Road safety communication campaigns: Theoretical foundations, validity, and empirical case studies

Although traffic density has increased over the years continuously, traffic accidents and number of death people involved has decreased in most countries. This trend can be accounted for by multiple factors. Typical examples are technical innovations such as seat belts, air bags, and antilock backing systems. In some instances these innovations are followed by respective judicial regulations that require manufacturers to equip new cars with it and oblige drivers to use the innovation (e.g., seat belts). However, in many instances there are no technical solutions or it is difficult to enforce a safe behavior by drivers, passengers, or pedestrians. In these instances communicative strategies become a crucial aspect aiming at vision zero. Public communication campaigns can be defined as important educational tool, based on intended, and strategically planned intensive communication over a chosen time period, addressing selected target groups, with explicit goals, and problem specific tailored messages, to influence knowledge, attitudes, and the behavior to increase road safety (Bonfadelli and Friemel, 2010). In most instances these campaigns are employed by government agencies, public–private-partnerships, non-profit organizations, and industry consortiums. Furthermore, formative evaluations, process evaluations, and summative impact evaluations are often regarded as an integral or even defining aspect of professionally managed communication campaigns (Rice and Atkin, 2013). The goal of these evaluations is to optimize and increase the effectiveness of a campaign (Hoekstra and Wegman, 2011) and to enable knowledge transfer among researchers and practitioners.

Today we can build on a long tradition of campaign evaluation in road safety and on other public health topics. In communication science the debate about campaign effectiveness started with a rather pessimistic contribution by Herbert H. Hyman and Paul M. Sheatsley in 1947. Their article in the Journal “Public Opinion Quarterly” with the title “Some Reasons Why Information Campaigns Fail” argues on the basis of psychological barriers like the so called “Chronic Know Nothing’s”, lack of interest, selective exposure and interpretation, and differential changes in attitudes after exposure. Almost 25 years later, Harold Mendelson argued more optimistically in his journal article “Some Reasons Why Information Campaigns Can Succeed”, arguing that the failure of many campaigns does not lay in the resisting public but by the planners of a campaign (1973/74). Today, there is a consensus that public communication campaigns can be effective, if they are based on social science theory and accompanied with sufficiently funded evaluations (e.g. Friemel and Bonfadelli, 2015; Rice and Atkin, 2013; Snyder and LaCroix, 2013). This conviction also holds true for road safety issues and is based on several meta-analyses (Elliot, 1993; Delhomme et al., 2009; Elvik et al., 2009; Phillips et al., 2009). According to these findings average campaign effects result in a 9% reduction of accidents with significant variations regarding the topic of the campaign, additional enforcements (e.g., new laws or increased police controls), campaign duration, and communication channels. Beside the positive overall effect economic assessments of cost/benefit ratios show that communication campaigns are an effective strategy (Wieser et al., 2009).

Of course this kind of justification relies fundamentally on the data collected and their interpretation. While statistical measures of reliability, confidence intervals and significance have become standard in evaluation reports, the issue of validity is seldom addressed. In general terms validity can be defined as a fit between an objective reality and its empirical operationalization or the extent to which an empirical instrument measures what it purports to measure. Of course any interpretation of campaign effects can only be as good as the data it relies on. Hence, the issue of validity is at the very bottom of any quality assessment.

1. Validity of empirical research

Shadish, Cook and Campbell distinguish four types of validity for experimental and quasi-experimental designs (2002): statistical conclusion validity, internal validity, external validity, and construct validity. Statistical conclusion validity is primarily concerned with the analytical methods (e.g. do the data meet the criteria of a statistical test). Internal and external validity are typically of interest for experimental and quasi-experimental designs. The former (internal validity) refers to the question whether the bounded scope of a (quasi-) experiment (including treatments, measures, and constructs as well as their timing) allows testing a causal relationship between cause and event and excluding alternative explanations. The later (external validity) is of special concern for laboratory settings and addresses the issue of how biased people behave in an artificial situation. Or put the other way whether people would behave similarly in an everyday situation. Hence, this type of validity is also called ecological validity. Transferred to quasi-experimental and non-experimental campaign evaluations it could be of interest how valid it is to transfer a finding from one country to another given differences in culture, legal regulations, traffic situation, etc. Construct validity addresses the fit between constructs and operations. It can partially be assessed by statistical
means by analysing the correlation with similar and different factors. High construct validity is given if the construct correlates high with similar factors (convergent validity) and low with different factors (discriminant validity) (Campbell and Fiske, 1959).

A similar but not identical category of validity is content validity. Content validity is given, if a measure takes all aspects of a social construct into account. While construct validity is rather focused on the score and assesses whether it is correlated with scores of a related factor the content validity is a “test-based” measure. It is therefore strongly dependent on the definition of a construct and the agreement among researchers about what belongs to this definition (and what not). Digging even deeper, Sireci distinguishes four elements of content validity: domain definition, domain relevance, domain representation, and appropriate test construction procedures (1998). Furthermore, he mentions response processes in surveys as a related aspect for which representativeness, relevance, and appropriateness can be discussed too (p. 101). Hence, an empirical assessment of content validity is only possible by the judgment of subject matter experts. Hereby, experts of a field decide on the definition of a domain, judge on the relevance of various aspects, rate their representativeness for the domain, and evaluate the procedure of test construction. This kind of evaluation and agreement among experts requires an ongoing academic discourse. However, our content analysis of all mass media road safety campaign evaluations published in English academic journals between 1990 and 2012 revealed that in most instances measures and scales are poorly documented and inhibit a thorough evaluation of the validity and reliability of the evaluation. The issue of validity appears to be limited to face validity which only has to meet the criteria of a superficial plausibility.

Nevertheless, two interesting applications of the validity issue to road safety evaluation are published by Rune Elvik. In a first paper he compared campaign evaluations which were published in peer reviewed journals with other types of publication and found only marginal differences in validity between the two outlets (Elvik, 1998). As indicators for validity he considered sampling technique, total sample size, mean sample size per result, specification of accident and injury severity, study design, number of confounding factors, and the number of moderator variables. Hence, it is more an assessment of factors that are relevant for general scientific quality (and are known to be relevant for valid conclusions) and not an assessment of the validity of measures and their interpretation. The second paper (Elvik, 2003) goes more in this direction by discussing the validity of road safety evaluations with respect to the proclaimed causal chains. Among others, he concludes that an explicit model of campaign effects is necessary to judge on the validity of an evaluation and that it is crucial to consider confounding factors that might moderate and mediate simplistic mono-causal chains of cause and consequences.

Given the poor documentation of many campaign evaluations it is not possible to acknowledge them sufficient validity. Of course this does not mean that they are all invalid but still highlights that improvements are pending. Given the various dimensions of validity and the current assessment of campaign evaluation three areas for improvement are suggested: (1) validation of theoretical models, (2) validation of measures, and (3) a reporting that make the process of validation transparent and allows other researchers to assess the validity of an evaluation.

2. Contributions to this special section

This special section on road safety campaigns tries to stimulate the steady progress in the field of road safety campaigns by combining theoretical and empirical contributions. As a starting point, Rune Elvik is developing a theoretical perspective on road safety campaigns, presuming that it is reasonable to assume that road user behavior is rational in the subjective perspective of people. However, this rationality is most of the time not an absolute rationality but only a bounded rationality. Therefore, the contribution argues that it is crucial to make road users aware of this boundedness. This strategy can also be found in the contribution of Nurit Guttman. Based on the analysis of 300 campaigns she provides an overview of persuasive appeals in road safety campaigns. The typology of five main approaches discusses advantages, limitations, and challenges of using different types of tactics in road safety campaigns. These first two papers contribute to the ongoing development of theoretical approaches and their systematization along different dimension. However, by highlighting more aspects to be considered, practitioners might get increasingly puzzled what theory should be used in a given situation (Slater, 1999; Friemel and Elbrecht, 2015). Ioni Lewis, Barry Watson, and Katherine White address this challenge by outlining a step-by-step approach for message design and testing. According to their model it is important to identify and elicit pre-existing individual characteristics in a first step, address message-related characteristics in a second step, consider emotional and cognitive responses in a third step, and finally measure message outcomes such as acceptance and rejection. However, also with this kind of tool-kits for practitioners there is seldom a one size fits all solution for today’s road safety challenges. The fourth contribution provides an excellent example for this. The contribution of Sarah Geber, Eva Baumann, and Christoph Klimmt illustrates on the topic of speeding that it is advisable to thoroughly test for differences of the above mentioned aspects within a target group. Based on a representative survey among young drivers they identify four types that differ regarding their risk motivation and risk behavior. Furthermore, these types are linked to distinct communication preferences and therefore need to be regarded as four groups requiring tailored campaign channels and messages.

Evaluations of road safety campaigns often have to rely on self-reported behavior. Of course these measures can be biased in various ways and their validity is often doubted. However, also observation studies sometimes lead to puzzling results. The paper by Ingrid Van Schagen, Jacques Commandeur, Charles Goldenheld, and Henk Stipdonk provide an example for the evaluation of an anti-speeding campaign based on observations. They come to the rather disillusioning conclusion that anti-speeding campaigns may serve various goals that may help in the long run to increase road safety but have no immediate effects on behavior.

Finally, the last contribution by Jeffrey R. Brubacher and his colleagues addresses the media coverage that may accompany the introduction of a new law. Based on a content analysis of mass media, reporting on a traffic legislation change it is discussed how this coverage helped to inform the public about the new law. From a campaign perspective this kind of free media is for good and for bad at the same time. While the media coverage helped to reach many citizens without developing and distributing a dedicated campaign it loses control of the interpretation (e.g., framing).

In sum, the contributions in this special section cover a wide range of theoretical, empirical, and very practical aspects of road safety communication campaigns. In many instances they also illustrate the need for ongoing research. Hence, we regard this special section more as a snap shot of some aspects that are crucial and encourage scientists from all related scientific disciplines as well as practitioners to further contribute to this area of research and the discussion about validity of campaign evaluation.

References


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