Driving anger as a psychological construct: Twenty years of research using the Driving Anger Scale

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A R T I C L E   I N F O

A B S T R A C T

It has been two decades since Deffenbacher, Oetting, and Lynch (1994) published their paper introducing the construct of driving anger. Since this time the Driving Anger Scale (DAS) has been adopted by a large number of transportation researchers and is the scale most commonly used to measure trait driving anger. Drivers high in trait driving anger tend to experience anger more often and more intensely when driving than those low in trait driving anger. In this paper we provide a broad overview of some of the leading research on driving anger conducted over the past 20 years. We intertwine the body of work by Deffenbacher and colleagues undertaken over the past years with research drawn from New Zealand, Malaysia, Turkey, Spain, Ireland, Japan, Ukraine, France, UK, China, Finland, The Netherlands and Ukraine. This article summarises the results regarding the validity and stability of the latent constructs underlying the measure of driving anger, along with the similarities and differences in the patterns of findings made. In particular we focus on the situations and driver characteristics, such as age and gender that trigger anger. This manuscript discusses the potential detrimental consequences of this anger and the factors that mediate the two. We conclude that the construct of driving anger is robust across a diverse range of drivers. However, while the DAS is a valuable tool in identifying drivers prone to anger, and subsequently higher risk of aggressive behaviour, we introduce some potential shortfalls of the current scale in the modern driving climate. In doing this, we present to the research community potential avenues for further development of the driving anger construct.

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1. Introduction

2014 marked the 20th anniversary of the publication of the Driving Anger Scale (DAS; Deffenbacher, Oetting, & Lynch, 1994). While not originally developed for transportation research, the DAS has been adopted into the field and is now the most common measure of the driving anger construct. Since its conception, the DAS has been applied to a diverse range of drivers sampled from various populations, including Universities (Björklund, 2008; Villieux & Delhomme, 2007), general driving communities (Sullman, 2006; Yasak & Esiyok, 2009) as well as specific driving professions (Sullman, Stephens, & Kuzu, 2013). In all cases, the DAS has helped its users to further understand the types of drivers likely to become angry while

driving, the situations most likely to trigger anger and the potential dangers of this anger. The DAS has also been used as a part of therapy, as decreases in DAS scores post anger treatment can indicate successful anger management strategies (Deffenbacher, 2009; Deffenbacher, 2013). In this paper we discuss the origins of the DAS and provide a broad review of the benefits achieved through its use in transportation research over the past two decades.

1.1. Scale development: driving anger as a psychological construct

The concept of driving anger originated from understanding and treating problem anger. In some of the early studies by Deffenbacher and colleagues on trait or general anger, i.e., individuals whose anger is triggered by a wide range of situations (Deffenbacher, Demm, & Brandon, 1986; Deffenbacher et al., 1996), high and low trait anger individuals were compared on many measures, including having them individually describe their most angering situations and rate the degree of anger experienced when confronted by those situations. Perhaps not surprisingly, high trait anger individuals reported more intense anger than low trait anger individuals, but what was surprising was the average intensity for low trait anger individuals. When asked what angered them most, many low trait anger individuals reported quite high, and in some cases very high, anger. They were not generally angry, but specific situations elicited considerable anger.

This raised the question of whether anger was more situational or contextual for some people. Could they be angered only when certain situations, or situations sharing a common theme occurred? To address these questions, Deffenbacher and colleagues reviewed 100's of anger diaries from high and low trait anger individuals. They found that 5–8% of examples involved driving, leading to the conclusion that there were individuals whose anger was primarily triggered when driving. In a preliminary evaluation, over 100 university students, faculty and community members were interviewed about, amongst other things, whether they could identify one or more persons who were fairly calm until they drove. Everyone interviewed identified him/herself, or one or more people, as an angry driver/s. Unrequested, the participants often provided graphic examples of anger while driving. This, according to Deffenbacher and colleagues was evidence of a crude face validity of the driving anger construct.

However, at this time no measure of driving anger existed. To create one, Deffenbacher et al. (1994) collated data from individual interviews, driving-related anger logs and self-reports of the most anger inducing situations. These were indexed and a standardised 53 items were retained and administered to over 1500 first year university students. A young group (modal age of 18) was chosen because youth were likely to provide the greatest range of responses and potential sensitivity of items, as anger tends to decrease with age. Students rated the degree of anger experienced when confronted by each of the 53 situations on a five-point scale (1 = not at all, 2 = a little, 3 = some, 4 = much, and 5 = very much). That is, items were rated on an intensity scale rather than a frequency scale of how often anger occurred.

Cluster analysis yielded a 33-item scale, named the Driving Anger Scale (DAS), with six correlated scales (Deffenbacher et al., 1994): (1) 3-item Hostile Gestures (α = .87) involving anger in response to things such as other drivers making obscene gestures or yelling at them; (2) 4-item Illegal Driving (α = .80) included things like others speeding or running stop signs; (3) 4-item Police Presence (α = .79) such as being close to police in traffic or receiving a traffic citation; (4) 5-item Slow Driving (α = .81) such as when another driver does not drive off as soon as a traffic signal changes or driving too slowly in the passing lane; (5) 9-item Discourtesy (α = .81) which is anger in response to discourteous or disrespectful behaviour of other drivers, such as taking a parking spot the person was waiting for or following too closely; and (6) 7-item Traffic Obstructions (α = .78) which included situations that impede one's progress such as traffic jams and road construction. The total score is the sum of all items (αs = .90–.93) and has a 10-week test–retest reliability of .88. The separate scales showed negligible (r = −.06) to large (r = .60) correlations with a modal r of .35, suggesting correlated but somewhat different aspects of anger while driving.

Deffenbacher et al. (1994) also constructed a short-form of the DAS by using cluster analysis to identify the shortest, most reliable scale that included at least one item from each factor of the long-form. The resultant 14-item short-form (αs = .80–.82) had 10-week test-reliability of .84 and was correlated highly with the long-form (r = .95). As a result, reliable short and long measures of driving anger had been developed, which highlighted some of the sub-contexts in which anger might be elicited while driving.

2. Construct validity of the scale to measure driving anger

2.1. Consistency of the DAS structure across various driver populations

Since publication in 1994, transportation researchers have regularly used the DAS. A Scopus citation search performed in May 2015 showed 228 citations, with the more timely Google Scholar citation count being 353. This is a significantly larger number of citations than the Propensity for Angry Driving Scale (PADS; DePasquale, Geller, Clarke, & Littleton, 2001), which is a similar measure designed to assess driving anger tendencies. A citation search of the PADS conducted on the same day showed a Scopus citation count of 41 and a Google Scholar citation count of 68. The DAS is therefore currently the most commonly cited measure of the psychological construct of driving anger.

Although developed on a sample of university students enrolled at an American University, the DAS has been validated on a broad range of drivers (see Table 1). These include drivers sampled from 12 countries. For example, drivers from general populations, in China (Li, Yao, Jiang, & Li, 2014), Japan (McLinton & Dollard, 2010), Malaysia (Sullman, Stephens, & Yong,