Personalization for Persuasive Arguments

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Abstract of keynote

This keynote discusses why (and what kind of) personalization is needed to produce persuasive arguments and the challenges of investigating this topic. Personalization is when a system automatically adapts its actions to a user; in this case, we are interested in all actions related to the use of persuasive arguments. We will use the term 'hearer' to indicate the user, who in this case is the target of the persuasive argument.

The need for personalization in persuasive systems in general has been argued before [13]. Examples of where personalization is needed specific to the case of persuasive arguments include the following.

Deciding on the type of argument. There is a growing body of research showing that adapting the *type* of argument to the hearer matters [11, 3, 21, 20, 4, 10]: which argumentation scheme [27] or Cialdini's principle [2] is used, and which *framing*, with different types of hearers more susceptible to different kinds of arguments.

Deciding on the content of the argument. Even when using the same type of argument, the content of the argument needs adapting. First, the position of the argument matters. When an argument's position is too far from the current position of the hearer, it falls outside the hearer's so-called *latitude of acceptance* [25]. In such a case, the argument will not move the hearer's position towards the speaker's, but on the contrary, may make the hearer even more ingrained in their original position. Nguyen et al. [19] investigated the hearer's position after hearing arguments, based on argument strength, argument position and receiver involvement.

Position is not just a point on a linear scale (as it was in the research by Nguyen et al). Often, there are multiple ways in which a behaviour can be improved. For example, there are many ways in which a person's diet can become healthier, and it may be easier to convince some people to eat more vegetables (and even a particular kind of vegetable, c.f. [8]) and other people to eat more fruit. Such cases could be regarded as having multiple position scales, e.g., one for eating vegetables and one for eating fruit.

Second, the hearer's *involvement* with the topic of the argument matters [9]. For example, when selling a house, one could highlight that the house has a garage that can hold two cars, but if the prospective buyer does not drive, this

argument will not help to sell the house. Instead, one might want to highlight that that space could be used as a kids' playroom (if the buyer has kids) or a gym (if the buyer is into fitness). Involvement is related to the hearer's values, preferences, interests, and goals [1, 8, 14]. Similarly, research in the Superhub and MyWay European projects on behaviour change for sustainable travel shows that hearer attitudes matter [23, 7], with hearers from different attitudinal segments being influenced by different argument contents.

Deciding the source of the argument. The credibility of the (perceived) source of the argument influences the extent to which people feel the argument is believable, trustworthy, non-biased, and detailed [17]. The credibility of a source depends on the hearer (as exemplifies also in politics). Additionally, in certain cases it may be better for the system not to provide arguments, but instead encourage the user to make their own arguments, in line with motivational interviewing [18]. This opens a new line of research on how a system can support users to produce self-persuasive arguments.

Deciding on the timing of the argument. The timing of arguments also matters. For example, research has shown that people are more persuaded by an argument when they were in a positive affective state than a negative one [12]. The hearer's cognitive load is also likely to matter.

Deciding whether to use arguments at all. Many different persuasion techniques exist; Michie et al. [16] listed 137 techniques based on different theories of behaviour change. Using arguments (as in persuasive messages) is just one such technique. Whether this technique is appropriate depends on the behavioural determinants [15, 5, 6] a system is trying to tackle, which in its turn depends on the person using the persuasive technology. Additionally, research shows that the effectiveness of techniques also depends on user characteristics such as personality [22], and that techniques that may be effective for some people are counterproductive for others [22]. This is likely to also hold for the use of argumentation.

Challenges. Challenges include (1) how to measure actual rather than perceived persuasiveness of arguments, and sequences of arguments, under controlled conditions, (2) how to investigate the impact of adaptation in persuasive argumentation (keeping in mind also the principles of layered evaluation [24]), and (3) how to enable a system to generate the variation of arguments that are needed for personalization (building on the work in [26]).

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