Development of Anger Reduction Animated Video for Indonesian Car Driver

L S Putranto*† and A N Tajudin† and Rostiana‡

1Civil Engineering Department, Tarumanagara University, Jakarta 11440, Indonesia
2Faculty of Psychology, Tarumanagara University, Jakarta 11440, Indonesia
*Corresponding author: leksmonop@ft.untar.ac.id

Abstract. Driving, especially in congested traffic, might trigger anger and this could be calmed down by accepting appropriate advice through animated socialization video. In this paper, we will discuss the development of anger reduction animated video for Indonesian Car Driver based on driver anger scale measurement in Denpasar, Manado, and Padang. In each city, we asked 200 respondents to fill the driver anger scale consist of 100 motorcyclists and 100 car drivers. Therefore, the overall sample was 600 respondents. A mean different analysis with 2.5 (the departure from not angry to angry) was conducted on 14 items of the scale. In general, the mean responses were less than 2.5 or only marginally above 2.5 except for items 3 (other road users keep changing lanes), 9 (a car moving back without looking) and 13 (a truck kicks up gravel to your vehicle). Therefore, we only design the animated socialization videos for these items.

1. Introduction
Nasir and Abd Ghani [1] in 2014 conducted a study among 552 male and 610 female teenagers (14-16 years old) randomly approached from public schools in Selangor State (West Malaysia). Almost all the respondents had experienced anger. Due to their anger, 7.1% hit someone, 25.1% hit something as a diversion, and 27.8% became aggressive orally (swearing). More than half of the respondents have regretted showing their anger while 44.7% wanted to say sorry. Most of the respondents (64.5%) said that they divert to calm themselves when they were angry. Lok et al. [2] in Turkey also observed teenagers in as a secondary school and suggested that they learn how to cope with anger. This can be incorporated with the program conducted by relevant trained nurses can deal with aggressive personality problems. Torres-Marin [3] in 2018 found that appreciating joke was related to a greater capability to decrease anger and its external anger statement. Using travel diary, Underwood et al. [4] found that most of the respondents reported anger feeling at least once a trip.

Zhang et al. [5] in 2018, adapted the short version of Driving Anger Scale (DAS) developed by Deffenbacher [6] in 1994 for Chinese respondents as this present paper also did for Indonesian respondents. From the confirmatory factor analysis, they found that the 14 items in DAS can be grouped into three factors, i.e. hostile gestures, safety-blocking, and arrival blocking. The hostile gesture subscale and arrival-blocking subscale were positive predictors for aggressive driving, while the safety-blocking subscale was a negative predictor of aggressive driving. In China, generally driving anger was lower but its relationship with aggressive driving was greater than that in Western countries.

Moller and Haustin [7] in 2018 used the results from three years of Danish surveys in 2005, 2008 and 2016 to provide an overview of the development of general and demographic sub-groups road anger expression. From 2005 to 2016 the proportion of road user involved in anger expression incidents increased, especially in Denmark. Females were less often involved than males both as an attacker and...
interestingly as a victim, but the gender difference became less significant from 2008 to eight years after. In general, own anger expression was more frequently explained by fear (positive trait), while anger expression by other drivers was more frequently shown by uncontrollable personal anger or by requiring to express someone else was wrong (negative trait). Nevertheless, road user responding high in aggressive anger expression frequently shown own anger expression by uncontrollable anger reactions to fear was to some extent incorrectly understood as anger expressions by other drivers. Findings show that rational and behavioural interventions, probably as part of the safer road user behaviour campaign, were suitable to suppress aggressive anger expression in road context.

Feng et al. [8] in 2018 studied the effectiveness of a rational intervention and a forgiveness intervention to reduce anger and driving aggressive expression and to compare the differences between the different interventions. The sample involved 54 male bus drivers in China who were randomly classified into 3 groups, with an equal number of drivers per group. The participants in the first, second and third group received a rational intervention, forgiveness intervention and served as the no-treatment control group respectively. All of 54 drivers completed driving anger questionnaires at the post-treatment evaluation. At post-treatment, the results showed that both types of interventions brought to substantial reductions in some indicators of driving anger and physically aggressive expression and substantial increases in adaptive/constructive driving anger expressions and the control anger capability. Moreover, the interventions encourage drivers’ use of positive rational strategies to suppress negative emotions. Nevertheless, the three groups did not differ substantially in terms of the slow driving factor of driving anger, vehicular and verbally aggressive expressions and the trait anger level. Furthermore, respondents in the first group felt substantially higher improvement in controlling driving anger, especially in the discourtesy and traffic obstruction factors and negative rational strategies, than participants in other groups.

Deffenbacher [9] in 2015 described and evaluated the usefulness of interventions to suppress drivers anger and aggression. The evaluation suggests starting empirical support for rational, relaxation, and behavioural interventions and the combinations of both interventions. Thus, it suggests that stakeholders from different backgrounds have a base of rationally supported interventions to develop interventions to a certain group of people. It also suggests other possible interventions such as acceptance-based interventions that may improve intervention effectiveness.

Guttman [10] in 2016 reviewed 300 road safety campaign materials from 41 countries. The campaign materials (e.g. diverse materials such as video and radio advertisements, posters and billboards) were taken from official national road safety organizations’ websites, which were obtained from 2004 and observed several times between 2007 and 2013. The materials were categorized into 6 types of appeal:

a) Appeals to logic:
   - Explanations referring to science
   - Use of metaphors and analogies
   - Use of simulations [11]
   - Crash reconstruction
   - Safety simulation with role-playing
   - Exposing accident statistics
   - Safety practices simulation

b) Appeals related to decision-making [12], counter-arguments & paradoxes.

c) Appeals to negative emotions:
   - Exposing near-miss accident
   - Exposing scary accident scenes [13]
   - Focusing on the culprit

d) Appeals to positive emotions and values [14]:
   - Sympathy for harmed person
   - Attention to the need of the closest person
   - Attention to general others
• Collective action
e) Appeals to law enforcement:
  • The certainty of getting caught [15-16]
  • The severity of penalties [17]
  • Justification for enforcement [18]
f) Humour [19], and sarcasm:
  • Using jokes for accident prevention
  • Using jokes to explain positive norms and practices
  • Sarcasm and exaggeration of negative emotions
  • Morbid humour

Every appeals/ tactics/strategy would then be discussed by providing examples, theoretical rationale/ advantageous and limitation/ challenges.

An increasing number of health organizations have used online social media to promote health. Posted feedback can give rich information regarding people reaction to health campaigns. Chung [20] in 2015 took the case of an antismoking campaign posted on YouTube by the Centers for Disease Control and Prevention (CDC) and evaluate comments to six campaign videos (N = 1186). Results showed that comments in positive emotions were more common compared to negative emotions. The majority were antismoking, pro-campaign comments supporting the campaign cause. Putranto and Rostiana [21] found that animated video and live-action video had similar power to change respondents’ attitude on road safety and suggest the use of animated video to describe risky road user behaviour. In an animated video, we could skip the use of stunt-men to describe the dangerous act in the road.

2. Method

2.1. Questionnaire design
The respondents were asked to fill adaptation of the short version (14 items) Driving Anger Scale (Deffenbacher et al [6]) into Indonesian. The keywords of the 14 items in the instruments can be listed as follow:

a) Insults your driving/ riding
b) Honks your driving/ riding
c) Keep changing lane
d) Red light violation
e) Pulls over by police
f) Watch by hidden police
g) Slow parking
h) Slow driving
i) Moving back without looking
j) Speeds up when you pass them
k) Cycling in the middle lane
l) Stuck in a traffic jam
m) A truck kicks up gravel on you
n) Driving behind a large truck

The difference with the original version was not only in the language. We used four scales instead of five scales (not angry, slightly angry, undecided, angry, very angry) of responses used in the original version. The use of even scale was to avoid to many undecided respondents mark "3" as the answers. The respondents were asked to rate whether they were:

a) not angry
b) slightly angry
c) angry
d) very angry
2.2. Sample size and data collection
There were 300 car driver respondents (100 respondents each at Denpasar, Manado, and Padang) and 300 motorcycle rider respondents (also 100 respondents each at Denpasar, Manado, and Padang). The respondents were deliberately selected to represent approximately equal gender representation and age groups (young adult group and older group) representation. The young adult group consists of respondents aged less than 40 years old.

2.3. Analysis tool
The collected data were then analyzed using one-sample t-tests mean difference analysis with $\alpha < 0.05$ to decide significance. The mean difference was with 2.5 (the departure value from not angry to angry).

3. Results

3.1. The profile of the respondents
There were 323 male respondents, consist of 161 car drivers (55 from Denpasar, 53 from Manado and 53 from Padang) and 162 motorcycle riders (57 from Denpasar, 54 from Manado and 51 from Padang). There were 277 female respondents, consist of 139 car drivers (45 from Denpasar, 47 from Manado and 47 from Padang) and 138 motorcycle riders (43 from Denpasar, 46 from Manado and 49 from Padang). We tried to get a similar proportion of respondents from young adult groups (not more than 39 years old) and older groups (beyond 39 years old). In Indonesia, 17 years old is the minimum age for legal driving/riding. Therefore, it is quite logical that our sample shows the mean age between 32.7 and 42.3 years old in our sub-samples grouped by gender and type of vehicles. Furthermore, most of the respondents were married with the exception for motorcycle rider respondents on Padang which were mostly not married (either single, widow or widower).

3.2. Statistical result summary
In most items, the responses were less than 2.5 or only slightly above 2.5. The only responses significantly above 2.5, were presented in Table 1.

| Item No. | Vehicle Type | City      | Mean | $\alpha$ |
|----------|--------------|-----------|------|---------|
| 3        | Motorcycle   | Padang    | 2.87 | <0.001  |
| 9        | Motorcycle   | Manado    | 2.80 | <0.001  |
| 13       | Car          | Denpasar  | 2.88 | <0.001  |
| 13       | Motorcycle   | Denpasar  | 2.67 | 0.020   |
| 13       | Car          | Manado    | 3.01 | <0.001  |
| 13       | Motorcycle   | Manado    | 3.16 | <0.001  |

Therefore the anger reduction animated videos will only produce with scenarios regarding:

a) “A truck kicks up sand and gravel on the car you are driving”
b) “A truck kicks up sand and gravel on the motorcycle you are riding”
c) “Someone backs right out in front of you without looking” for motorcycle riders.
d) “Someone is weaving in and out of traffic” for motorcycle riders.

3.3 Animated video development stages
Developing animated video requires some stages as follow:

a) Concept (script, finalize script, illustration, animation, voice-over)
b) Finishing (composing scene by scene, synchronize voice-over, synchronize music)

A script is “the written text of a play.” In other words, what is finally seen and heard is written on the page. According to Sampath [22], here are several aspects to be considered during script drafting for an animation video such as:
a) focus on what people need
b) avoid lengthy scenes
c) create unforeseen scenes
d) amaze the spectators
e) convey your idea smartly
f) look for awareness
g) engage passionately
h) tell stories to be conversational
i) deliver your message simply
j) make it personal
k) bring some joke
l) summarize

An illustration is in short, a still image, like a painting or a sketch. An animation is many illustrations put together to form a moving graphic, the illusion of movement [23]. According to Merriam webster [24], voice-over is the voice of a hidden talent talking or the voice of a visible personality describing untold thoughts.

Compositing consists of everything from special effects, where things blow up, fade, mutate, etc [25]. It also consists of stage prolongations (creating a larger stage in post-production), to surrounding development (from the built environment to greenery), to blue/green screen removal (shooting beyond a blue or green screen and then change the background with e.g. digitally created footage). The art of taking live footage and blending it with digital footage would be considered compositing. According to [26] synchronizing is a process to make (motion-picture sound) exactly simultaneous with the action. The sound can be in the form of a voice-over or a piece of music.

4. Draft scripts for four proposed anger reduction animated videos

4.1. Item no. 1 of DAS (car driver)
You are driving in an intercity-road. You arrive at a curved-uphill-narrow segment of the road. A truck in front of you suddenly spill its gravel load and fall into your car. You feel angry and try to overtake the truck although under limited sight distance whilst keeping push the horn. Fortunately, you are accompanied by a patient partner who advises you to control yourself [1] because anger will not solve the problem and may endanger the travel. Although you are still grumbling, you become calmer and stop pushing the horn and cancel the intention to overtake the truck until reaching safer road condition.

4.2. Item no. 1 of DAS (motorcycle rider)
You are driving in an intercity-road. You arrive at a curved-uphill-narrow segment of the road. A truck in front of you suddenly spill its gravel load and fall into your helmet. You feel angry and try to overtake the truck although under limited sight distance whilst keeping push the horn. Fortunately, you are accompanied by a patient pillion who advise you to understand the situation [1] because it’s not deliberately conducted by the truck driver. Although you are still grumbling, you become calmer and stop pushing the horn and cancel the intention to overtake the truck until reaching safer road condition.

4.3. Item no. 9 of DAS (motorcycle rider)
You are riding your motorcycle towards motorcycle parking space and should pass car parking space. Suddenly a car which has just filled a car parking space move back in front of you without looking and almost hit you. You want to express your anger by cursing the car driver. Fortunately, you remember one trick provided in a personality course that if you about to get angry you should take a deep breath [1]. After doing it several times you become calmer.
4.4. Item no. 3 of DAS (motorcycle rider)

In a congested afternoon, you are just leaving office in a very tired condition riding a motorcycle. Suddenly you almost hit by another motorcycle who deliberately weaving in and out of traffic. Although at first, you are very angry you tried to ignore what just happened [1] and assume that that person was mentally unhealthy. By doing so you become calmer.

5. Conclusion and recommendation

Anger, including driving anger, should be managed to reduce road safety risks. One method to reduce anger is by providing road user education. One of the sufficiently influencing material to change road user behaviour is a socialization video. Animated video is quite suitable used if there are dangerous video scenes. However such materials should be shown for substantially long period frequently. Otherwise, it will only remind road user instantly and easily forgotten.

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