

Environmental messages, diver attitudes and depreciative behaviours: Does how we communicate environmental messages to recreational divers and dive tourists really matter?

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Introduction

Scuba diving is a popular tourism activity which can contribute to marine ecosystem degradation (Barker & Roberts, 2004). Most research on diver impact mitigation has examined pre-dive briefings and Dive Master interference (ibid); limited research explores diver certification courses (Lindgren, et al., 2008). Extensive research has examined the efficacy of environmental messages in eliciting pro-environmental behaviour (Bradford, 2005) among other types of recreationists and tourists.

This study used the Elaboration Likelihood Model of Persuasion (ELM) (Petty & Cacioppo, 1986) as a framework to determine the effectiveness of environmental communications with SCUBA divers certified by the British Sub Aqua Club (BSAC), the Professional Association of Diving Professionals (PADI) and Scuba Schools International (SSI).

The ELM (Petty & Cacioppo, 1986) has been used extensively to model effective environmental communication in recreation, tourism and natural resource management. According to Marion and Reid (2007) “the central route to persuasion is most appropriate when educational goals include instilling an enhanced environmental ethic, or when ... targeting unintentional deviant or depreciative behaviours” (pp. 11). The central route to persuasion relies on attention, consideration and internalization of messages and arises from the Theory of Planned Behaviour (Kohl, 2005). It allows message recipients to process information, synthesize it with past experiences and knowledge, and to evaluate it (Marion & Reid, 2007). Message recipients’ attitudes change and are integrated into their belief structure, resulting in long term behavioural change. Message recipients are likely to behave in accordance with their changed attitudes “if they retain the message and attitudes” (Marion & Reid, 2007, pp. 11).

Methodology

A sequential-exploratory strategy was undertaken. The first phase used content analysis of novice BSAC, PADI, and SSI certification manuals, coded for low impact diving content, message format and associated diver processing pathway (central or peripheral).

Based on the content analysis, an e-survey was created and administered to determine divers’ knowledge retention and demographics. The sample was a convenience, purposive, snowball sample of certified divers, who completed their novice dive training with BSAC, PADI or SSI. Respondents

were 18 or older, and recruited through online diving forums, dive club, dive store or dive resort e-mail lists.

Tests were graded to determine divers’ knowledge retention levels. One-way ANOVAs were used to determine whether statistically significant ($p < 0.05$) differences existed in respondents’ retention levels at a 95% confidence level. Pairwise comparisons were determined to be significant using a Bonferroni post-hoc analysis. Subsequently, Crosstabs and Chi Square analyses were used to determine the percentage of respondents from each certifying body who answered individual questions correctly / significantly, determining which low impact concepts were not retained. Triangulation illustrated the impact that communication assumed to result in processing along the central and peripheral routes to persuasion had on knowledge retention and its potential behavioural implications. These findings were then compared to the theoretical processing pathways articulated in the ELM.

Results & discussion

The relative efficacies of the manuals were compared based on their use of the message formats assumed to result in processing along the central and peripheral routes. The manuals’ use can be ranked: BSAC (85.45%); SSI (83.59%); and, PADI (74.94 %). Therefore, the manuals were hypothesized as most to least effective from PADI, to SSI and then BSAC prior to analyzing the e-survey results.

In total 499 usable responses to the e-survey were received, comprised of: 128 BSAC divers; 301 PADI divers; and; 70 SSI divers. Respondent divers were evenly dispersed across certification levels. Of all the respondent divers, 90.4% passed the knowledge test with a score of 80% or higher, while 9.6% failed with a score of 79.9% or lower (divers must score 80% or higher to be certified). There was no statistically significant ($p > 0.05$) difference between the number of BSAC, PADI and SSI divers’ who passed the test ($\chi^2 = 0.139$, $df = 2$, $p = 0.933$). There were no statistically significant variations in mean test scores ($F = 0.242$, $df = 2$, $p = 0.785$) based on novice certification. This is unsurprising given that divers must possess a significant level of initial knowledge, and the majority of respondents had logged their last dive within 6 months (84.86%) and taken advanced training (99.1%), factors found to increase knowledge retention (Semb & Ellis, 1994).

However, differences in the number of BSAC, PADI and SSI divers’ who answered individual questions incorrectly were significant ($p < 0.05$). These differences highlight

where environmental communications can be improved. This study found that the manuals using message formats assumed to result in processing along the central route were more effective in producing retention of individual concepts. The manuals that made use of a combination of message formats resulting in combined processing along the central and peripheral routes were also effective, suggesting that the additive effect of multiple messaging formats also encouraged knowledge retention.

Despite the consistent effective pattern of the observed messaging formats believed to result in processing along the central and peripheral routes to persuasion, which accords well with the theoretical ‘persuasive communication-information processing-attitude-predicative behaviour’ pathway of the ELM, it failed to completely explain the observed phenomena. As such, a Predictive Behavioural Outcomes Model of Effective Communication is proposed (Figure 1).

This model illustrates a theoretical ‘persuasive communication-information processing-attitude-skills competency-behaviour’ pathway while taking into consideration the impact of constraints on divers’ adoption of desired behaviours.

Conclusion

This research met the objectives of determining the nature of environmental communications with scuba divers, examining their levels of post-certification knowledge retention, the theoretical impact of knowledge retention and message processing on divers’ attitudes towards low impact diving and in-water behaviour thereby ascertaining whether or not the environmental messages contained in the certification manuals of BSAC, PADI and SSI novice courses were effective. The research concluded that the manuals were moderately effective in achieving this goal, but that revisions to each manual would increase their effectiveness. This study was therefore able to shed light on the effectiveness of environmental communication with scuba divers.

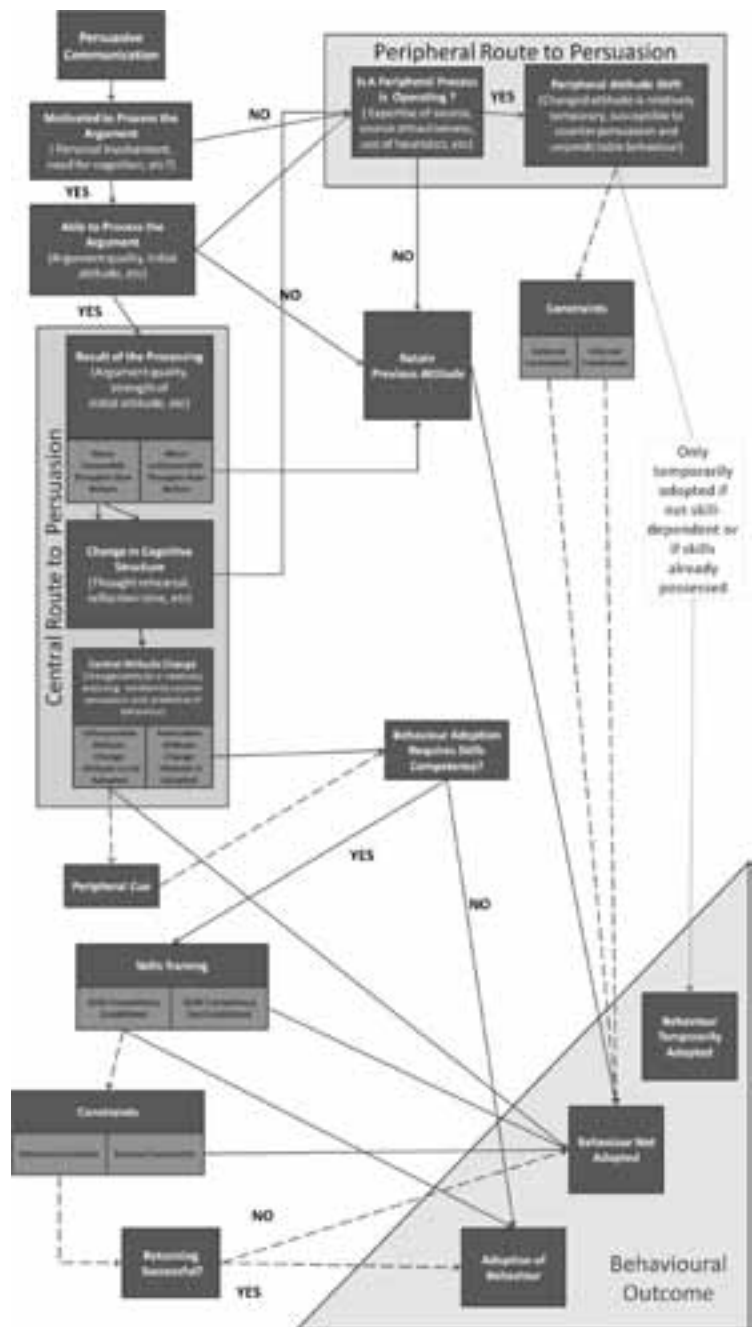


Figure 1. Predictive Behavioural Outcomes Model of Effective Communication

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