct assessment and treatment of driving anger.

REFERENCES

American Automobile Association Foundation for Traffic Safety. (1997). *Aggressive driving: Three studies.* Washington, DC: Author.

Baxter, J. S., Macrae, C. N., Manstead, A. S. R., Stradling, S. G., & Parker, D. (1990). Attributional biases and driver behavior. *Social Behaviour, 5*, 185–192.

Berger, K. T. (1998). *Zen driving*. New York: Ballantine.

Deffenbacher, J. L., Deffenbacher, D. M., Lynch, R. S., & Richards, T. L. (2003). Anger, aggression, and risky behavior: A comparison of high and low anger drivers. *Behaviour Research and Therapy, 41*, 701–718.

Deffenbacher, J. L., Filetti, L. B., Lynch, R. S., Dahlen, E. R., & Oetting, E. R. (2002). Cognitive-behavioral treatment of high anger drivers. *Behaviour Research and Therapy, 40*, 895–910.

Deffenbacher, J. L., Huff, M. E., Lynch, R. S., Oetting, E. R., & Salvatore, N. F. (2000). Characteristics and treatment of high-anger drivers. *Journal of Counseling Psychology, 47*, 5–17.

Deffenbacher, J. L., Lynch, R. S., Oetting, E. R., & Swaim, R. C. (2002). The Driving Anger Expression Inventory: A measure of how people express their anger on the road. *Behaviour Research and Therapy, 40*, 717–737.

Deffenbacher, J. L., Lynch, R. S., Oetting, E. R., & Yingling, D. A. (2001). Driving anger: Correlates and a test of state-trait theory. *Personality and Individual Differences, 31*, 1321–1331.

Deffenbacher, J. L., Oetting, E. R., & Lynch, R. S. (1994). Development of a Driving Anger Scale. *Psychological Reports, 74*, 83–91.

Deffenbacher, J. L., Oetting, E. R., Lynch, R. S., & Morris, C. D. (1996). The expression of anger and its consequences. *Behaviour Research and Therapy, 34*, 575–590.

Deffenbacher, J. L., Petrilli, R. T., Lynch, R. S., Oetting, E. R., & Swaim, R. C. (2003). The Driver's Angry Thoughts Questionnaire: A measure of angry cognitions when driving. *Cognitive Therapy and Research, 27*, 383–402.

Elander, J., West, R., & French, D. (1993). Behavioral correlates of individual differences in road-traffic crash risk: An examination of methods and findings. *Psychological Bulletin, 113*, 279–294.

Ellison, P. A., Govern, J. M., Petri, H. L., & Figler, M. H. (1995). Anonymity and aggressive driving behavior: A field study. *Journal of Social Behavior and Personality, 10*, 265–272.

Ellison-Potter, P., Bell, P., & Deffenbacher, J. (2001). The effects of trait driving anger, anonymity, and aggressive stimuli on aggressive driving behavior. *Journal of Applied Social Psychology, 31*, 431–443.

Ferguson, A. (1998, January 12). Road rage. *Time,* 64–68.

Fong, G., Frost, D., & Stansfeld, S. (2001). Road rage: A psychiatric phenomenon? *Social Psychiatry and Psychiatric Epidemiology, 36*, 277–286.

Galovski, T. E., & Blanchard, E. B. (2002). The effectiveness of a brief psychological intervention on court-referred and self-referred aggressive drivers. *Behaviour Research and Therapy, 40*, 1385–1402.

Gulian, E., Debney, L. M., Glendon, A. I., Davies, D. R., & Matthews, G. (1989). Coping with driver stress. In F. J. McGuigan, W. E. Sime, & J. M. Wallace (Eds.), *Stress and tension control* (Vol. 3, pp. 173–186). New York: Plenum Press.

Gulian, E., Glendon, A. I., Matthews, G., Davies, D. R., & Debney, L. M. (1988). Exploration of driver stress. In J. A. Rothengatter & R. A. de Bruin (Eds.), *Road user behaviour: Theory and research* (pp. 342–347). Assen, The Netherlands: Van Gorcum.

Gulian, E., Glendon, A. I., Matthews, G., Davies, D. R., & Debney, L. M. (1990). The stress of driving: A diary study. *Work and Stress, 4*, 7–16.

Gulian, E., Matthews, G., Glendon, A. I., Davies, D. R., & Debney, L. M. (1989). Dimensions of driver stress. *Ergonomics, 32*, 585–602.

Hennessy, D. A., & Wiesenthal, D. L. (1999). Traffic congestion, driver stress, and driver aggression. *Aggressive Behavior, 25*, 409–423.

Hennessy, D. A., & Wiesenthal, D. L. (2001). Gender, driver aggression, and driver violence: An applied analysis. *Sex Roles, 44*, 661–676.

James, L., & Nahl, D. (2000). *Road rage and aggressive driving: Steering clear of highway warfare*. Amherst, NY: Prometheus.

Jonah, B. A. (1986). Accident risk and risk-taking behaviour among young drivers. *Accident Analysis and Prevention, 18*, 255–271.

Jonah, B. A., & Dawson, N. E. (1987). Youth and risk: Age differences in risky driving, risk perception, and risk utility. *Alcohol, Drugs, and Driving, 3*, 13–29.

Lajunen, T., & Parker, D. (2001). Are aggressive people aggressive drivers? A study of the relationship between self-reported general aggressiveness, driver anger and aggressive driving. *Accident Analysis and Prevention, 33*, 243–255.

Lajunen, T., Parker, D., & Stradling, S. G. (1998). Dimensions of driver anger, aggressive and highway code violations and their mediation by safety orientation in UK drivers. *Transportation Research Part F, 1*, 107–121.

Lajunen, T., Parker, D., & Summala, H. (1999). Does traffic congestion increase driver aggression? *Transportation Research Part F, 2*, 225–236.

Larson, J. A. (1996). *Steering clear of highway madness.* Wilsonville, OR: Bookpartners.

Lawton, R., Parker, D., Manstead, A. S. R., & Stradling, S. G. (1997). The role of affect in predicting social behaviors: The case of road traffic violations. *Journal of Applied Social Psychology, 27*, 1258–1276.

Matthews, B. A., & Norris, F. H. (2002). When is believing "seeing"? Hostile attribution bias as a function of self-reported aggression. *Journal of Applied Social Psychology, 32*, 1–32.

Novaco, R. W. (1991). Aggression on roadways. In R. Baenninger (Ed.), *Targets of violence and aggression* (pp. 253–326). Oxford, England: North-Holland.

Novaco, R. W., Stokols, D., Campbell, J., & Stokols, J. (1979). Transportation, stress, and community psychology. *American Journal of Community Psychology, 7*, 361–380.

Novaco, R. W., Stokols, D., & Milanesi, L. (1990). Objective and subjective dimensions of travel impedance as determinants of commuting stress. *American Journal of Community Psychology, 18*, 231–257.

Parker, D., Lajunen, T., & Summala, H. (2002). Anger and aggression among drivers in three European countries. *Accident Analysis and Prevention, 34*, 229–235.

Parker, D., Manstead, A. S. R., Stradling, S. G., & Reason, J. T. (1992). Determinants of intention to commit driving violations. *Accident Analysis and Prevention, 24*, 117–131.

Parker, D., Reason, J. T., Manstead, A. S. R., & Stradling, S. G. (1995). Driving errors, driving violations, and accident involvement. *Ergonomics, 38*, 1036–1048.

Parkinson, B. (2001). Anger on and off the road. *British Journal of Psychology, 92*, 507–526.

Retting, R. A., & Williams, A. F. (1996). Characteristics of red light violators: Results of a field investigation. *Journal of Safety Research, 27*, 9–15.

Sharkin, B. S. (1988). The measurement and treatment of client anger in counseling. *Journal of Counseling and Development, 66*, 361–365.

Shinar, D. (1998). Aggressive driving: The contribution of the drivers and the situation. *Transportation Research Part F, 1*, 137–160.

Stokols, D., Novaco, R. W., Stokols, J., & Campbell, J. (1978). Traffic congestion, Type-A behavior, and stress. *Journal of Applied Psychology, 63*, 467–480.

Summala, H. (1987). Young driver accidents: Risk taking or failure of skills? *Alcohol, Drugs, and Driving, 3*, 79–91.

Underwood, G., Chapman, P., Wright, S., & Crundell, D. (1999). Anger while driving. *Transportation Research Part F, 2*, 55–68.

Vest, J., Cohen, W., & Tharp, M. (1997, June 2). Road rage. *U.S. News and World Report*, 24–30.

Wells-Parker, E., Ceminsky, J., Hallberg, V., Snow, R. W., Dunaway, G., Guiling, S., et al. (2002). An exploratory study of the relationship between road rage and crash experience in a representative sample of U.S. drivers. *Accident Analysis and Prevention, 34*, 271–278.